

HEALTH SIGNALS

(Level 3)

Topic	Training & information Content
9.1	Introduction to Animal health (Prevention vs curative health care)
9.2	Health signals
9.3	Biosecurity of dairy farms
9.4	Tick born diseases (Prevention and treatment)
9.5	Worm infections (Prevention and treatment)
9.6	Vaccination schedule and planning
9.7	Mastitis prevention and treatment
9.8	California Mastitis Test
9.9	Usage and storage of veterinary medicines on dairy farms
9.10	Administering of medicines to dairy cows
9.11	Instruction use of injectors into teat canal
9.12	Key performance indicators (KPIs) for monitoring health status of dairy herd



1. You will learn about (learning objectives):

- Simple ways of distinguishing healthy cows from unhealthy cows
- Normal range (Values) for different several health traits
- Relationship between different health traits
- Important (right) times to contact a veterinarian



2. Background

- 'A healthy cow is a happy cow' is an understatement we all agree about
- A cow is an animal with a very high level of resistance. This means that cows become sick very slowly
- The challenge a farmer has is to recognize these pre-sick signals in advance
- Therefore keen observations skills are required to get them treated before your cow becomes really/very sick
- Your eyes, ears, nose, brains are needed in helping your cow to remain healthy.



3. Health signals

- Health signals to be known/judged by the farmer include:
 - Body Temperature
 - Pulse rate
 - Respiration rate
 - Rumen contractions
 - Rumination activity
 - Rumen fill and Body condition Scoring (BCS)
 - Mucous membranes
 - Dehydration
 - Manure
 - Tyrewire Disease (hardware disease)



