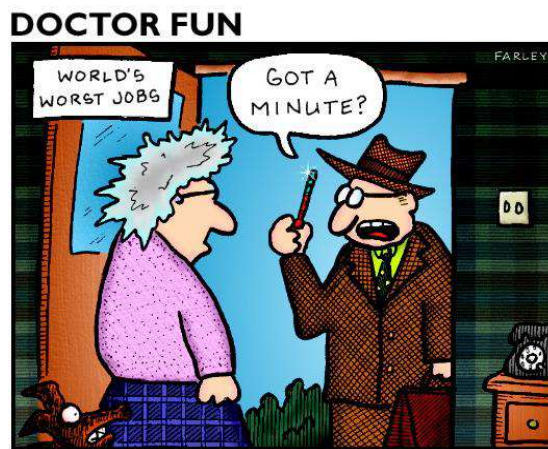


PHYSICAL EXAMINATION OF CATTLE

Jerry Bertoldo, DVM
NWNV Dairy, Livestock and Field Crops Team
Cornell Cooperative Extension



Door-to-door rectal thermometer salesman



Physical examination requires a basic knowledge of anatomy and physiology to be able to make sense out of what the cow is telling you. Knowing what is normal is key to being able to identify and assess what is not.

Having a history on the animal, a record the findings of an exam and a treatment log is very important. If you are the only person responsible for herd health this may be easier. A lack of hand written or computer entered information can lead to ineffective care as well as a drug residue disaster particularly if the examination and treatment tasks lie with more than one person.

It is important to choose a location for examination with proper restraint, good lighting and the ability to place a pail of water or other tools where other animals will not bother with them. Always let an animal calm down before examining them if you had to move them to a restraining location. Approach from behind rather than the head.

It is critical to develop a routine pattern of examination. You can change the order by examining the right side instead of left first. This has no impact on exam accuracy,

Abnormalities are more easily caught this way versus a random order of examination points. Do not skip certain steps in the exam anticipating a specific diagnosis because of a hunch! A good examination will take at least 5 minutes.

Make a note of findings, provisional diagnoses and treatment decisions. Progress may vary from cow to cow. Logical treatment changes must be based on physical examinations, the cow's appetite and milk production and past herd experience.

IDENTIFYING THE “OFF” ANIMAL

Know the normal to recognize the problem

General Appearance and Attitude

<u>Normal Cow:</u>	<u>Problem Cow:</u>
<ul style="list-style-type: none">• Alert, Bright• With the group• Head up• Ears up• Standing straight• Walks flat footed• Chewing cud• Moves well• Gets up easily	<ul style="list-style-type: none">• Slow, Dull• Alone• Head low• Ears drooping• Hunched up• Favors one leg• Does not chew cud• Slow getting around• Laying down alone• Holds tail out• Grinds teeth• Extends neck• Kicks at belly• Breathes with mouth open

General Appearance Condition

<u>Normal Cow:</u>	<u>Problem Cow:</u>
<ul style="list-style-type: none">• Body condition good• Shiny, flat haircoat• Eyes bright, open• Belly full• Clean tail, escutcheon, rear of udder	<ul style="list-style-type: none">• Thin• Dull haircoat with hair up• Eyes dull, sunken, swollen• Belly bloated or sunken• Manure or discharge around the tail

Step 1: Exam from behind

Normal

Problem

- Between 101.5 and 102.5

Temperature

- Less than 101.5
- Greater than 102.5
- In hot weather, greater than 103.5

- Space behind the ribs is depressed
- Lower belly is round

Gut Fill

- Space behind the ribs is deep
- Lower belly has shrunk
- Left side is pushed out (bloat)
- Entire bell is rounder and full

- Stands up in a pile
- Has form
- Brown color

Manure Consistency

- Loose
- Smelly
- Mucous
- Blood
- Blackish

- 18 - 26 breaths/minute
- Even breathing pattern
- Calves: 20 - 40 breaths per minute

Breathing

- Panting
- Holds breath after inhaling
- Grunts
- Moves belly mostly
- Barely moves chest
- Coughing

- No odor
- Discharge: clear, cloudy or brownish and thick
- Pink membrane

Vulva

- Foul odor
- Thin, reddish discharge
- Pale or dark membrane
- Tail coated and crusty

Step 1 – Examination from Behind

Temperatures

Never take a temperature after a rectal examination. Air enters the rectum after the arm is removed causing a cooler environment and a bogus reading. An untethered thermometer will easily fall out as well.

