

Instruction Sheet 1	Learning Guide 40
----------------------------	--------------------------

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

- Recognizing Occupational Health and Safety (OHS) hazards and procedure in the workplace
- Maintaining personal hygiene and cleanliness standards
- Recognising and reporting hazards in the workplace.
- Recognizing zoonotic diseases of dairy ruminants and their economic and public importance

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 –

- Personal hygiene and cleanliness standards are maintained in accordance with occupational health and safety (OHS) procedures and organisational guidelines and procedures.
- Information regarding hazard identification and risk control is collected and assessed following the enterprise requirements.
- Hazards in the workplace are recognized and reported to the supervisor.
- Risks to self, bystanders, the public and animals are recognized and action is taken according to the enterprise **guide lines**.

Learning Instructions:

1. Read the specific objectives of this Learning Guide 40.
2. Follow the instructions described in number 1 to 6.
3. Read the information written in the “Information Sheet (1, 2,3 and4) in page **2,6,11,18 and 22** respectively
4. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
5. Accomplish the “**Self-check 1, 2, 3, 4 and 5**in page, **5, 10, 17, 21 and 25** respectively.
6. Do the “LAP test” in page 28 and operation sheet page 26 &27 (if you are ready). Request your teacher to evaluate your performance and outputs. Your teacher will

give you feedback and the evaluation will be either satisfactory or unsatisfactory. If unsatisfactory, your teacher shall advise you on additional work.

Information sheet-1	Recognizing Occupational Health and Safety (OHS) hazards and procedure in the workplace
----------------------------	---

1.1. Occupational Health and Safety (OHS) hazards

The Occupational Health and Safety Regulation 2001 defines a hazard as ‘anything (including work practices or procedures) that has the potential to harm the health or safety of a person’.

Hazards can be grouped into five broad areas:

- Physical eg. noise, radiation, light, vibration
- Chemical eg. poisons, dusts
- Biological eg. viruses, plants, parasites
- Mechanical/electrical eg. slips, trips and falls, tools, electrical equipment
- psychological eg. fatigue, violence, bullying.

Hazards can arise from:

- the work environment
- the use of machinery and substances
- poor work design
- inappropriate systems and procedures

Examples of workplace hazards include:

- manual handling e.g pushing, pulling, carrying, lifting
- work environment e.g. floor surfaces, noise, temperature
- machinery
- heat e.g. burns and scalds
- electricity e.g. electrocution
- harassment e.g. bullying and/or violence
- hazardous substances e.g. chemicals, fumes
- biological waste
- skin penetrating injuries e.g. knife or syringe injuries



- noise
- confined space

Recognising the hazards in a workplace and taking steps to eliminate or control the hazard ensures the safety and wellbeing of all employees. It is easier and more effective to eliminate or control the hazard before serious injuries result.

The Occupational Health and Safety Regulation 2001 states that an employer must eliminate any reasonably foreseeable risk to the health and safety of employees and others in the workplace and if this is not practicable must control the risk.

Occupational Health and Safety procedures can be done:

- During design and implementation
 1. Designing a new process or procedure
 2. Purchasing and installing new machinery
- Before tasks are done
 1. Checking equipment or following processes
 2. Reviewing surroundings before each shift
- While tasks are being done
 1. Be aware of changes, abnormal conditions, or sudden emissions
- During inspections
 1. Formal, informal, supervisor, health and safety committee
- After incidents
 1. Near misses or minor events
 2. Injuries

To be sure that all OHS hazards are recognized:

- Look at all aspects of the work and include non-routine activities such as maintenance, repair, or cleaning.
- Look at the physical work environment, equipment, materials, products, etc. that are used.
- Include how the tasks are done.

- Look at injury and incident records.
- Talk to the workers: they know their job and its hazards best.
- Include all shifts, and people who work off site either at home, on other job sites, drivers, teleworkers, with clients, etc.
- Look at the way the work is organized or done (include experience of people doing the work, systems being used, etc).
- Look at foreseeable unusual conditions (for example: possible impact on hazard control procedures that may be unavailable in an emergency situation, power outage, etc.).
- Determine whether a product, machine or equipment can be intentionally or unintentionally changed (e.g., a safety guard that could be removed).
- Review all of the phases of the lifecycle.
- Examine risks to visitors or the public.
- Consider the groups of people that may have a different level of risk such as young or inexperienced workers, persons with disabilities, or new or expectant mothers

Self-Check -1	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. List hazards which are arise from workplace (3pts)
2. Hazards can be grouped into five broad areas, what are they? (5 points)
3. List about 5 examples of hazards in workplace? (5 pts)

Note: Satisfactory rating - 13points Unsatisfactory - below 13 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date: _____

1. _____

2. _____

3. _____

Information sheet-2	Maintaining personal hygiene and cleanliness standards
----------------------------	--

2.1. Facilities

To promote positive hygiene standards on your farm, it is important that you provide adequate facilities where everyone on farm can access them easily. These should be located at appropriate sites around your farm, in particular next to animal handling areas, and should include the following.

Hand washing facilities

- Hot running water
- Permanent sinks
- Liquid soap
- Paper towels

Facilities for cleaning and disinfection

- Hoses or pressure washers
- Brushes and buckets
- Disinfectant supplies with clear instructions for use
- Disinfectant footbaths, where appropriate

2.2. Depending upon the disease status of your animals, you may have to provide

- Showers
- Clean overalls and boots
- Disinfectant footbaths placed at the entrance to your farm and at entrances to areas where vulnerable or high risk animals are kept

❖ Overalls

☞ In general

- Keep a set of overalls for use on each of your farms
- Keep a set of overalls for visitors, if visiting animal accommodation
- You may require additional changes of overalls for use within your farm
- Waterproof overalls are practical as they are easy to clean and disinfect

Always change your overalls

- When moving between different animal areas
- Before tending vulnerable animals, e.g. those giving birth and newborn animals
- After tending sick and quarantined animals

When visiting a market or show

- Wear clean overalls
- Clean any contamination from your overalls before leaving animal areas
- Change overalls before going back to your own animals

It is important to keep fabric overalls free from contamination and laundered after use

- Overalls should be washed separately from all other laundry at the highest temperature suitable for the fabric as per the care label
- Ironing or tumble drying fabric overalls provides additional heat treatment to help control organisms which can cause disease
- Use clean containers (e.g. plastic bags) for storing and transporting overalls which ensure effective separation from regular laundry
- Ensure all overalls are kept separate from all other laundry before, during and after laundering

Much of the risk to people can be mitigated by following these simple safe-hygiene practices around animals:

- Exhibition organizers should provide hand-washing stations equipped with soap and warm water, and encourage visitors to use them after handling farm animals. Stations should be clearly marked, convenient to use and maintained so as not contribute to the risk.
- Visitors should be discouraged from eating food while in the company of farm animals or in animal-housing areas.
- Parents should supervise their children when they are in contact with farm animals and ensure that they wash their hands thoroughly afterwards.
- Anyone who sells animals should educate their customers on safe handling and proper hygiene practices, along with proper care and feeding of the animal.
- Those who purchase animals at an exhibition, farm or sale should be prepared prior to receiving the animals to provide a clean, dry and secure place for animal housing outside the home appropriate for the type of animal.
- Keep animal food, feeding bottles, dishes and other equipment away from household food, utensils, and food-preparation areas and store them in a dedicated area outside the daily living area and away from young children. The animals, feeding bottles and other equipment should not be kept in the home.
- Thoroughly wash animal feeding equipment such as utensils, bottles and nipples prior to disinfecting. Organic matter on surfaces can reduce the effectiveness of disinfectants. Follow label directions when using any disinfectant.
- Wear dedicated clothing such as gloves, coveralls and boots while handling and working around animals. After use, launder the clothes in hot water and dry on the highest heat setting. Boots should be cleaned of organic matter and disinfected after use. Leave boots outside of the home. Or use disposable, single-use products that are commercially available.



2.3. Important points

- Hand washing sinks should have both hot and cold running water, as:

1. It is easier to create soap lather with running warm water
 2. It will encourage more thorough hand washing, particularly in cold weather
- Provide liquid soap, as soap bars can be dropped on the ground
 - Dry hands thoroughly after hand washing using disposable paper towels
 - Cleansing wipes or antibacterial gels complement, but don't replace proper hand washing
 - In extensive field situations where hand washing is impossible, the use of cleansing wipes, antibacterial gels and disposable gloves can help to control disease

Minimum Standards for Maintenance and Hygiene:

- Animal rooms and houses must be kept clean, tidy, vermin-proof and in good repair to facilitate effective cleaning.
- Bedding in animal enclosures must be changed as often as necessary to keep animals clean, dry and comfortable

Self-Check -2	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. what will be done during visiting market place (4 pts)
2. what are the minimum standards for maintenance and hygiene (2 pts)
3. what are the use of washing of hand with both hot and cold running water (4pts)

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

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date _____

1.

- _____
- _____

2.

- _____
- _____

3.

- _____
- _____

Information sheet-3	Recognising and reporting hazards in the workplace.
----------------------------	---

3.1. Recognition of hazards

What materials or equipment should identified in workplace?

- moving objects (e.g., forklifts, overhead cranes, vehicles)
- flying objects (e.g., sparks or shards from grinding)
- falling material (e.g., equipment from above)

3.2. hazards and control in dairy farm

People working in farm dairies are exposed to hazards involving machinery and moving parts, animals, slips, trips, falls, exoskeletal injuries, electrical and chemical hazards, and burns from hot water. The following hazards in farm dairies can be controlled through good design.

HAZARD	CONTROLS
Exposed platform rollers on rotary platforms	<ul style="list-style-type: none"> • Provide a skirt around the platform or guard the rotary milking platform rollers.
Projections at head height like receivers, interceptors, pipes and rails	<ul style="list-style-type: none"> • Where possible, remove head-high obstacles and hazards, especially pipes and rails.
Unguarded herringbone rapid exit mechanisms	<ul style="list-style-type: none"> • Guard rapid exits in herringbone sheds to stop people getting trapped in the shed and yards.
Moving rotary platforms passing fixed rails can potentially trap or crush	<ul style="list-style-type: none"> • Fit a 'banana' rail between the rotary platform's backing and kick rails.