4. Important questions in health checks

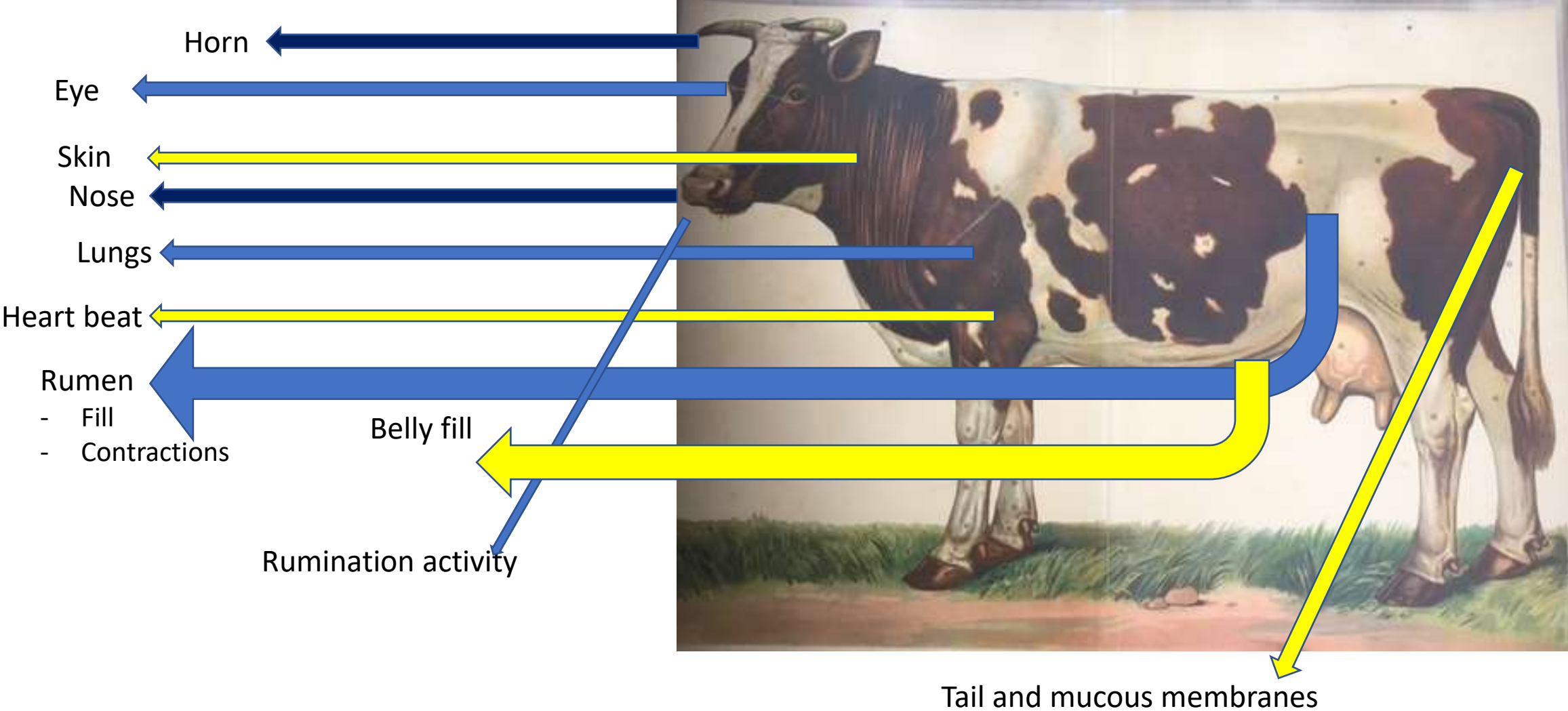
Some questions

- Having known Health signals to be known/judged by the farmer, then:
 1. How and where do you measure to know about the different values belonging to each health trait?
 2. When do you call in a veterinarian?

Note: All the Health checks take place while the the farmer is standing to the left side of the cow



5. Important (health check) parts in a cow



6. Body temperature

- The most reliable place to take cow's body temperature is in the cow's rectum
- Make sure that the tip of the thermometer contacts the inner wall of the cow's rectum
- Temperature should be:

Never less than 38° Celsius



6.1 Body temperature cont'd...

Normal temperature

- When everything is normal (weather, no stress), the body temperature of a healthy cow always varies between 38° and 39.5°Celsius

Always between 38° and 39.5°



6.2 Body temperature cont'd...

- If thermometer is not available, check;
 1. Horns
 2. Ears
 3. Tail
 4. Rump
 5. Nose



Healthy cow: the horns, ears, tail and rump are all warm with a wet nose

Sick cow: the horns, ears, tail and rump are all cold with a dry nose

- Temperature should be:

Never more than 39.5° Celsius



7. Pulse rate

- Cow's heart is located just above the elbow straight above the left front leg
- Another option available to measure the pulse rate is the tail