Milk fever cows lose their ability to regulate body temperature. If the environment is cold, the cow's temperature will be below normal. When exposed to hot conditions or direct sunlight on a warm day, the cow may appear to have a fever. On the other hand, cows that spiked high fevers from a coliform mastitis often return to normal rectal temperatures or go subnormal within a day due to the toxemia or poisons from the mastitis bug. Be careful of evaluating conditions based only on rectal temperatures.

Urine Collection

If you are getting a urine sample for a ketosis test, it is best to attempt that first thing before the cow is examined, gets nervous and is reluctant to urinate.

Gut Fill

Left side fullness may indicate rumen bloat, hardware or a left DA. Right sided fullness may indicate a right DA or rarely cecal torsion. A distended belly on both sides indicates a total stoppage of intestinal flow. Vagal indigestions, uterine hydrops, intestinal intussusceptions, and right DA's might exhibit this type of fullness.

Manure

"Normal" manure varies with the feeding program. Dry cows on lots of dry hay will have stiff manure. High producing cows on high grain diets will be somewhat loose. Watery diarrhea indicates intestinal irritation by bacteria, viruses, internal parasites or chemicals (mycotoxins as an example). Gassy diarrhea indicates large intestinal irritation as observed with too high a starch load in the diet. Mucus originates in the large intestine. Bloody (reddish) manure indicates intestinal hemorrhage. Blackish, tarry manure is a result of bleeding in the abomasum as a result of ulcers or lymphoma (cancer).

Breathing

The pattern of breathing is important. Shallow breathes are associated with pain. Abdominal breathing may indicate chest pain as from hardware. Panting may indicate extreme pain (usually with grunting) or advanced lung disease such as with Pasturella pneumonia.

Vulva

Vaginal discharges in the fresh cow can tell a good deal. Bloody mucous is common in the first few days even if the cow has cleaned. Generally, the thicker and the clearer a discharge is the better the situation. Thin, red-dish fluid with a foul odor is indicative of metritis in need of treatment. A brownish, thick mucous discharge around 10 days post-calving is called lochia. This is a normal "clean out" product of uterine involution.

Calving trauma can cause severe tears in the vaginal wall. These usually result in a foul odor around the vulva similar to nasty metritis. The discharge may be scant and thick. A vaginal exam is required to sort out the source of the problem.

Taking the pulse

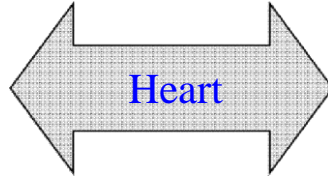
It is possible to take the pulse of a cow from her tail. This can be done while waiting to read an old style thermometer or while looking over the animal from behind. Using the tip of your middle finger, gently put pressure on the underside of the tail between two vertebrae about 6-12 inches below the base of the tail. With the right pressure, the coccygeal artery in the tail will pulse under your finger.

Step 2: *Exam on left side*

Normal

Problem

- Heartbeat: 60 - 80 beats per minute
- Calves: 72 - 100 beats per minute
- Even rhythm, intensity



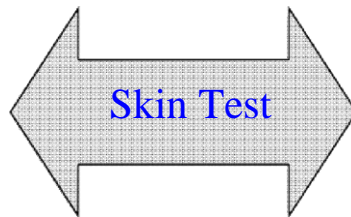
- Heartbeat greater than 80 beats per minute
- Hard to hear
- Uneven rhythm
- Swooshing

- 18 - 26 breaths per minute
- Calves: 20 - 40 breaths per minute
- Soft air sounds all over



- More than 30 breaths per minute
- Loud, harsh sounds
- Whistles, crackles, gurgles
- No sounds
- Heartbeat heard over wide area