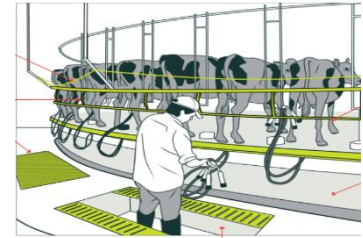
a person	
Carrying out cattle husbandry, artificial insemination (AI) and pregnancy testing on rotary platforms	<ul style="list-style-type: none"> • Fit purpose-built AI/pregnancy testing platforms with steps and rails. • Build a separate AI/pregnancy test race alongside the farm dairy. • When using a trolley or stand for AI and tail painting, make sure the footing wheels are lockable and the floor surface has enough grip. • Install a handrail
Poor drainage	<ul style="list-style-type: none"> • Use rubber non-slip matting or concrete grooving on surfaces to increase traction. • Place lids on drums used in cleaning systems.
Cracked or leaking pipe joints	<ul style="list-style-type: none"> • Make sure there are no leaks or weaknesses in the pipe jointing.
Very hot water	<ul style="list-style-type: none"> • Place very hot water taps where children cannot easily get to them. • Hot water taps should not be easily opened by getting caught in clothing or being leaned on. The best options are taps that require a two-step process to turn them on. • Extend pipes and hoses deep into drums to reduce splashing. • Insulate exposed pipes to prevent burns. • Label water pipes and taps with safety signs saying: 'very hot water'.
Poorly designed cow entries and exits that have turns, ramps, steps or are too steep	<ul style="list-style-type: none"> • Avoid corners or bends in cow entry points. • Design a cow entry with a slope of less than 6%; it should slope up to the farm dairy
Touching unguarded machinery	<ul style="list-style-type: none"> • Guard machinery. • Install emergency stop mushroom buttons. • Use a lanyard (cord)-operated emergency stop instead of the forward/stop reverse lanyard. Never disconnect the lanyards.
Cows going down and/or entering the pit	<ul style="list-style-type: none"> • Quick release gate systems should be in place to release cows if they go down.
Kicking cows	<ul style="list-style-type: none"> • Install kick rails.

Distressed cows	<ul style="list-style-type: none"> • Install good-sized personnel escapes or yard refuges
-----------------	--

3.2.1. Machine guarding

In the farm dairy these unguarded machinery parts present serious risks of injury:

- Belts and pulleys (found on vacuum pumps, milk pumps and auger motors) generator flywheels and gear wheels
- shafts and spindles on vacuum pumps and milk pumps, also on the tractor power take-off (PTO) drive when using a tractor as a power source
- chain and sprocket gears, found on some backing gates and grain crushers
- meal feeding systems.



The dangerous machine parts are:

- **'Drawing-in points' or 'nip points':** These occur when a belt contacts a pulley. These points grab at fingers, clothing or hair and draw the operator in, causing serious injuries.
- **Shear points:** Items or parts that move against each other and can cut by pinching. Often this hazard occurs on machines like augers with exposed flights.
- **Impact and crushing areas:** These are similar to shear points but they don't cut. These points crush limbs or people, like rotary platform rollers (where people can be caught between fixed rails) and the moving stalls on rotary, hydraulic or pneumatic gates (like cow entrances and exits on all shed types).
- **Entanglement areas:** These are areas that catch clothing and hair, like exposed rotating shafts on pumps.

3.2.2. Lifting and carrying

Lifting and carrying objects increases the risk of back injury. Most back injuries don't happen suddenly. They usually occur after many years of wear and tear, making the discs between the vertebrae weak and prone to rupture.

These lifting and carrying tasks pose risks:

- handling buckets of grain, feed, milk or chemicals
- handling bags of feed and feed additives
- handling herd test samples
- moving chemical drums or containers
- lifting full buckets of water or milk
- Lifting calves.

3.2.3. Cattle handling

Handling cattle always involves a risk of injury from crushing, kicking, butting or goring. Even skilled cattle handlers take knocks or kicks some time in their careers. Never underestimate the risk from cattle, even with good systems in place.

Injuries usually happen when moving dairy cows in and out of the dairy shed, during milking (eg from kicks) and during herd testing.

Risks increase if cattle are fearful or agitated. Cows may be fearful or agitated if:

- facilities are unsafe
- a consistent routine is not maintained
- they are exposed to unexpected, loud noises
- they experience pain because of facility features (eg poorly placed neck rails, poor flooring, obstacles)
- a dominant cow approaches another cow and their comfort zone is invaded
- the cow does not cope with the equipment or facility (eg poor lighting, noise from air-operated gates, slippery floor surfaces)
- the work involves infrequently-handled animals, or newly calved cattle
- a veterinarian is treating them.

Many cattle are familiar with being around humans – dairy cows are normally handled daily and pose fewer risks. However, newly calved cows are very protective of their calves and can behave unpredictably. Fattening cattle, kept in the paddock, may not be handled often, so the risks are greater. Dairy bulls are dangerous. They are unpredictable and may be aggressive toward humans and other bulls.

3.2.4. Chemical storage

Agrichemicals are potentially hazardous and people can become ill if they are exposed to them. Badly stored agrichemicals can seriously harm children or others unaware of the risks of exposure. Also, some chemicals can form potentially deadly, flammable or explosive cocktails if accidentally mixed.

Store agrichemicals safely and make sure children and unauthorised people cannot get to the chemicals.

3.2.5. Risks of zoonoses

Humans can catch the following diseases from cattle: acariasis, campylobacter, cryptosporidiosis, E. coli, leptospirosis, listeriosis, milkers' nodules, ringworm, salmonella and streptococcus.

You can be exposed to zoonotic diseases by:

- getting animal blood, urine or feces splashed in your eyes, nose or mouth
- having bugs enter your bloodstream through cracked skin or open cuts
- breathing in dust or micro-organisms
- eating or drinking infected animal products
- being bitten by a fly, mosquito, tick or flea that has also bitten an infected animal
- rats, possums and other pests
- Bird droppings.

Notes: Avoid catching diseases from animals through good health and hygiene practices

3.2.6. Another way to look at health and safety in your workplace

What objects or equipment could I strike or hit my body upon, or that part of my body might be caught in, on, or between?

- stationary or moving objects
- protruding objects
- sharp or jagged edges

- pinch points on machines (places where parts are very close together)
- objects that stick out (protrude)
- Moving objects (conveyors, chains, belts, ropes, etc.)

What could I fall from? (e.g., falls to lower levels)

- objects, structures, tanks, silos, lofts
- ladders, overhead walkways
- roofs
- trees, cliffs

How could I overexert myself?

- lifting
- pulling
- pushing
- carrying
- repetitive motions

What other situations could I come across?

- unknown/unauthorized people in area
- a potentially violent situation
- working alone
- confined space
- missing/damaged materials
- new equipment/procedure at work site
- fire/explosion
- chemical spill or release

Self-Check -3	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What types object or equipment could strike your body upon workplace? (4 pts)
2. How you exposed to zoonotic diseases?(5pts.)
3. What are lifting and carrying tasks pose risks on workplace? (4pts)

Note: Satisfactory rating – 13 points Unsatisfactory - below 13 points

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

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date _____

1

- _____
- _____

2

- _____
- _____
- _____

3

- _____
- _____

Information sheet-4	Recognizing zoonotic diseases of dairy ruminants and their economic and public importance
----------------------------	---

4.1 Disease Transmitted from Animals to Humans

Zoonotic diseases present challenges not only to veterinarians but also to all professions concerned with public health. Cooperation between veterinarians and public health physicians has been an important factor in zoonosis control programs.

Zoonotic diseases can be caused by bacteria, viruses, fungi, parasites, or prions. Because organisms are more readily transmitted between closely related hosts, most of these agents are pathogens of mammals. A particularly large number of diseases are shared by people and nonhuman primates. Birds, reptiles, amphibians, fish, and invertebrates can also be sources of infection

4.1.1. Illnesses Associated with Animal Contact

Cowpox	Cowpox virus	rodents	direct contact (usually with cats)
Cryptosporidiosis	Cryptosporidium spp	cattle, sheep, pets	contaminated water, direct contact
Cysticercosis / Taeniasis	Taenia spp.	cattle, pigs	raw/undercooked meat
Cowpox	Cowpox virus	rodents	direct contact (usually with cats)
Cryptosporidiosis	Cryptosporidium spp	cattle, sheep, pets	contaminated water, direct contact
Cysticercosis / Taeniasis	Taenia spp.	cattle, pigs	raw/undercooked meat
Cowpox	Cowpox virus	rodents	direct contact (usually with cats)
Cryptosporidiosis	Cryptosporidium spp	cattle, sheep, pets	contaminated water, direct contact
Cysticercosis / Taeniasis	Taenia spp.	cattle, pigs	raw/undercooked meat

Human-health threats from livestock come in two basic forms:

- (i) zoonotic diseases, and
- (ii) Food-borne illnesses.

Zoonotic diseases are those that arise in animals but can be transmitted to humans.

Potentially pandemic viruses, such as influenza, are the most newsworthy, but

many others exist, including rabies, brucellosis and anthrax.

Food-borne illness can come from disease agents such as salmonella and *E. coli* or contaminants that enter the food chain during the production and processing of animal-based foods.

Zoonotic bacterial, viral, fungal, and parasitic diseases, grouped by category. Many proven zoonoses, including some diseases that are rare in people, organisms that are maintained primarily in people, some primate diseases, and diseases caused by fish and reptile toxins have been omitted.

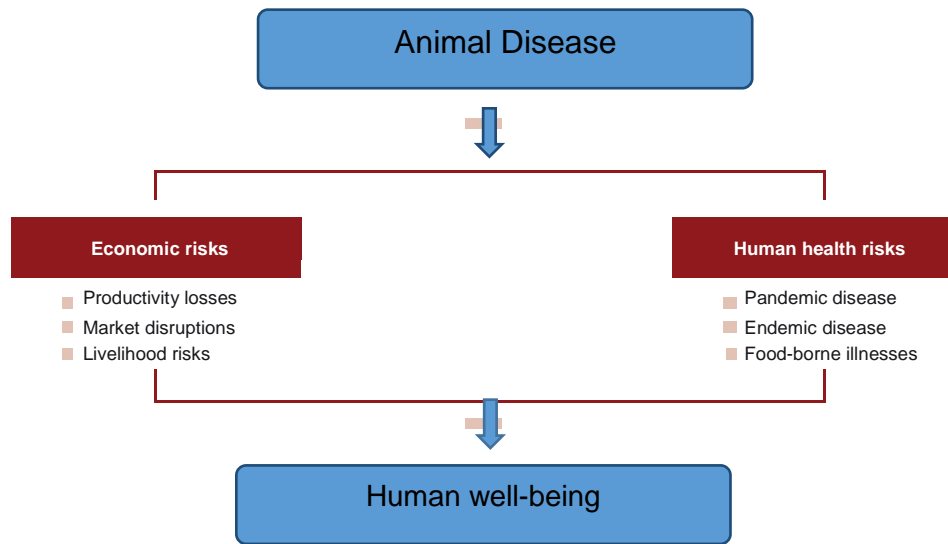
4.2. Economic and public importance of zoonotic disease

Economic and socio-economic threats from livestock diseases come in three broad categories:

- (i) losses in production, productivity and profitability caused by disease agents and the cost of their treatment;
- (ii) disruptions to local markets, international trade and rural economies arising from disease outbreaks and the control measures aimed at containing their spread, such as culling, quarantines and travel bans; and
- (iii) Livelihood threats to the poor. Livelihood threats arise from the first two categories of threat.