Not the easiest place



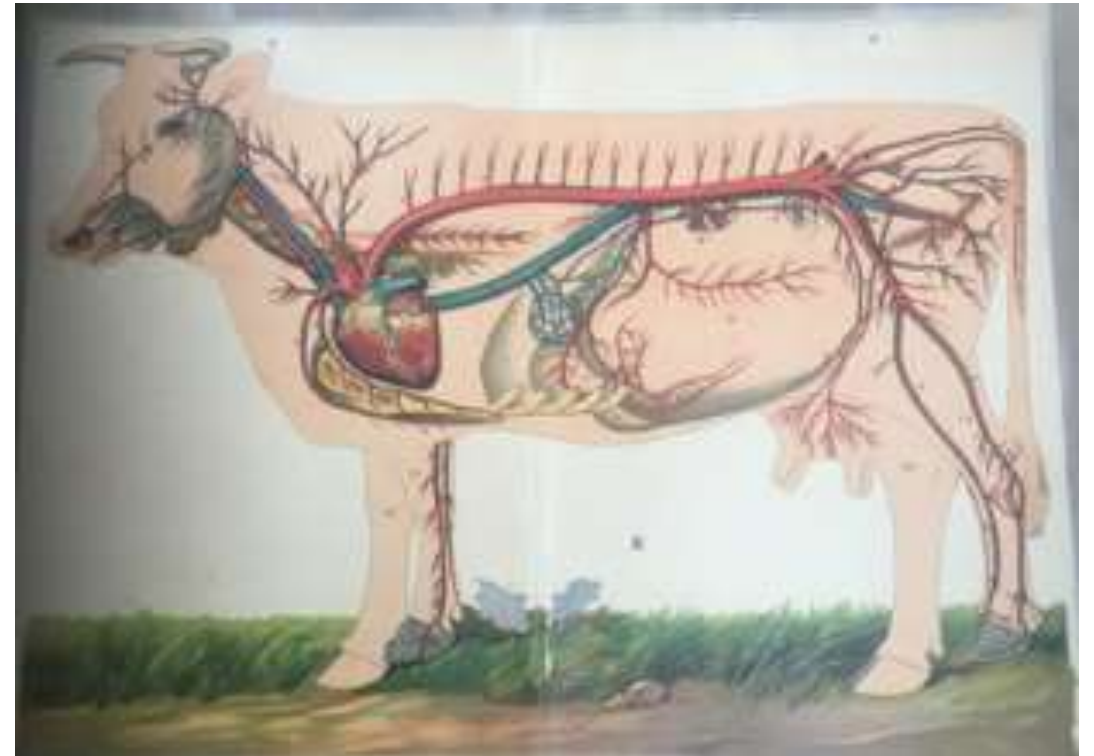
Sensitive but reliable



7.1 Pulse rate cont'd...

- Listen to the cow's pulse:
<http://cal.vet.upenn.edu/projects/fieldservice/Dairy/cowcases/case1/ccs1-2.html>
- Pulse rate can be abnormal in case;
 - Cow is in heat
 - Cow is due to calve
 - of Heat stress (environmental temperature)
- When abnormal Pulse rates are experienced incase of unexplained reasons, always check cow's body temperature
- If there's High pulse in combination with high temperature, maybe something yet invisible is developing

Important: A steady pulse rate is between 60-80 beats/minute



8. Respiration/breathing rate

- To check the respiration rate of the cow (without stethoscope), it is advised to keep some distance. Coming close makes the cow become nervous, thus increases the respiration rate

Observe;

- Breathing (nose) - if cow blows the air out
- Flanks - if moving inwards/outwards (take your time)

Listen;

- Respiration/breathing rate using a stethoscope
- In case of “relaxed cow,” put your ears against cow where lungs are located



8.1 Respiration/breathing rate Cont'd...

- Respiration rate can be abnormal incase (of);
 - Cow is in heat
 - Cow is due to calf
 - Disease
 - Heat stress
 - High humidity
- Abnormal respiration rates in most cases can be explained, i.e.:
 - High respiration rates for sure will have a negative impact on milk production
 - Activities need to be undertaken to help the cow reduce respiration rate, for example;
 - Cooling either using fans, water sprinklers, shade
 - Trying everything is better than doing nothing