- Pinched skin on neck returns flat in less than one second
- Ear and upper leg feels warm



- If pinched skin stays tented for more than 1 - 2 seconds; sign of dehydration
- Ear or leg is cool

- Fist test shows "doughy" consistency
- Rumen cycles about 2 times per minute
- Finger tap over ribs & hollow area sounds dull
- Dull sound



- Splashy or solid feel with the fist test
- No movement or too much
- "Ping" heard over ribs or hollow area
- Ringing, tin can rattle

Step 2 – Exam on the Left Side

Heart

The heart is located inside of the front legs at elbow height. The beat of the heart creates two distinct sounds. In cattle there is often a split first sound. This is normal.

The rhythm of the heart beat should remain fairly constant. Missing beats or a series of very rapid beats is not normal. Cows with low blood calcium levels tend to have slower rates and more pronounced sounds. Severe milk fever cases will have very slow rates and reduced volume of sounds. Toxic cows will have fast and sometimes erratic heart beats.

Swooshing sounds associated with the first beat indicate a problem with blood leaking back through a heart valve. Heart infections particularly those involving the valves are often the cause although severely anemic cattle will sound this way as well.

Occasionally a sloshing “washing machine” sound will be heard. This is associated with fluid build up around the heart or fluid in a chest abscess associated with a case of hardware or previous pneumonia.

Lungs

You should listen to the lungs over many locations. Getting to know what is normal can be challenging especially with calves. One point is important: you should be able to hear sounds, even if faint, over the entire lung field. No sound indicated severe swelling of lung tissue and closure of airways. Heart sounds will transmit through “firmer” lung tissue than a normal spongy one. Musical sounds indicate fluid and pus in the airways usually associated with bacterial infections.

In hot weather panting will be a normal result of heat stressed cattle. Lungs will sound louder, but air moves evenly throughout.

Rumen

The rumen is a large bag made of muscle. It moves constantly to mix feed and aid in belching up gas and advancing the cud into the mouth. The rumen has 2-3 cycles of contraction every minute. This can be felt and heard by holding a stethoscope over the hollow behind the last rib and in front of the cow's hook or hip bone. It normally has a dough-like consistency if you push your fist into this area. The dimple formed will disappear quickly after removing the fist. Resistance to fist pressure or a soft, splashy feel are both abnormal.

This is area to start finger snapping or “pinging” while listening with a stethoscope to check for gas pockets associated with DA's. Dull echoing sounds may only indicate gas in the rumen or in the body cavity itself. A ringing, metallic sound caused by percussion of the finger over a gas pocket lying over a fluid mass is the classical ping of a DA. Consistency of location and pitch are important in differentiating a DA from other intestinal gas

Skin Tenting for Hydration Status

Pinch, lift and slightly twist the skin over the neck. Cattle have loose attachment of the skin to the underlying muscle. In normally hydrated animals the “tenting” skin will return to its original flat state in less than a second. Dehydration can be estimated by the excessive length of time for the skin to return to normal. Animals that take 3 seconds are severely dehydrated and in need of IV and/or oral fluids.

Step 3: *Exam on right side*

Normal

Problem

- Fainter than left side, but same rate and rhythm
- Listen under the elbow

Heart

- Confirm abnormal findings by listening to left again

- Dry, air rushing sounds

Windpipe

- Noisy air flow
- Grunts

- Drops away from pinch
- No grunting

Wither Pinch or
Knee/Fist test

- Stiffens up
- Holds breath
- Grunts

- Should not show
- No pulse

Jugular Vein

- Distended
- Wave with pulse

- Soft, even size of quarters
- CMT– All 4 are similar
- Teats have normal skin
- No teat end damage

Udder

- Firm, painful enlarged quarter
- CMT– Thickened, darker
- Teats: scabs, thickened, swollen, poor ends

Step 3 – Exam on the Right Side

Heart

Same as from the left except you need to place the stethoscope further under the elbow to hear well. Sounds on the right are not as easily heard.