There are simple steps you can take to protect yourself and your family from zoonotic diseases caused by parasites.

- Make sure your pet is under a veterinarian's care to help protect your pet and your family from possible parasite infections.
- Practice the four Ps: Pick up Pet Poop Promptly, and dispose of properly. Be sure to wash your hands after handling pet waste.
- Wash your hands frequently, especially after touching animals, and avoid contact with animal feces.
- Follow proper food-handling procedures to reduce the risk of transmission from contaminated food.
- For people with weakened immune systems, be especially careful of contact with animals that could transmit these infections.



Self-Check -4	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. Human-health threats from livestock come in two basic forms: what are they?
(3pts)
2. What are caustic agent of zoonotic disease? (4pts)
3. What are the economic risks of animal disease? (5pts)

Note: Satisfactory rating – 12 points Unsatisfactory - below 12 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date _____

1

- _____
- _____
- _____
- _____

2

- _____
- _____
- _____
- _____

3

- _____
- _____
- _____
- _____

Information sheet-5	Taking appropriate care and preventive action on zoonotic diseases
----------------------------	--

5.1. Prevention of zoonotic diseases

Caring for the health of animals is the first important step in preventing zoonoses. Practicing good personal hygiene, wearing protective clothing and undertaking vaccination where appropriate, can minimise the risk of some animal-borne diseases affecting people.

People can be protected from some zoonoses by eliminating the pathogen from its animal reservoir(s). In some countries, livestock diseases such as bovine and porcine brucellosis and bovine tuberculosis have been eradicated, and the prevalence of *Salmonella* in poultry has been significantly reduced.

Vaccination (eg, rabies), treatment of clinical cases, flea and tick control, periodic testing for enteric parasites or other pathogens, and other disease control measures in domestic animals can also protect people.

Human vaccines are available for a few diseases, and arthropod control measures decrease the risk of vectorborne infections.

A disease that is naturally transmissible from animals to people is classified as a zoonosis.

Zoonotic diseases can spread in many ways, such as:

- working closely with livestock
- contact with pets, exhibited animals or wildlife
- contact with soil or water contaminated by animals
- Consumption of unpasteurized dairy products.

5.1.1. Preventing the spread of disease to humans

Zoonoses are common and the diseases they cause can be serious. Zoonoses are diseases that are transmissible between animals and people. Caring for the health of animals is the first important step in preventing zoonoses. Practising good personal hygiene, wearing protective clothing and undertaking vaccination where appropriate, can minimise the risk of some animal-borne diseases affecting people.

5.1.2. People at risk to be care from zoonosis

Fortunately the occurrence of zoonotic disease is uncommon and contact with zoonotic disease agents is preventable by taking a number of precautions including:

- practicing good personal hygiene;
- providing prompt and effective first aid treatment to cuts and scratches;
- using personal protective equipment eg overalls, gloves, boots, goggles, aprons;
- cleaning and disinfecting work spaces and equipment;
- vaccinating pets and livestock;
- worming pets;
- controlling rodents;
- Isolating and treating sick animals.

Specific occupational groups may also be at higher risk of zoonotic infections. Meatworkers, farmers, wildlife workers and veterinarians, who have close contact with animals, may have increased exposure to diseases like Q fever and leptospirosis. Whereas wild pig shooters may come into contact with pigs infected with brucellosis.

Some diseases such as salmonellosis can be contracted from eating foods that aren't cooked properly and un-pasteurised dairy products may cause listeriosis. Owing pets can be rewarding, however, their close proximity to people, especially children, can result in the spread of diseases.

5.1.3. Precautions

Anyone working with or handling animals should take precautions to minimize the risk of infection. Because different zoonotic diseases behave differently, avoiding specific infections requires an individual approach. A few straight forward practices can provide a high level of general protection.

Precautions include:

- **Good personal hygiene:** Wash hands after handling animals and before preparing or eating food or smoking cigarettes. Unwashed hands should not be put in the mouth, including someone else's mouth.
- **Hygienic food preparation:** Food-borne diseases can be largely avoided through correct processing and hygienic food preparation.
- **Vaccination for people:** Vaccines are available for some zoonoses and they should be made use of. Abattoir workers, farmers and vets should seek advice on Q fever vaccination. To protect against Australian bat lyssavirus, bat carers are advised to have a rabies vaccination.
- **Personal protection:** Gloves, boots and aprons or overalls should be worn when handling animals. Cover cuts and scratches with waterproof plasters. For some diseases that may be fatal to people, e.g. Hendra virus, full protective clothing is essential including respiratory protection.
- **Maintain animal health:** Farm biosecurity and animal health programs, including the use of vaccines, play an important role in reducing the risk of some zoonotic diseases. Pet owners should make sure their animals are healthy and regularly wormed; private veterinarians can provide advice on treatments.
- **Care when pregnant:** To reduce the risk of toxoplasmosis, pregnant women should not empty cat litter boxes and or handle pregnant ewes.
- **Care when immuno-suppressed:** People with depressed immunity whether due to illness or medical treatments, should avoid all exposure to zoonotic diseases.
- **Suspect and stray animals:** Animals that appear ill, or carry skin infections should not be handled without taking precautions. It is also wise to avoid handling stray animals.

- Control of pest animals:** Animals such as rats or feral pigs can carry zoonotic diseases and control programs will reduce the likelihood of transmission to people.

Self-Check -5	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

- What should take precautions to minimize the risk of infection? (6pts)
- How zoonotic diseases can spread from animal to human (4pts)?

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

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

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date _____

1

- _____
- _____
- _____
- _____

2

- _____
- _____
- _____
- _____

operation sheet # 2	To be sure that all hazards are recognized
---------------------	--

To be sure that all hazards are recognized:

- Look at all aspects of the work
- Look at the physical work environment, equipment, materials, products,
- Look at injury and incident records.
- Talk to the workers:
- Look at the way the work is organized
- Determine whether a product, machine or equipment can be intentionally or unintentionally changed (e.g., a safety guard that could be removed).
- Examine risks to visitors or the public.

LAP Test-1	Practical Demonstration
------------	-------------------------

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within 10min.

Depending upon the disease status of your animals, you may have to practice the following

Task 1 Take showers

Task 2 Clean overalls and boots

Task 3 Disinfectant footbaths placed at the entrance to your farm and at entrances to areas where vulnerable or high risk animals are kept

References

- https://www.ccohs.ca/oshanswers/hsprograms/hazard_identification.html
- <https://portal.ct.gov/DOAG/Regulatory/Regulatory/RECOMMENDED-HANDLING-AND-HYGIENE-PRACTICES-FOR-FARM-ANIMAL-EXHIBITORS-AND-VISITORS>
- <https://www.scotlandshelthyanimals.scot/disease-voidance/farmers-livestock-keepers/how-you-can-avoid-disease/ppe-and-hygiene>
- <http://www.fao.org/3/i0680e/i0680e05.pdf>
- <https://www.msdrvmanual.com/public-health/zoonoses/overview-of-zoonoses>
- <https://www.gov.uk/government/publications/list-of-zoonotic-diseases/list-of-zoonotic-diseases>
- <https://www.daf.qld.gov.au/business-priorities/biosecurity/animal-biosecurity-welfare/animal-health-pests-diseases/preventing-zoonoses>
- <https://worksafe.govt.nz/topic-and-industry/agriculture/working-with-animals/staying-safe-in-and-around-farm-dairies/#lf-doc-31690>

Dairy production

NTQF Level –II

Learning Guide# 41

Unit of Competence: Assist in dairy animal health care activities

Module Title: Assisting in dairy animal health care activities

LG Code: AGR DRP2 M11 L02 LG41

TTLM Code: AGR DRP2 TTLM 1219v1

LO 2: Safely capture, handle and restrain dairy animals

Instruction Sheet 1	Learning Guide 41
----------------------------	--------------------------

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

- Identifying animals and assessing risks.
- Selecting and preparing appropriate capture techniques and equipments.
- Capturing animals in a safe and humane manner
- Applying appropriate restraining techniques according.
- Following protocols and procedures for capture and restrain

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 –

- Animals are identified and risks are assessed in accordance with organizational guidelines and procedures.
- Appropriate capture techniques and equipment are selected and prepared for use.
- Animals are captured in a safe and humane manner and in accordance with occupational health and safety (OHS) and emergency procedures.
- Animals are handled correctly and monitored carefully for stressor injury.
- Dairy animals are safely captured, handled, restrained, mustered and restrained safely, yarded, controlled, inspected and identified for treatment in line with enterprise requirements.
- Appropriate restraining techniques applied according to the species and condition of the animal.
- Protocols and procedures for capture and restrain including animal welfare requirements are followed under supervision.

Learning Instructions:

1. Read the specific objectives of this Learning Guide 48.
2. Follow the instructions described in number 1 to 6.
3. Read the information written in the “Information Sheet (1, 2,3,4, and 5) in page 4,8,12,17 and 23 respectively

4. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
5. Accomplish the **Self-check (1, 2, 3 and 3) and Self-check** in page **7, 11, 16, 22and 29**respectively.
6. Do the “LAP test” in page __ (if you are ready). Request your teacher to evaluate your performance and outputs. Your teacher will give you feedback and the evaluation will be either satisfactory or unsatisfactory. If unsatisfactory, your teacher shall advice you on additional work.

Information sheet-1	Identifying animals and assessing <i>risks</i>
----------------------------	--

1.1 Three essential elements of animal handling

Although the area of animal behavior and control is quite vast, an animal health worker must be well conversant with the three (**flight zone, blind spot and point of balance**) essential elements of animal behavior and control viz.

i. Flight zone

All animals have a flight zone which is the animal's "personal space". It is the space in which the animal feels comfortable. It is the minimum distance the animal tries to maintain between itself and any perceived threat. The size of the flight zone varies depending on how calm or aggressive the animal is.