Important: A steady respiration rate lies between 15-35 beats/minute



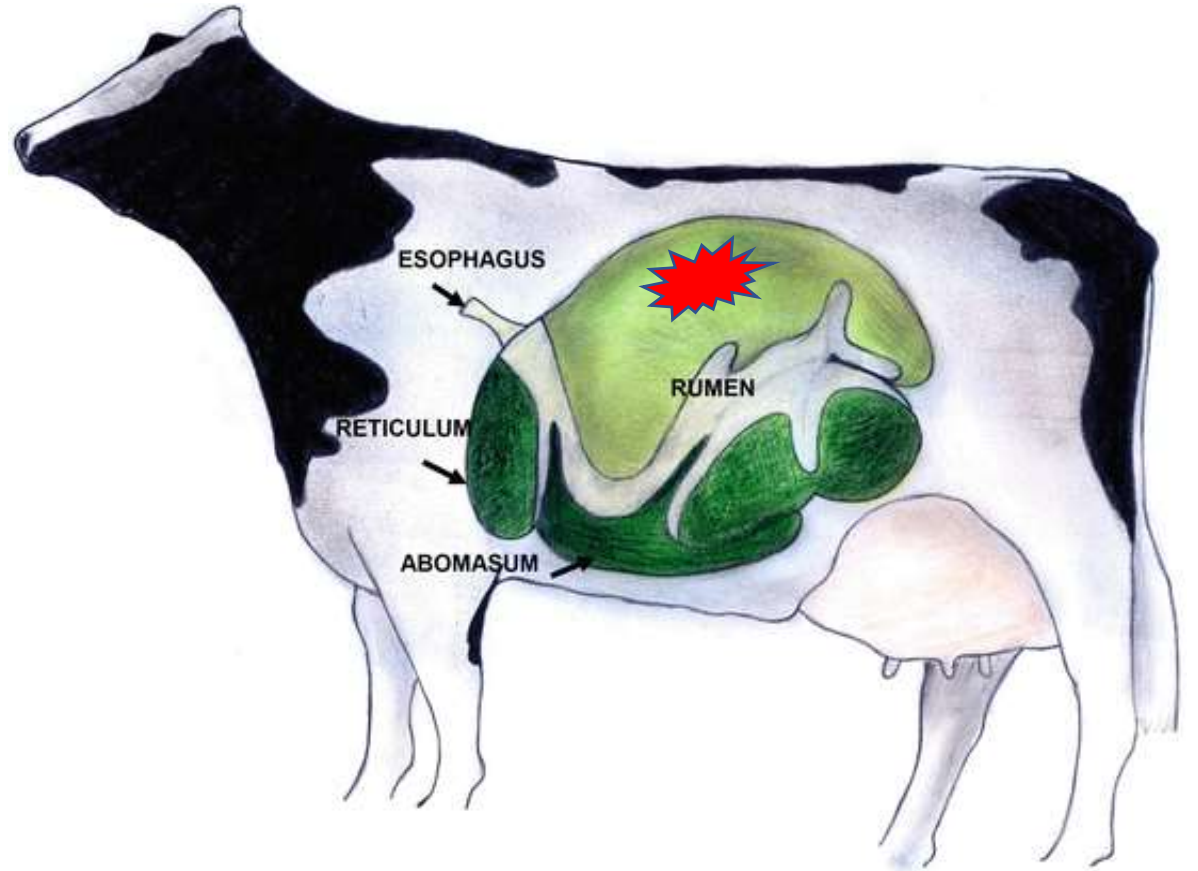
Respiration rate in case of heat stress

9. Rumen health/activity

- Rumen capacity is between 150-200 Liters
- Activities within the rumen takes place 24/7
- Two (2) contractions occurs per minute

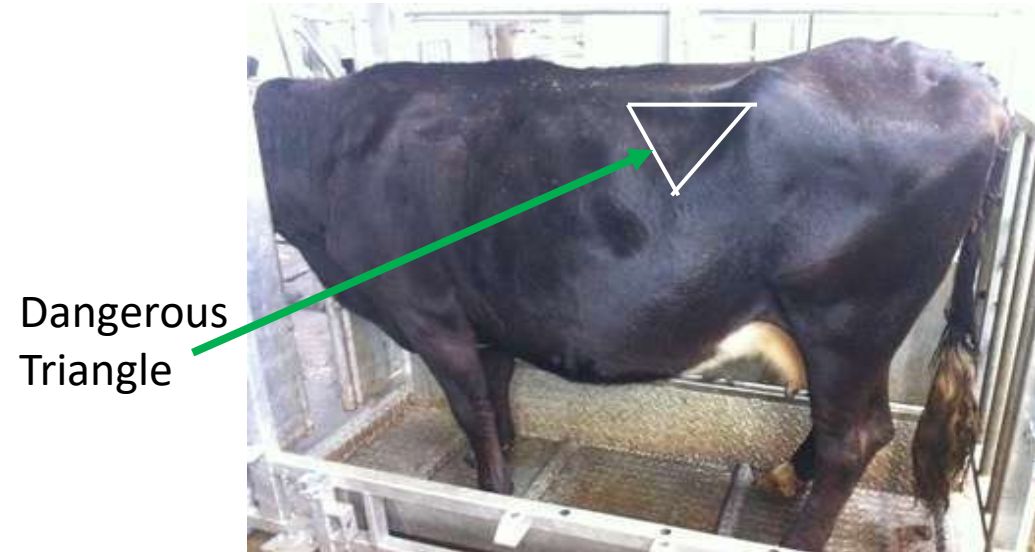
The Rumen health/activity is crucial for the cow's general health status

A sick rumen is a sick cow



9.1 Rumen health/activity cont'd...

- Rumen activity can be assessed via the danger triangle, using a stethoscope or by hand



Check with stethoscope



Check by hand



10. Rumination activity

- Cows ruminate. Observe;
 - Between 50-70 chews per curd
 - Beware belching and swallowing (after swallowing start counting how many chews per curd)
 - 70-80 % of resting (laying) cows are expectedly ruminating
 - During the day, a healthy well-fed cow spends about 8 hours ruminating



11. Rumen Fill

- Rumen Fill can be used to tell the feed intake of the last few hours

Score 1 = very bad

Score 2 = acceptable High producers

Score 3 = needed for milking cows



11.1 Rumen Fill cont'd...

Score 4 = needed for dry cows

Score 5 = pregnant heifers



12. Manure

- Manure is very informative, can be assessed to tell;
 - Ration evaluation: well balanced for proteins, fiber and carbohydrates
 - If water intake is appropriate
 - If the cows are digesting the feed correctly
- Score 1: Manure feels like a creamy homogenous mixture. There are no visible undigested food particles. Could this mean too much protein?
- Score 2: Manure feels like a creamy homogenous mixture. There are a few visible undigested food particles. Could this imply inadequate fiber/acidosis?