Windpipe or Trachea

Place the stethoscope midway up the cow's neck on the very bottom. The windpipe is just below the skin surface. Normal air movement is soft, possibly loud, but without musical tones, squeaks or grunting noises. "Referred" or traveling sounds either from the throat area or lungs can be heard through the windpipe. Move the stethoscope up towards the throat to determine if abnormal sounds are originating there.

Whithers pinch or Knee/fist Test

With the stethoscope over the windpipe, reach up and firmly squeeze the spine just behind the shoulder (whithers). A cow without any pain in the sternal/lower chest area will sink away from the pinch without any grunting or holding of breathe. Reluctance to sink down, holding of breathe until you release the pinch or grunting is a possible sign of hardware, chest cavity infection (pleuritis) or infection around the heart (pericarditis).

A similar test involves placing your fist on top of your knee under the cow's chest or even further back under the belly. Pain will be shown with pressure in these areas. Belly area response indicates the possibility of abomasal ulcers or peritonitis.

JugularVein

While listening to the heart, look towards the neck and the jugular vein. Normally the jugular should not be obvious and only the groove that it lies in is noticeable. When the heart valves are not functioning correctly (valve disease, hardware, and lymphoma of the heart) the jugular can distend with blood while the cow is standing. You may see a wave in the jugular in synch with the heart rate

Lungs

Same as the left side.

Udder

A common myth existed for years about using the CMT or California Mastitis Teat on fresh cows. It was considered useless. Good colostrum should have a somatic cell count (SCC) of over 1 million giving it a strong positive on the CMT paddle. However, comparing each of the four quarters to each other is a valuable thing. A bad quarter will appear even more positive than the "normal" one when checking the first milk.

Palpating the quarters can tell you if a problem exists in the udder. Acute infections obviously result in swelling and firmness. Long standing infections even without clinical mastitis can cause internal scarring and loss of milk production. This is the case with chronic Staph aureus mastitis.

Step 4: *Exam of the Head*

Normal

Problem

- Warm
- Held Up

Ears

- Cold
- Listless

- Clear
- Pupil Open
- No discharge

Eyes

- Cloudy
- Small pupil (in dark)
- Pus, tearing
- Swollen lids

- Clean
- Air moving through both nostrils okay
- Breath sweet

Nose

- Snotty
- Blocked air movement
- Foul breath
- Noisy

- Normal appearance
- No smell
- No swellings

Mouth/Throat

- Slobbering
- Foul Smell
- Swellings
- Painful
- Feed wadded up

Step 4 – Exam of the Head

Ears

A cow's ears are somewhat like a barometer: when warm the cow is usually feeling well, when hot there might be fever, when cold she is not feeling well. Most cold ear situations correlate to low blood calcium levels or at least poor circulation to the extremities.

Eyes

A penlight or small flashlight should always be used to look at and into the eyes. The hydration status can be estimated by the dullness of the eye surface or cornea and the degree the eye has “sunken” into the head. Redness and pus can be associated with respiratory disease, toxemia or an eye infection. Swollen lids may indicate an allergic response to molds or weeds.

A normal cow will have a pupil that is wide and open in a relatively dark place. When a light is shined into it, the pupil should close down to make a smaller opening. Cows that do not have the pupil close with light are hypocalcemic or low in blood calcium. This is a classic sign of milk fever. A slow response would indicate a less severe case of hypocalcemia. Cows in a dark area that have small pupils when you shine the light in them are generally toxic from mastitis, metritis, peritonitis or some other severe infection.

Nose

The breath can be used to determine whether a cow has ketosis. Unfortunately, you have to be born with the right genes to be able to smell the ketone compounds.

Anyone can tell if a cow has foul breath or not. Foul odor from the nose may indicate sinus infections from dehorning or tumors, abscesses in the throat or severe pneumonia. Pay attention if air moves through both nostrils or not. One may be blocked by a mass.

Listen for unusual noises from the nose. Place the stethoscope over the front of the face or over the throat to try and locate the source of the sound.

Mouth/Throat

Cows should always breathe through their noses unless it is extremely hot and they open mouth breathe to cool off. Drooling should only be associated with open mouth panting due to overheating. Observe for any swellings around the face or jaws. Feel around the throat for swellings or discomfort.