Cattle confined to a small space have a smaller flight zone than cattle kept in a large area. The size of the flight zone slowly diminishes when animals receive frequent gentle handling. An understanding of the flight zone of the animal can help the handlers to reduce stress and prevent accidents.

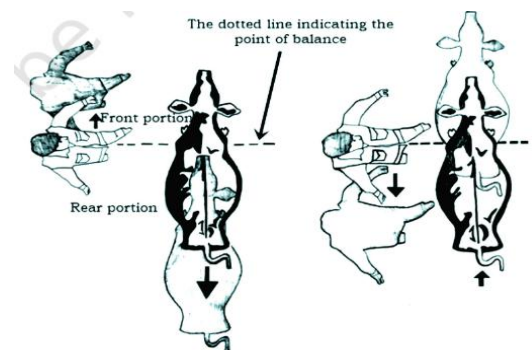


Fig. 1.5: Diagram showing point of balance in an animal

ii. Blind spot

It is necessary to remember that the area immediately behind the tail of the animals extending up to 15° on either side (i.e., total 30°) is treated as the "blind spot", where the animal cannot perceive the handler. An efficient handler never approaches the animal in the area of blind spot as it may get frightened and cause injury to the handler.

iii. Point of balance

This is another important concept of livestock handling (see Fig. 1.5). Farm animals have a wide angle of vision. Point of balance is the imaginary point located on the animal's shoulder which divides the animal's body into two portions, i.e., front portion and rear portion. If the handler crosses this hypothetical point in the direction of front portion, the animal generally moves in the forward direction.

1.2 Important aspects of livestock handling

The following points must be taken into consideration while handling farm animals

a) Never handle excited Animals

- Excited animals are difficult to handle. Thus, if cattle become excited, allow them at least 30 minutes to return to normality.

b) Changes in animal behavior due to stress

- Animals express fear or alarm under stress through their behavioral symptoms.

c) Cattle are sensitive to contrasts

- Cattle are colour-blind and have poor depth perception. It implies that they are very sensitive to contrasts. Therefore, contrasting situations are avoided in the farm.

d) High-pitched noises

- Animals are frightened by high-pitched noises. When cattle are moved quietly, they remain calm and are a lot easier to handle.

e) Animals remember 'bad' experiences

- Cattle remember 'bad' experiences and create associations from fearful memories. For example, if a bald man caused pain to a cow, the same cow may exhibit fear towards all bald men. This emphasises the need for calm and respectful handling of animals at all times.

f) Direction of kicking

- Cattle usually kick in forward direction, then kick out and back in a swinging motion. The animal health worker must be aware of this kicking habit to avoid injury to self and to the animal.

g) Attachment with the owner

- Animals are also very observant. They learn to watch and listen to their owners, even when they may appear to be inattentive. Animals can sense the human mood by watching human behavior.

h) Proper handling techniques

- Some animals take longer than others to get trained but all farm animals can be handled safely and effectively if proper techniques are used.

Self-Check -1	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are three essential elements of animal handling (3 pts)
2. What must be taken in to consideration while handling farm animal (6 pts)
3. How the cattle usually kick during approaching to them? (3pts)

Note: Satisfactory rating – 12 points Unsatisfactory - below 12 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____ Date _____

1. _____
2. _____
3. _____

Information sheet-2	Selecting and preparing appropriate capture techniques and equipment
----------------------------	--

2.1. Restraining of individual cows and buffaloes

Halters and ropes can be useful for handling cattle and for moving them. Soft rope or leather strap can be used for this purpose. The following precautions must be kept in mind while restraining animals.

- Cows are generally more nervous than other animals. Always announce your presence when approaching a cow and gently touch it.
- If a cow tends to kick, consider using a rope. Do not permit workers to talk loudly. Gentle cows can be dangerous while defending their calves and such information should be shared with the visitors and new workers.
- Special care is required for handling the breeding bulls. The handler should never come in direct contact with a breeding bull.
- Keep small children and strangers away from the animals.
- Cattle can be difficult to handle if you force them to act in ways that are not natural for them.

2.1.1 Restraining particular body parts of animals

Different tools and methods are used to bring the needed body parts of the animals under control. The different approaches for restraining particular parts of an animal are given below.

a) Restraining of the head region

To manually restrain the head region, grasp the bridge between the nostrils with thumb and forefinger of one hand and hold it firmly (Fig. 1.7). With the other hand, hold the horn. Besides this method, following tools are also commonly used for controlling the head region of large animals.



Fig. 1.7: An animal handler restraining head of a young cattle

- Bull nose ring:** It is fixed to the nasal septum of bulls and used to restrain the head region of the animal. It is made up of two semi-circular pieces of aluminium, copper or some alloy which does not rust. Rope or bull holder is attached to the bull nose ring to control the bulls.

ii. Bull holder: It is a wooden pole fitted with metal structure which entraps the bull nose ring to control the bull (Fig. 1.10).



Fig. 1.10: Bull holder

iii. Bull nose leader: It is used if examination of the animal is likely to be prolonged or if the animal is restive. The swivel allows the animal to turn and twist its head without twisting the operator's wrist (Fig. 1.11). The ring is used as a handle. The finger-like structure can be separated and inserted into the two nostrils of a bull and then closed tight.



Fig. 1.11: Bull nose leader



Fig. 1.12: Muzzle cover

iv. Muzzle cover: It is made of rope, string, bamboo splits and wire netting or leather straps and used to envelope mouth of animals to prevent them from biting and overeating (Fig. 1.12).

v. Mouth gags: These are used for keeping the two jaws of cattle open for examination of the mouth. One gag is used for the right jaw and the other for the left jaw.



Fig. 1.13: Wooden mouth gag

(b) Restraining of the foreleg

The foreleg of the cattle is raised and held off the ground for examination or treatment. Raising the foreleg also helps in controlling the movement of the animals and hinder their kicking with the hind leg. The method of restraining the front leg of cattle with the help of a rope is shown in Fig. 1.14.



Fig. 1.14: Restraining of foreleg of cattle

(c) Restraining of the hind leg

Raising of the hind leg off the ground and holding it in that position facilitates examination or treatment of the animal. It is particularly useful for the treatment of hooves. Following are the two commonly used ways of restraining the hind legs (Fig. 1.15). Anti-kicker and Milker's knot are used to prevent the animal from kicking during examination of udder and teats while milking or examination of the hind region in case of Mastitis and udder swelling (Figs 1.16a and 1.16b). In an anti-kicker, two metal spring clips connected by a chain are used.



Fig. 1.15: Restraining of hind leg of cattle



Fig. 1.16 (a) Anti-kicker



Fig. 1.16 (b) Milker's knot

(d) Restraining the tail to divert animal's attention

For this purpose, the animal worker stands on the side of the cow to avoid being kicked.

Animal handler keeps both the hands close to the base of the tail as much as possible (Fig. 1.17). The grip is gentle but firm. Restraining of tail is required to distract the cattle's attention from another part of its body on which some operation is being done.



Fig. 1.17; Tail restraining in cattle

Yard design, equipment and safety

General suggestions for improving yard safety include:

- Yards, crushes, cradles and sheds should be suitable in size and strength for the animals being handled.
- Avoid blind corners and sharp turns in the design of your yard.
- Keep the walkways and laneways dry and non-slip wherever possible.
- Make sure your gates, footholds and access ways are well positioned.
- Keep all equipment in good repair: gates moving and hung, latches working, hinges greased

Self-Check -2	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are the material useful for handling cattle and for moving them? (4pts)
2. What is type of restraining material figure-like structure can be inserted in to two nostril of the bull? (3pts)
3. What is the metal structure which entrap the bull nose ring to control the bull (3)

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

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date _____

1

▪ _____

▪ _____

2

▪ _____

▪ _____

3

▪ _____

▪ _____

3.1. Safe Animal Handling:

Be aware of the special stressors for animals in the clinic setting.

- The clinic is extremely chaotic for any animal-there are an incredible number of smells and other stimuli and animals are likely to be confused and distressed.
- Many of our patients have lived entirely outdoors and have not been handled or examined before. They may not have any experience on a leash and may panic in response.
- Even the most social animal may exhibit aggression toward other animals, particularly in a strange environment and may redirect to nearby people when over-stimulated.

Safe and effective animal handling requires a thorough understanding of the normal behavior and responses of each species. Below is some general information on animal behavior and handling techniques. There is no substitute, however, for careful observation and experience.

3.1.1 Safe handling of cattle

Suggestions for handling cattle include:

- Make sure the cattle know you are approaching.
- Take care – cows may charge to protect their calves or if they are startled.
- If mustering during mating (joining) season, use separate yards for bulls once yarded, if possible.
- Make sure there's enough room for the cattle to move.
- Try to work beyond the kicking range of the animal or close to its body.
- Use head rails, cradles and crushes to restrain animals when necessary.
- Dehorn your cattle.

3.1.2 Safe handling of sheep

Suggestions for handling sheep include:

- Plan musters in advance.
- Assume that rams will act unpredictably.
- Use suitably trained sheep dogs to control the mob.
- Avoid isolating individual sheep.
- Lifting a sheep should be avoided, but if you must lift a sheep, sit it down facing away from you, draw it close to your body and pick it up by the back legs, making sure to lift with your thigh muscles.
- When shearing, use a harness to support your back.

3.1.3 Farm safety risk assessment – animal handling

You can assess potential animal handling risks in many ways:

- Walk through all animal-handling areas and look for hazards, such as broken gate latches, broken posts, or restraining equipment not working.
- Consult with [Work safe Victoria's advisory service](#) or visit [work safe's farming information page](#).
- Reflect on injury records to pinpoint recurring dangers, including less obvious ones like lacerations and sprains.
- Talk over safety issues with family members, workers and other animal handlers.
- Make sure at least one person on the farm is trained in first aid.
- Remember that inexperienced workers and bystanders are more likely to be injured.

Restraint or Control

The first rule to keep in mind when handling any kind of animal is that the least restraint is often the best restraint. This does not mean that you give up your control, just that you use as little restraint as necessary while maintaining control of the situation. Every animal and every situation is different so there are no hard and fast rules as to what method works best in which situation.

Before attempting to restrain an animal you should take a moment to allow the animal to become comfortable with you:

- ✚ Crouch down so that you are on their level.
- ✚ Do not sit on the ground as you will be unable to move away or protect yourself if necessary.
- ✚ Avoid direct eye contact but maintain safe visual contact with the animal. Talk in soothing tones.
- ✚ Avoid high-pitched, excited talk.
- ✚ Try patting your leg or the ground, motioning the animal towards you.

