BUL291

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Health Management of Newly-Arrived Beef Cattle into a Backgrounding/Stocker Operation[1]

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Backgrounding (a stocker operation) describes a management system where recently weaned calves or yearling cattle are grazed for a period of time before they are placed in the feed yard. After they reach a desired size, or at the end of the "grazing" season, they are sorted into uniform loads or pen-size lots and placed in a feedlot. Sounds rather simple, but in reality, the successful management of a backgrounding operation can be rather complex. Backgrounding is a part of the cattle industry that most cow/calf operators and veterinarians are not comfortable with, especially when dealing with the problems of health management in backgrounding cattle.

Why is the health management of backgrounding cattle such a problem? In general, most calves entering the stocker programs have been recently weaned, commingled with calves from many sources, exposed to many diseases for the first time, and "off feed" for many days. Also, many of the calves have never received a vaccination for anything. If they still have horns, and the bull calves are still bulls, rest assured, they haven't been vaccinated. At the stocker operation, the calves must establish a new social order, adapt to different feed stuffs, adjust to new surroundings, and in some cases acclimate to new weather conditions.

All of these variables will reduce the calves' resistance levels while the disease challenge levels are rising; this results in calves rapidly becoming sick during shipment or shortly after arrival. Most of the sickness occurring in newly arrived cattle is due to "bovine respiratory disease complex." Bovine respiratory disease complex, or "BRD," refers to infections of the lungs caused by bacteria that normally inhabit the nose and throat of the sick animal. Healthy lungs will have adequate resistance against the bacteria; however, damaged lungs have a lowered resistance level. This lowered resistance level allows the bacteria to colonize in the lungs, reproduce rapidly, spread throughout the lungs, and cause severe problems. The resistance of the lung can be lowered by certain viral diseases and stresses. Thus the age-old equation: **Bacteria + Viral Disease + Stresses = BRD** When a rapidly rising bacterial disease challenge is superimposed on a lowered resistance level, sickness occurs rapidly, usually with severe intensity (Figure 1).

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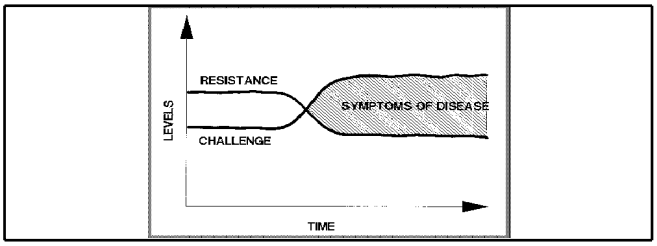


Figure 1.

There are at least twelve viruses that attack the respiratory tract of cattle. Unfortunately, we only have vaccines for four of them: infectious bovine rhinotracheitis (IBR), parainfluenza-3 (PI3), bovine virus diarrhea (BVD), and bovine respiratory syncytial virus (BRSV). Each of these viruses lowers the resistance of the lungs.

The stresses that are thought to contribute to the BRD complex by reducing the animal's resistance level include exhaustion, starvation, and dehydration (often associated with shipping); weaning; ration changes; castration; dehorning; overcrowding; chilling; overheating; confinement in poorly ventilated quarters; and social adjustments associated with commingling cattle from different sources.

In addition, the occurrence of non-respiratory diseases such as digestive upsets from improper feeding is an additional stress associated with the BRDC. These stresses are common to most of the calves shipped from Florida. BRD is primarily a disease of newly weaned and/or shipped calves and yearlings.

The bacteria primarily involved with BRD are *Haemophilus somnus, Pasteurella hemolytica*, and *Pasteurella multocida*. With less frequency, other bacteria and organisms have been isolated from the lungs of animals with BRD; their significance, as related to BRD, is unclear in many cases.

Because of the wide spread prevalence of the respiratory viruses and bacteria, the potential for an outbreak of BRD exists in virtually any population of cattle subjected to stress. The probability that BRD will result is increased by mismanagement, which increases and compounds stresses, which result in a reduction of natural resistance.

Furthermore, because respiratory viruses and bacteria are transmitted by direct contact; by breathing aerosols; and by ingestion of feed or water contaminated by nasal discharges and drool from infected animals; commingling susceptible cattle from different sources will also set the stage for BRD problems.

Signs of the disease do not usually occur until six to ten days after cattle are stressed or new cattle are mixed with a herd. The first signs are slight depression and going off feed. Affected animals often stand apart from the group, with lowered head, drooping ears,and half closed eyes.

In the early stages, the respiratory rate may increase if the animal has a high fever or it is a hot day; however, labored breathing is usually not seen at this time. The muzzle may be dry and scabby, nasal discharge may or may not be observed, and coughing (if present) is usually soft. The rectal temperature may range from 102°F to 108°F. Treatment is essential at this time! If treatment is delayed, or the wrong treatment is given, the disease progresses and the lungs become more involved and consolidated.

The animal becomes markedly depressed, won't eat, has labored breathing, stands with neck and head extended, and breathes with an open mouth. Treatment at this time may only "save a life"; a major portion of the lung damage is permanent, and the animal will generally be a "poor doer," a "chronic," a "realizer." Animals of this sort are usually sold to some unsuspecting sole or just turned out to pasture to be added to a group at a later date.

Because of the time delay between actual disease and the combining of stress, bacteria, and viruses, it is usually the **receivers** of shipped cattle that deal with BRD.