12.1 Manure Cont'd...

- Score 3: Manure does not feel homogeneous. Some undigested particles are visible. When you squeeze the manure in your hand, some undigested fibers will stick to your fingers. This is the Optimal Score
- Score 4: Undigested food particles are clearly visible and are larger than in Score 3. When you squeeze the manure in your hand, a ball of undigested food will remain. This is normal for dry cows
- Score 5: Larger food particles are clearly visible in the manure and it is easy to distinguish the undigested components of the feed ration (Karreman, 2007) Could this imply low quality forage, a digestive blockage, or dehydration?



13. Body Condition Score (BCS)

- The picture alongside illustrates the areas to evaluate in a cow for BCS



13.1 Body Condition Score (BCS) Cont'd...

- Check the angle between hook and pin bones

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Angle Between Hooks and Pins

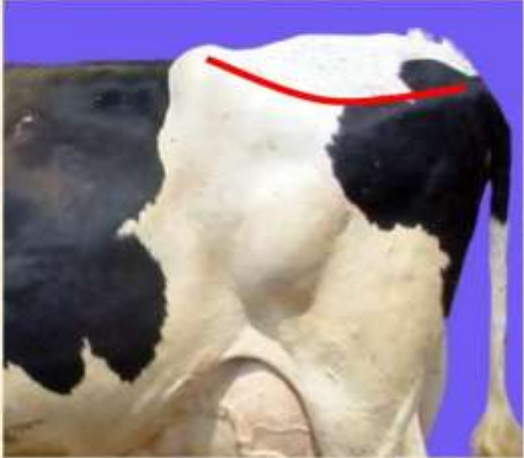
- Angle is a V
- Will be a 3 or less BCS



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Angle Between Hooks and Pins

- Angle is a U
- BCS will be more than 3

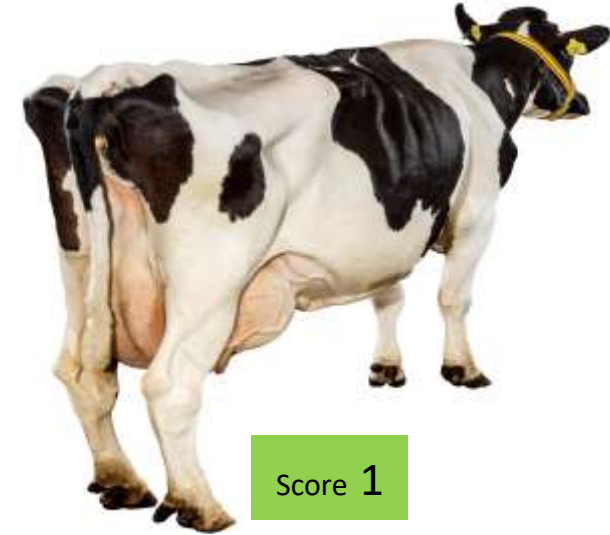


13.2 Farmers' Tips for Body Condition Score (BCS)

1. Every month the same person should do the Body Condition Scoring

2. All the scores must be administered

3. When cow is losing/gaining 0.5-point BCS, its time to re-evaluate the cow for over feeding/underfeeding etc.



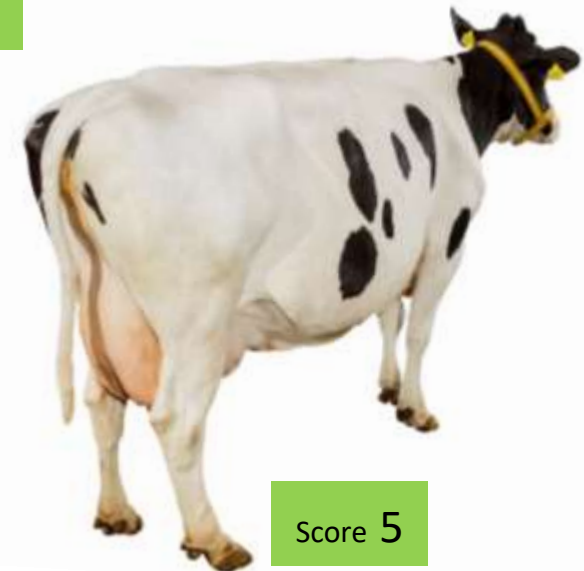
13.3 Farmers' Tips for Body Condition Score (BCS) Cont'd...