3.1.4 Safe practices in animal handling

The animal health worker ensures personal safety by observing the following practices.

- i. The important protective equipment are gloves, apron, gum boots and mask (Fig. 1.23). A rigid protective helmet is also worn when required.
- ii. It is important to wear proper gumboots when one is around livestock. Gumboots provide proper foot support and protection to the worker.



Fig. 1.23: Protective equipment used in farms

- iii. Wear rubber gloves when working with sick and injured animals as well as other protective clothing.
- iv. Observe personal hygiene by washing hands and face after handling the animals.
- v. A good farm health worker is concerned about zoonotic diseases which can be transmitted from humans to animals and vice versa. Leptospirosis, Rabies, Brucellosis, Salmonellosis and Ringworm are some examples of zoonotic diseases.

- vi. To reduce exposure to diseases, use basic hygiene and sanitation practices which include prompt treating or disposal of infected animals, adequate disposal of infected tissues and proper cleaning of contaminated sites.
- vii. Always handle any hazardous medical equipment such as needles or chemicals with extreme caution. Never throw needles away in the waste. Special red-coloured bio-hazard disposal boxes must be kept for this purpose on the farms.

Self-Check -3	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What should the worker be consider to safe and effective animal handling? (3pts)
2. Why you should take a moment before attempting for restrain the animal? (3pts)

Note: Satisfactory rating – 6 points Unsatisfactory - below 6 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date _____

1

- _____
- _____
- _____
- _____

2

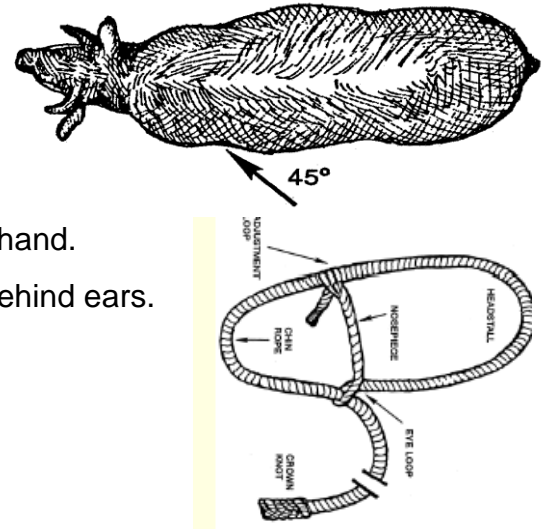
- _____
- _____
- _____
- _____

4.1. Cattle restrain technique

i. Animal restrain

Halters – Haltering

- Loosen chin rope.
- Go over nose and under chin with left hand.
- Tighten chin rope by pull of lead rope with left hand.
- Place headstall with right hand over poll and behind ears.
- Stanchions
- Milking parlor
- Treatment pen

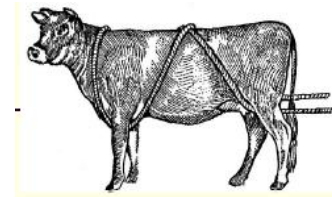


ii. Beef cattle restrain

- Squeeze chutes
- ✓ Close head gate.
- ✓ Close tail gate.
- ✓ Close sides.
- ✓ Apply nose bar or nose tong to work head.
- ✓ Drop bottom side plank to work feet.
- ✓ Drop side bars to work neck, body and legs.
- ✓ Tilt calf chute (calf table) to work calves.
- Lane chute
- ✓ Crowd multiple cattle.
- ✓ Chock single animal with pole in front and rear.

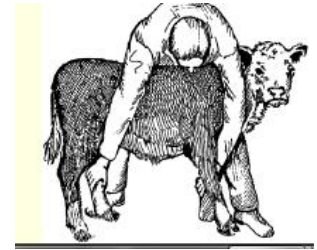
Cast rope –Casting (Burley Method)

- Halter tie head
- Pass rope over withers, ends through forelegs, cross over back and through hind legs.
- Pull both ends of rope from rear to fall cow.



Flanking (Calves)

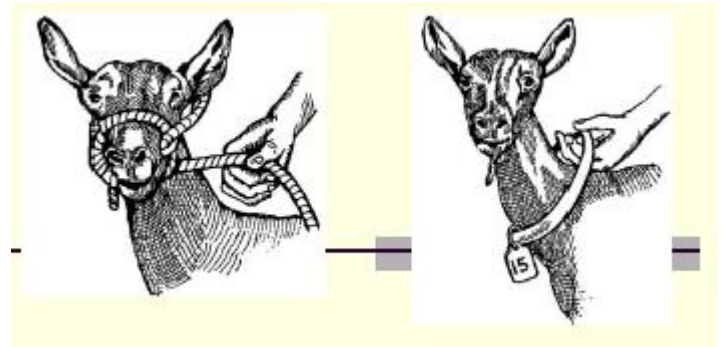
- Reach over calf.
- Reach down flank and grasp nearest hindleg with one hand.
- Reach between forelegs and grasp nearest foreleg with other hand.
- Lift and slide calf to ground.
- Kneel on neck and thigh.
- Lift bottom foreleg from ground.



iii. Sheep and Goats restrain

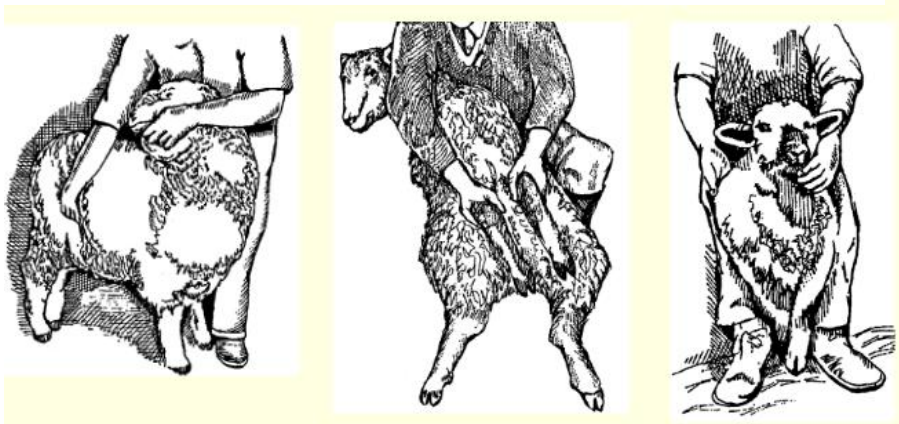
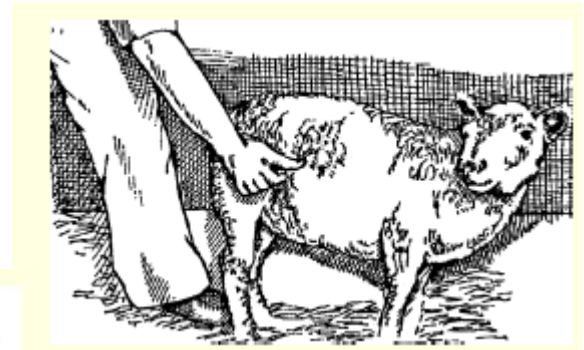
Halter

- Collar
- Flank hold
- Jaw restraint
- Rumping
- Pull jaw and push flank to roll back on rump.
- Grasp front legs.



Saddle restraint

- Straddle and grasp body with knees.



4.2. Restraining the whole animal

Casting of animals

Casting of an animal means making the animal fall on the ground. Animals are cast for various reasons like surgical operations, hoof trimming, etc.

The following two methods are used for casting of large animals.

a) Reuff's method

It is the most common and efficient method of casting the large animals. For this method, around 30 feet of rope is required to carry out the following steps for casting:

Make a loop around the animal's neck using a bowline knot placed as indicated in the pictures. Throw the end of the rope over animals back to the opposite side. Pick the rope from under the animal, bring it around its body and near the bowline to form a half hitch just behind the shoulder. By tossing the end over the animal's back, make another half hitch just in front of the udder or scrotum in case of male cattle. Gently pull the rope to cast the animal (Fig. 1.19).



Fig. 1.19: Reuff's method of casting down a large animal

b) Burley method of casting

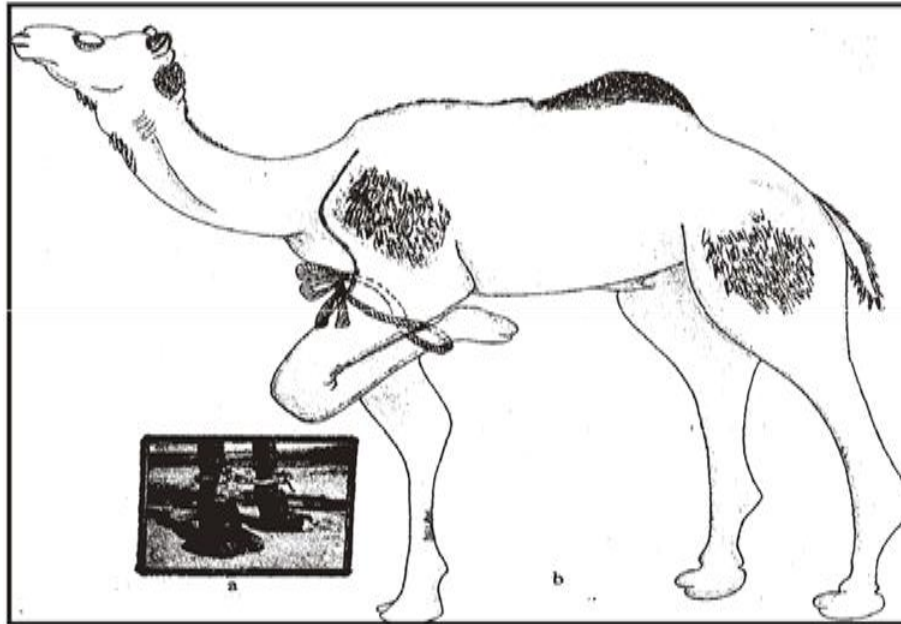
In this method, the rope is divided into two equal parts. The middle portion of the rope is placed on the upper side of the animal's neck and free ends of the rope are crossed under the neck. Then both the free ends of the rope pass between the front legs in backward direction on either side of the animal. Each free end of the rope then crosses over the back of the animal and subsequently passes through the area between the

udder or scrotum (in case of males) and hind legs. When the rope is pulled in the backward direction, the animal is cast to the ground.

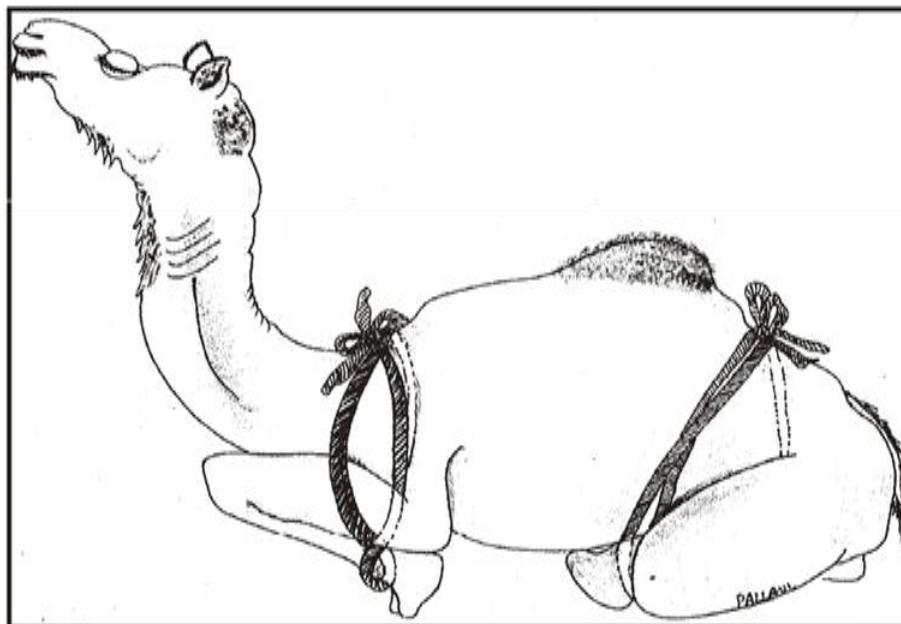


Fig. 1.20: Burley method of casting down an animal

Restrain camel



- 4a. Restraining of forelimb in a standing camel with a rope. a) both the forelimbs, b) one forelimb



- 4b. Restraining a sitting camel with ropes around forelimbs and hindlimbs
Source: Gahlot (2000).

Self-Check -4	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What methods have been used to casting the animals? (3pts)
2. What are the reason of casting of an animal? (3pts)

Note: Satisfactory rating – 6 points Unsatisfactory - below 6 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date _____

1

- _____
- _____
- _____
- _____

2

- _____
- _____
- _____
- _____

Information sheet 5	Following protocols and procedures for capture and restrain animals
----------------------------	---

5.1 Animal safety and welfare

Animal transportation by air is considered to be the most humane and expedient method of transportation over long distances. However, it doesn't come without its challenges which are due to the very specific requirements that supply chain stakeholders need to abide by to ensure animal safety and welfare while being transported by air.

The industry has voiced concerns over non-compliance with handling and transport practices, along with the need to reinforce training requirements and create visibility for best players who adhere to regulations. Not following requirements can lead to consequences such as additional stress, injury and even death of animals.

Driven by industry standards, the Center of Excellence for Independent Validators (CEIV) for Live Animals Logistics establishes baseline standards to improve the level of competency, infrastructure and quality management in the handling and transportation of live animals throughout the supply chain.

Organizations that undergo training, an assessment and validation requirements are granted a certificate issued by IATA and are listed in a registry on the IATA webpage upon successful completion and compliance with the program standards.

Three general categories of restraints exist—physical restraint, chemical restraint, and seclusion.

5.1.1 Physical restraint

Physical restraint, the most frequently used type, is a specific intervention or device that prevents the patient from moving freely or restricts normal access to the patient's own body.

Physical restraint may involve:

- applying a wrist, ankle, or waist restraint
- tucking in a sheet very tightly so the patient can't move
- keeping all side rails up to prevent the patient from getting out of bed
- Using an enclosure bed.

5.1.2 Chemical restraint

Chemical restraint involves use of a drug to restrict a patient's movement or behavior, where the drug or dosage used isn't an approved standard of treatment for the patient's condition. For example, a provider may order haloperidol in a high dosage for a postsurgical patient who won't go to sleep. (If the drug is a standard treatment for the patient's condition, such as an antipsychotic for a patient with psychosis or a benzodiazepine for a patient with alcohol-withdrawal delirium, and the ordered dosage is appropriate, it's *not* considered a chemical restraint.) Many healthcare facilities prohibit use of medications for chemical restraint.

CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) guidelines for the non-air transport of live wild animals and plants

a) Buffalo and cattle species

General care and loading

Buffalo and cattle species may be transported loose in compartments within trucks, trailers or rail cars. Compartments must meet the minimum requirements for container construction regarding strength, stability, safety, and size.

Sexually mature males must be shipped individually and must not be in the same trailer with females.

Females accompanied by unweaned calves may be shipped together if approved by a certified veterinarian.

All other weaned juveniles and mature animals should be transported singly in individual compartments or containers.

Dimensions and stocking density

For total transport times over 48 hours the number of rest stops should be increased and additional space offered while not motion. Additional conditions may be required to meet general transport conditions.

Food and water containers

Containers may not be affixed inside trailer or compartment

b) Sheep species

General care and loading

Sheep species may be transported loose in trucks, trailers or rail cars. Trucks, trailers and rail cars must meet the minimum requirements for container construction regarding strength, stability, safety, and size.

Sheep may not be shipped together in groups if they:

- are unfamiliar with each other;
- are different species;
- display aggression in close quarters;
- are significantly different sizes or ages;
- are sexually mature males;
- have horns;
- are aggressive to each other.

This shall not apply to animals from proven compatible groups, animals that are accustomed to each other, animals where separation will cause distress, or females accompanied by dependent young.

Sexually mature males must not be in the same trailer with females unless they are in a separate container or a completely segregated compartment.

It is highly recommended that all animals be shipped singly in compartments.

Sheep species whose normal behaviour includes vertical jumping (e.g. bighorn sheep) should be transported in containers and not loose in compartments.

Dimensions and stocking density

For total transport times over 48 hours the number of rest stops should be increased and additional space offered while not in motion. Additional conditions may be required to meet general transport conditions.

Food and water containers

Containers may not be affixed inside trailer or compartment.

The process to achieve CEIV Live Animal certification and to maintain it includes the following 6 parts:

1: Planning

Setup a project organization team. Within the team define the scope of work, accountabilities, and deliverables, and communication plan.

2: Training

Follow the Live Animals Cargo Logistics Management training destined for personnel involved in the handling and transport of live animals and working for airlines, ground handling, freight forwarding and animal shipping companies.

3: Assessment

Carry out an assessment of the handling and transport of live animals against the dedicated CEIV Live Animals Logistics audit checklist to ensure compliance with existing standards, requirements and the Live Animals Regulations (LAR).

4: Validation

Conduct a final validation to verify the findings and the gap analysis made during the assessment have been addressed to ensure that the organization meets the program's objectives.

5: Certification

Being recognized and registered as a “Center of Excellence for Live Animals Logistics” after successful completion of the training and validation parts. The certificate is valid for 36 months.

6: Re-certification

It includes a refresher training and a re-validation to check and ensure continued compliance with the program's objectives.

5.2. Guidelines for transport

CITES guidelines for the non-air transport of live wild animals and plants

The *CITES Guidelines for the non-air transport of live wild animals and plants* were adopted by the Conference of the Parties to CITES at its sixteenth meeting (CoP16, Bangkok, 2013)

The new *Guidelines* replace the 'Guidelines for transport and preparation for shipment of live wild animals and plants' adopted by the Conference of the Parties at its second meeting (San José, 1979)

In Resolution Conf. 10.21 (Rev. CoP16), on *Transport of live specimens*, the Conference of the Parties recommends *inter alia* that:

- a) suitable measures be taken by the Parties to promote the full and effective use by Management Authorities of the IATA *Live Animals Regulations* (for animals), the IATA *Perishable Cargo Regulations* (for plants) and the *CITES guidelines for the non-air transport of live wild animals and plants* for the preparation and transport of live specimens and that they be brought to the attention of exporters, importers, transport companies, carriers, freight forwarders, inspection authorities and international organizations and conferences competent to regulate conditions of carriage by air, land and sea or inland waterways;
- b) Parties invite the above organizations and institutions to comment on and amplify the IATA *Live Animals Regulations* (for animals) and the IATA *Perishable Cargo Regulations* (for plants), so as to promote their effectiveness;
- c) for as long as the CITES Secretariat and the Standing Committee agree, the IATA *Live Animals Regulations* (for animals), the IATA *Perishable Cargo Regulations* (for plants) and the *CITES guidelines for the non-air transport of live wild animals and plants* in their most recent edition be deemed to meet CITES transport requirements;
- d) the Standing Committee and the Secretariat, in consultation with the Animals and Plants Committees and IATA, regularly review, revise and approve amendments to the *CITES guidelines for the non-air transport of live wild animals and plants*;
- e) the IATA *Live Animals Regulations*, the sections of the IATA *Perishable Cargo Regulations* related to the transport of live plant specimens and the *CITES guidelines for the non-air transport of live wild animals and plants* be incorporated into Parties' domestic legislation or policies;

5.3 General conditions for the transport of live animals

The transport of an animal constitutes an unnatural situation for the animal and is most likely to cause it some degree of stress. High levels of stress may increase metabolic rates, hazardous behavior, chances of injuries and susceptibility to diseases.

For reasons of animal welfare, animal transport should be quick, efficient and strive to avoid as much stress as possible to the animal.

The transport of live animals must be well planned, well prepared and effectively executed!

For long distances, air transport should be the first consideration!

Animals must:

- never be transported in a way likely to cause them unnecessary fear, injury, damage to health or undue suffering;
- Be checked for fitness for transport before loading.

An animal that is injured or that has physiological weaknesses or pathological problems should not be considered fit for transport especially if:

- it is unable to move independently without pain;
- it has a severe open wound, or prolapse;
- it is a pregnant female for whom 90 % or more of the expected gestation period has already passed;
- it is a female that has given birth in the previous week;
- it is a new-born mammal in which the navel has not completely healed;
- it is a cervid in velvet;

However, sick and/or injured animals may be transported if:

- the illness or injury is part of a research programme,
- The animals are transported under veterinary supervision for or following veterinary treatment or diagnosis, (i.e. the animal is being transported to receive medical treatment for its condition, etc.)