4. Within the first months after calving the cow may lose about 1 point BCS

5. After peak production, slowly by slowly the cow is expected to gain BCS

6. At the moment of drying the cow must have the same BCS as when she calved

7. During dry period, BCS should not increase (become fat) either decrease (become skinny).



14. Mucous membranes

- If the mucous membranes show abnormalities, it could be too late for the body of the cow to respond to treatment



Anemia Internal bleeding	Liver fluke	Normal	Normal	Just calved
White	Yellow	Pinkish	Pink	Red

15. Tyrewire Disease (hardware disease)

- Tyrewire disease happens unexpectedly
- Sharp objects are found in the reticulum of the cow
- The cow stands with arched back. When squeezing the back, it is very painful
- Cow stops feeding at all and milk production drops rapidly
- The cow feels very cold
- The animal could die



Sharp objects found within reticulum



Wall of cow's reticulum with metal wire and splenic inflammation



15.1 How to prevent cows against Tyrewire Disease

- Treatment/surgery is almost impossible (not realistic)
- Prevention is possible
 - Make sure iron leftovers are not in contact with roughages
 - Bring in magnets in cow's reticulum
 - The magnet can remain seated for the rest of the cow's life
 - The magnet attracts all iron particles and prevents inflammation of the reticulum wall



Serious injury after eating sharp particles



Unused magnet



Used magnet



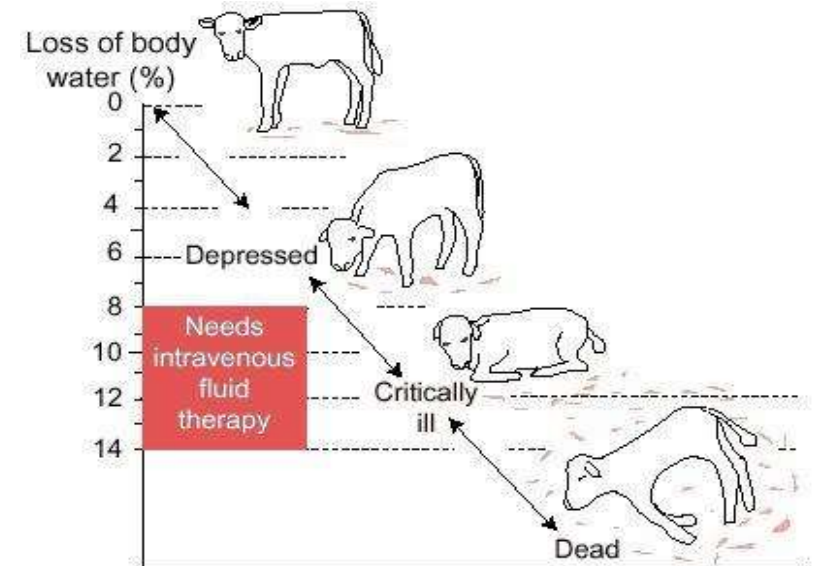
16. Dehydration

Parameters	No dehydration	Some dehydration	Severe dehydration
Appearance	Well, alert	Restless, irritable	Lethargic, or unconscious; floppy
Eyes	Normal	Sunken	Very sunken
Thirst	Drinks normally, not thirsty	Thirsty, drinks eagerly	Drinks poorly or not able to drink
Skin pinch	Goes back quickly (<1 second)	Goes back slowly (1 second)	Goes back very slowly (≥ 2 seconds)

- To check for dehydration, do a skin pinch on the cow



Do a skin pinch on the cow



17. Summary/Take home

Note: If more than one trait records deviating values in the same cow by the farmer, serious consideration should be given to whether to consult the veterinarian.

Summary;		
Health Trait	Right place	Value
1. Body Temperature	Rectum	38-39.5° Celsius
2. Pulse Rate	Left Shoulder, Tail, Jaw	60-80/minute
3. Respiration Rate	Flank, Nose	15-35/minute
4. Rumen contractions	Dangerous Triangle	10-12/5 minutes
5. Rumination activity	Mouth	50-75 chews/cud
6. Rumen Fill	Dangerous Triangle fill	3.0; on a scale from 1-5
7. Body Condition Score	Loin, pin bones/hipbones	within the range of 2.5- 3.5
8. Mucous membranes	Vulva	Pinkish/Pink
9. Dehydration	Skin and Eyes	Active and alert

Healthy cows, Happy cows, Happy Farmers!