Self-Check -5	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What must be meet the minimum requirements of containers compartment for transportation of cattle and buffalo species? (6pts)

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

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

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date _____

1

- _____
- _____
- _____
- _____

2

- _____
- _____
- _____
- _____

Operation sheet # 1	Perform physical restraint
----------------------------	-----------------------------------

Physical restraint:

- applying a wrist, ankle, or waist restraint
- tucking in a sheet very tightly so the patient can't move
- keeping all side rails up to prevent the patient from getting out of bed
- Using an enclosure bed

LAP Test-1	Practical Demonstration
-------------------	--------------------------------

Name: _____ Date: _____

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following tasks within 10min.

How to physical restraining

Task 1 perform restrain

References

https://www.ruralareavet.org/PDF/Animal_Handling.pdf

https://aevm.tamu.edu/files/2011/01/Handling_Restraining_Livestock.pdf

<https://cites.org/eng/resources/transport/index.php>

<https://www.betterhealth.vic.gov.au/health/HealthyLiving/farm-safety-handling-animals>

<https://catalogimages.wiley.com/images/db/pdf/9780813814322.excerpt.pdf>

https://cites.org/eng/resources/transport/index.php#2_1

<https://www.iata.org/en/programs/cargo/live-animals/ceiv-animals/#tab-2>

<https://www.americannursetoday.com/use-restraints/>

<https://www.compliance.iastate.edu/sites/default/files/imported/iacuc/policies/docs/Physical%20Restraint%20and%20Prolonged%20Restraint.pdf>

Dairy production

NTQF Level –II

Learning Guide# 42

Unit of Competence: Assist in dairy animal health care activities

Module Title: Assisting in dairy animal health care activities

LG Code: AGR DRP2 M11 L03 LG42

TTLM Code: AGR DRP2 TTLM 1219v1

LO 3: Assist in dairy animal health control and welfare procedures

Instruction Sheet 1	Learning Guide 42
----------------------------	--------------------------

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

- Maintaining thorough personal hygiene practices in all activities.
- Observing animals regularly and reporting any sign of ill health.
- Treating and destroying sick or dead dairy animal safely and humanely.
- Preparing dairy animal treatment site and facilities
- Monitoring dairy animals post-treatment for signs of treatment effectiveness.
- Recording disease incidence, dairy animal's losses, and treatments.

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 –

- Thorough personal hygiene practices are maintained in all activities associated with handling dairy animal, including reducing risks from diseases transmissible to humans.
- Animals are regularly observed and any sign of ill health is reported to the supervisor
- Sick or dead dairy animal are safely treated and humanely destroyed, if necessary.
- Dairy animal treatment site and facilities are prepared to enterprise standards in line with enterprise requirements.
- Dairy animals are monitored post-treatment for signs of treatment effectiveness.
- Disease treatment information is reported to the manager so that prevention strategies can be planned and implemented.
- Disease incidence, dairy animal's losses, and treatments are recorded accurately according to organisation practice and relevant regulations.

Learning Instructions:

7. Read the specific objectives of this Learning Guide 42.
8. Follow the instructions described in number 1 to 6.
9. Read the information written in the “Information Sheet (1, 2,3 and4) in page **36,39,42, 46,49 and 52** respectively
10. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
11. Accomplish the “**Self-check1, 2, 3, 4,5and 6**” in page**38,41, 45,48,51and 55**respectively.
12. Do the “LAP test” in page __ (if you are ready). Request your teacher to evaluate your performance and outputs. Your teacher will give you feedback and the evaluation will be either satisfactory or unsatisfactory. If unsatisfactory, your teacher shall advice you on additional work.

Information sheet-1	Maintaining thorough personal hygiene practices in all activities
----------------------------	---

1.1 Maintain personal hygiene practices

Farmers and farm workers can easily be injured by livestock. Cattle, pigs, horses, sheep, dogs and other farm animals can be unpredictable and should be treated with caution at all times. Attempting to lift or push animals can cause injury and animals may also transmit certain diseases. Plan ahead for any task, maintain a barrier between the animals and yourself, and get help if you need it.

To prevent farm accidents, assess the breed, temperament, gender mix, size and training of your animals. Remember that both male and female animals may be more aggressive during the mating season.

Make sure you are adequately trained and familiar with the temperament of the animals they are working with. Also ensure that yards and fences are well designed and properly maintained.

Always wear suitable protective clothing (pants, boots) and use appropriate animal-handling facilities and aids such as cradles and crushes.

Farm safety risk assessment – animal handling

You can assess potential animal handling risks in many ways:

- Walk through all animal-handling areas and look for hazards, such as broken gate latches, broken posts, or restraining equipment not working.
- Consult with [Work safe Victoria's advisory service](#)
- Reflect on injury records to pinpoint recurring dangers, including less obvious ones like lacerations and sprains.
- Talk over safety issues with family members, workers and other animal handlers.

- Make sure at least one person on the farm is trained in first aid.
- Remember that inexperienced workers and bystanders are more likely to be injured

1.3 Precautions of transmittable animal diseases

Many diseases can be transferred from animal to human through contact with skin, wool, hair, blood, saliva, faeces, urine and fetal products. Precautions include:

- Keep your animals appropriately vaccinated.
- Familiarize yourself with the symptoms of animal diseases.
- Treat any sign of illness promptly.
- Practise good personal hygiene – for example, washing hands and getting out of soiled clothing.
- Cover all cuts and open wounds before coming in contact with animals.
- If you come in contact with animal blood, urine or saliva, wash well with soap, water and antiseptic.

Self-Check -1	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

4. What are main points be assess in the farm to prevent any accidents? (4pts)
5. How a person exposed to transmitted disease in animal farm? (3pts)

Note: Satisfactory rating – 7 points Unsatisfactory - below 7 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date _____

1

▪

2

▪

Information sheet-2	Observing animals regularly and reporting any sign of ill health
----------------------------	--

2.1 Daily observation is key in animal health and wellbeing

One of the most overlooked practices among animal owners is daily observation. Daily observation will help owners properly monitor their animal's health and wellbeing. We often get caught up in the routine of making sure our animals have feed and water and forget to examine some other equally important things that are happening in our barns.

First, know the signs and symptoms of a sick animal as they are key in monitoring the animal's overall health. Animal owners develop a baseline knowledge for each animal and how they act and react during interactions. Mentally taking note of a few things can help you be aware of how your animal may be feeling. [Michigan State University Extension](#) suggests noting the following observations:

- Are your animals' eyes bright?
- Is your animal alert?
- Is your animal up and moving around with normal locomotion or laying down?
- Is there anything that seems abnormal in your animal's behavior that would make you question if they are feeling normal?

Second, inspect the animal thoroughly daily for cuts, abrasions, rashes, fungus and external parasites. It is important to make it a daily habit to individually inspect each animal for any injuries. It is a skill that may take time to develop, but after it has become part of a routine, you will find the time it takes decreases. With tame animals, it is always helpful to have an individual interaction with them where you can run your hands over their top lines, down their legs and under their bellies. This will allow you to have a good look at the animals' body up close. During this time, you can address any issues such as an unexplained lameness, cut or abrasion.

It is essential to monitor daily intake of water and feed. Typically, an animal losing its appetite and becoming lethargic is the first symptom of illness and a cue for owners to contact their veterinarian. When you are aware of what the animal or herd normally consumes, this will give you clues of additional body characteristics to look for when you are inspecting the animal. For example, if you observe the water tank is not as empty as it typically is at evening or morning chore time, indicating animals aren't drinking appropriately, you can check each animal for classic signs of dehydration such as sunken sides and poor capillary refill.

Daily observation of our animals is the most important, yet most overlooked, task animal owners can do to help keep their stock healthy.

Self-Check -2	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

4. What are the overall observation in the farm to know the signs and symptoms of a sick animal? (6pts)

Note: Satisfactory rating – 6 points Unsatisfactory - below 6 points

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

Answer Sheet

Score = _____

Rating: _____

Name: _____

Date _____

1

- _____
- _____
- _____
- _____

Information sheet-3	Treating and destroying sick or dead dairy animal safely and humanely
----------------------------	---

3.1 Treating sick animal

If you've been tasked with caring for livestock, you know how important it is to be able to identify livestock illness symptoms and properly treat the animal once it is sick.

The people responsible for finding and treating sick dairy animal at your place probably have varying skill and experience levels. But, regardless of the disease or the caretaker's experience, the keys to successful treatment are the same.



- a) Identify sick cattle early in the disease process.
- b) Correctly identify the disease and causative agent.
- c) Administer appropriate therapy.
- d) Monitor sick cattle to continue therapy in a timely manner if needed.

The Challenge

Cow health is a key factor in dairy herd profitability. Cows must be in excellent health to provide high quality milk and superior reproductive performance – and high-production cows are particularly susceptible to disease. Mastitis, ketosis, calving problems, lameness and other disorders reduce production and demand costly veterinary treatment. Ultimately, animal illness leads to financial losses that can transform a

profitable dairy farm to a losing enterprise. Thus, to remain profitable, dairy farms must ensure the prevention, early detection and treatment of sick cows.

Lost Assets

Dairy herds worldwide suffer losses due to health problems.

- **Mastitis** is the most prevalent disease among high-yielding dairy cows. This illness reduces milk production and quality, and necessitates costly medication and treatment. The estimated economic loss from mastitis is US \$80 to \$250 per lactation for each cow in an average herd.
- **Lameness** is the second most prevalent health issue on the modern dairy farm, with incidence running between 20% and 50%. Resulting damages are decreased milk production with losses of 300-450 kg/cow during a 305 day period , an additional 36-50 open days and 1.45 higher risk of culling/death.
- **Post-calving diseases** – The post-calving period is the most susceptible time for lactating dairy cows. Post-calving diseases include dystocia, retained placenta, endometritis, milk fever, ketosis and displaced abomasum. These illnesses, which appear a short time after calving, greatly influence cow performance, (including milk production and fertility) during the entire lactation period. Over a 305-day period, ketotic cows produce about 400 kg milk less than their non-ketotic counterparts.

3.2 Carcass disposal

It is very important that any cattle carcasses be disposed of appropriately.

The law prohibits leaving carcasses to rot or dumping them in waterways.

It is illegal in most states to allow anyone other than a licensed knackery to remove meat from a farm.

Disposal method	Note
Composting	<ul style="list-style-type: none"> • A safe, effective and environmentally friendly method well suited to dairy farms: • No holes need to be dug • End product is useful soil conditioner applicable to pasture and crop land. • Waste hay, silage, calf pen litter and solid dairy effluent are suitable composting materials
Burning	<ul style="list-style-type: none"> • Used in the case of emergency diseases to destroy pathogens. • Significant air pollution is created. • Sufficient fuel is required for adequate burning—tyres are not permitted.
Burial	<ul style="list-style-type: none"> • Must not impact on the land, ground or surface waters or the air. • Carcasses must be buried deeply enough to prevent access by other livestock and scavengers. • Access information from state environmental protection agencies regarding depth of hole, distance from water, exclusion of stock and scavengers.
Knackery	<ul style="list-style-type: none"> • Collection sites should be confined to the farm and managed to minimise the potential for disease spread. • Not suitable for chemically euthanised carcasses. • Avoid communal collection sites in public areas.

Self-Check -3	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

3. What measure you will take whenever die suspected animal in farm? (6pts)

Note: Satisfactory rating – 6 points Unsatisfactory - below 6 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date _____

- 1
- _____
 - _____
 - _____
 - _____

Information sheet-4	Preparing dairy animal treatment site and facilities
----------------------------	--

Use Clean Equipment

- Wash your hands before and after handling medicinal products.
- Use disposable syringes whenever possible.
- If using reusable syringes, use only hot water (no soap or detergent) to rinse them before using modified live virus vaccines. Chemicals may destroy the live virus and inactivate the vaccine.
- Use hot water and mild disinfectants to clean syringes for other types of injectable products.
- After cleaning, sterilize reusable syringes before reusing by autoclaving (high temperature, pressurized steam cleaning technique).

Administration technique of intra-mammary treatment in Dairy Cows

- 1- Use only products approved for intra-mammary infusion.
- 2- Make sure the environment is clean and restrain the cow, as needed.
- 3- Prepare all the necessary material: teat dip, gloves, clean towels, sampling tubes, antibiotic tubes, alcohol swabs.
- 4- Proceed carefully to avoid introducing pathogens into the teats and prevent damaging the interior of the teat canal.
- 5- Identify the treated cow. Avoid contaminating the milking machine or milk with the antibiotic.

Drugs are introduced into the body by several routes. They may be

- Taken by mouth (orally)
- Given by injection into a vein (intravenously, IV), into a muscle (intramuscularly, IM), into the space around the spinal cord (intrathecally), or beneath the skin (subcutaneously, sc)

- Placed under the tongue (sublingually) or between the gums and cheek (buccally)
- Inserted in the rectum (rectally) or vagina (vaginally)
- Placed in the eye (by the ocular route) or the ear (by the otic route)
- Sprayed into the nose and absorbed through the nasal membranes (nasally)
- Breathed into the lungs, usually through the mouth (by inhalation) or mouth and nose (by nebulization)
- Applied to the skin (cutaneously) for a local (topical) or bodywide (systemic) effect
- Delivered through the skin by a patch (transdermally) for a systemic effect

Self-Check -4	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are the routes used to administer drug to animals. (4pts)

Note: Satisfactory rating – 4 points Unsatisfactory - below 4 points

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

Answer Sheet

Score = _____ Rating: _____

Name: _____

Date _____

1.
 - _____
 - _____
 - _____
 - _____

Information sheet-5	Monitoring dairy animals post-treatment for signs of treatment effectiveness
----------------------------	--

5.1 Monitoring Postpartum Health in Dairy animal

The postpartum period of the dairy cow determines productive and reproductive responses during lactation and is therefore, a pivotal time in the production cycle of the cow.

During this period, dairy cows are at risk of developing calving related diseases, such as hypocalcemia, metritis (uterine infection), ketosis and displacement of the abomasum.

Monitoring postpartum health allows the opportunity to identify sick cows early and provide supportive therapy in order to maintain dry matter intake during the transition from parturition to lactation. Monitoring postpartum health involves the examination of all cows early in the postpartum period (7 to 10 days in milk) by trained herd personnel. Parameters that can be used to evaluate health status of cows include attitude, rectal temperature and milk production.

Treatment with antibiotics is recommended for cows that are sick and have fever. In particular, those cows that have toxic metritis may be a life threatening condition. When choosing which antibiotic to use, producers should consider efficacy, cost and potential for milk residues. It is recommended to follow label instructions under the guidance of a veterinarian.

In conclusion, disorders such as, metritis, displacement of the abomasum and ketosis can be evaluated by monitoring temperature, milk production and attitude early postpartum by employing a health monitoring program.

This program assures

- 1) That all postpartum cows are examined daily during the time when they are most susceptible to disease and
- 2) The implementation of judicious treatments early in the course of disease. Successful management of lactating dairy cows needs to integrate the disciplines of nutrition and herd health programs in order to optimize both milk and reproductive responses. In addition to monitoring postpartum health,

Self-Check -5	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What will be recommended for cows that are sick and have fever?(4pts)

Note: Satisfactory rating – 4 points Unsatisfactory - below 4 points

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

Answer Sheet

Score = _____
Rating: _____

Name: _____

Date _____

- 1
 - _____
 - _____
 - _____
 - _____

Information sheet-6	Recording disease incidence, dairy animal's losses, and treatments
----------------------------	--

Animal Health Form

- Identity of the animal
- Descriptions of any illness, injury, distress and/or behavioral abnormalities and the resolution of any noted problem.
- Dates, details and results of all medically related observations, examinations, tests and other such procedures.
- Dates, details of all treatments, including the name, dose, route, frequency, and duration of treatment with drugs or other medications (worming, vaccinations, etc).
- Treatment plans should include a diagnosis and prognosis, detailing the type, frequency, and duration of any treatment and the criteria and/or schedule for re-evaluation(s) by the attending veterinarian.

Surgical records should include detailed pre- and post-, as well as intra-operation, notes.

Definitions

- 4.1. Lost-time injuries/diseases – those occurrences that resulted in a fatality, permanent disability or time lost from work of one day/shift or more.
- 4.2. No lost-time injuries/diseases - those occurrences which were not lost-time injuries and for which first aid and/or medical treatment was administered.

4.3. Near misses – any unplanned incidents that occurred at the workplace which, although not resulting in any injury or disease, had the potential to do so.

4.4. Commuting injuries – all injuries that occurred during travel while not on duty or during a recess period. This would normally include travel between place of abode and workplace, travel to technical school for training associated with employment and travel to receive medical treatment for an injury sustained at work. Treatment of Special Cases.

4.5. Those occurrences of injury or disease which meet the above definitions, but for which there was a workers' compensation claim that was rejected, should also be recorded. They should not, however, be used in the calculation of measurement rates or other indicators of performance.

4.6. Cases of recurring injury or disease should be recorded and cross-referenced to the original record but not counted as a separate occurrence unless there was a separate identifiable incident associated with the recurrence.

4.7. In the case of part-time workers, if a person is away from work due to a lost-time injury/disease for one whole day or shift, irrespective of how many hours constitute that shift, they are considered to have satisfied the threshold of the one day/shift time lost. Updating of Records

4.8. All records should be updated, where necessary, for a period of at least five years after the year to which they relate. Retention of Records.

4.9. Individual records should be retained at the workplace for the period specified by relevant legislation in each State/Territory.

Individual Health Record Form

ANIMAL ID#: _____ Species: _____				
DATE	HEALTH RECORD			INITIALS
Drugs Administered or Prescribed	Dosage	Amount	Route/Site	Date & Time
Specimens Collected	Amount	Site	Submitted for testing?	

Self-Check -6	Written Test
----------------------	---------------------

Directions: Answer all the questions listed below. Use the Answer sheet provided in the next page:

1. What are records information detailed pre- and post- Surgical as well as intra-operation (6pts)

Note: Satisfactory rating – 6 points Unsatisfactory - below 6 points

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

Answer Sheet

Score = _____ Rating: _____

Name: _____

Date _____

- 1
 - _____
 - _____
 - _____
 - _____

References

https://www.canr.msu.edu/news/daily_observation_is_key_in_animal_health_and_wellbeing

https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=12&cad=rja&uact=8&ved=2ahUKEwjN09Tt2ubmAhVLA2MBHWS8BJwQFjALegQIBBAC&url=https://www.dairyaustralia.com.au/media/dairyaustralia/documents/farm/animal-care/animal-welfare/calf-welfare/humane-killing-and-disposal-of-sick-or-injured-cattle.pdf&usg=AOvVaw30m_M4HuXxwv9jj1aGvyGz

https://www.beefmagazine.com/mag/beef_four_key_steps

<https://www.nelsonmfg.com/5-common-livestock-illnesses-symptoms-treatment-and-prevention/>

http://wildpro.twycrosszoo.org/S/00Man/PainRumOverviews/PainGeneral/07Drug_Admin_Routes.htm#Transdermal

https://www.medvet.umontreal.ca/rcrmb/dynamiques/PDF_AN/Toolbox/Factsheets/AdministrationTreatmentPro.pdf

<https://www.msmanuals.com/en-kr/home/drugs/administration-and-kinetics-of-drugs/drug-administration>

<http://www.omafra.gov.on.ca/english/livestock/vet/facts/07-031.htm>

<https://animal.ifas.ufl.edu/apps/dairymedia/rns/2003/Risco.pdf>

Trainers prepared the TTLM with their full address

No	Name of trainer	TVET Represent	Occupation	Mob.	E-mail
1	Addisu Desta	W/Sodo ATVET College	Animal and range science(B.sc)	0913270120	addiserahel2701@gmail.com
2	Ayele Mengesha	Holeta Poly tech. College	An. Nutr.(MSc)	0911802467	ayelemengesha@ymail.com
3	Sead Taha	Agarfa ATVET College	Animal science(Bsc)	0920356174	tahasead@gmail.com
4	Sisay Fekadu	Gewane ATVET College	BVSc, Animal Prod. (MSc)	0913115358	sisrobelt09@gmail.com
5	Tesfahun Kebede	Alage ATVET College	Animal breeding & Genetic (MSc)	0910618584	praiselord21@gmail.com
6	Ybrah Weliyergs	Michew ATVET College	Livestock production & pastoral Dev't (MSc)	0910569723	ybrahababa@gmail.com
7	Sintayehu Belina	Assossa ATVET College	Animal Science Bsc	0953307311	Sintayehubelina@yahoo.com
8	Tesfu Abtie	Burie Poly TVET college	Animal Science	0910162233	tawe2111@gmail.com
9	Tamirat Chanyalew	Bako ATVET College	Animal and Range science(Bsc.)	0942922400/ 0917819403	tamiratgeletac@yahoo.com