Even though many cow/calf producers do not think that their cow herds are challenged by the viruses and bacteria that are involved with BRD, it is imperative that the cow/calf operators (the sellers of cattle) adequately prepare their cattle for the trip ahead.

Remember, stress lowers the animal's resistance. Reducing stresses will not raise the resistance; reducing stresses will keep the resistance from dropping. How do we reduce stresses? Remember,

you control cattle as long as you have physical control; do what you can while you have them.

Castrate, dehorn, brand, and process cattle months before they are to be shipped. Adjust or familiarize cattle to commercial feeds before shipment. Reducing the parasite load in or on animals will also reduce stresses; internal and external parasite control is a must for cattle while on the ranch. The commingling of cattle is built into the marketing system and will not change; however, properly prepared cattle handle the commingling more successfully.

Respiratory virus infections reduce the resistance of the lungs, thus increasing susceptibility to bacterial infections. Reduce the chances of viral infections by vaccinating cattle against IBR, PI3, BVD, and BRSV.

The animal's resistance against certain respiratory bacteria can be raised by vaccination, so properly vaccinate the cattle for *Haemophilus somnus*, *Pasteurella hemolytica*, and *Pasteurella multocida*. In addition, respiratory bacterial challenges may be reduced by proper use of antibiotics before, during, and after shipment.

Regardless of the tools we have that will reduce BRD, the disease challenge will always occur in shipped cattle. However these strategies can help.

- Proper management to **reduce stresses**.
- Proper vaccination to **raise** the **resistance** of the animals against virus & bacteria challenges.
- Antibiotics to **reduce** the bacterial **challenge**.
- External and internal parasite controls to resist parasite challenge and stress.

The backgrounders have learned to live with this scenario: they hope for the best, but expect the worst. If they have been in the business for any length of time, they have experienced a "wreck" in a load of calves; they have experienced 40 to 50 percent of a load of calves getting sick and they have experienced a 4 to 5 percent deathloss.

Most successful backgrounders have a "plan" for handling newly arrived purchased cattle. They have a plan to keep calves alive, for getting the resistance level above the disease challenge level, and for preventing or getting out of a wreck (Figure 2).

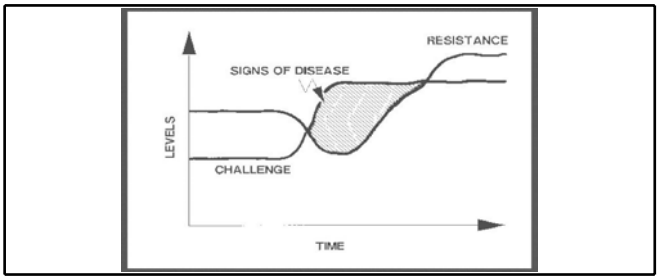


Figure 2.

All such plans revolve around adequate preparation. One of the major errors in stocker operations, especially new operations, is lack of preparation. Important items to be considered in preparation are listed.

- Facilities and equipment
- Training of personnel
- Nutrition
- A receiving program
- Management of sick animals.

Let's quickly review a few of the items that many new comers to the backgrounding business learn the hard way.

1. Upon arrival, calves should be inspected as they are unloaded. In many cases, the truck driver is required to carry back a check for the load of cattle; to pay for an unacceptable load would be a disaster. If they are unacceptable, they should be reloaded or the seller notified immediately for a price renegotiation.

2. Calves should be batch weighed upon arrival to determine shrinkage. Shrinkage of 7 to 8 percent or more is generally indicative of problem cattle. They have been in the marketing system too long and will probably require more intensive management during the receiving period.

3. Once accepted, the calves should be placed in small drylots with free access to good quality grass hay and fresh water, and allowed to rest overnight.

4. Processing begins at daylight the next day. Processing includes vaccinations, vitamin injections, parasite control, neutering, horn tip removal, branding, and implanting.

5. Sick calves will need to be identified at processing, treated, and assigned to a "sick" pen.

6. Sick calves need to be examined and treated daily.

7. The "non-ill" calves should be maintained in small lots until they have straightened out. Separating calves into 25-head groups and dryloting them for up to 3 weeks is often necessary to allow recovery from stress-related diseases occurring during the receiving period. Calves kept in drylots have lower sickness and death rates, improved gains, and lower labor costs than calves kept in pastures. Pastures allow calves too much room to walk fences, causing more physical stress, and allowing them to stray too far from feed bunks and water sources. Water tanks with water running from a hydrant will often encourage calves to drink. Calves are not very competitive at the feed bunk, so a minimum of 1.5 feet of bunk space per animal should be provided.

8. Newly arrived, stressed calves have special nutritional problems. Inadequate or stress-induced nutritional practices compound health problems. On the average, the feed intake of newly arrived cattle is low. It is essential that the ration be palatable ration and that the nutrient densities in the ration be of sufficient level to compensate for low intake. Pounds of nutrients consumed during the receiving period are of greater importance than percentages of nutrients in rations. Concentrate levels above 55 percent during the receiving period usually cause more cattle to become sick, resulting in higher medication costs; however, average daily gain (ADG) and feed efficiency (FE) will be improved.

9. Coccidiostats in the receiving program provide effective control of both clinical and subclinical coccidiosis. The use of Rumensin or Bovatec after the calves leave the receiving period is recommended to not only enhance feed digestion but also to continue the control of coccidiosis.

10. After the calves are straightened out, they should be moved to grass or small grain pastures to complete the stocker phase. Adequate feed and mineral supplements, as well as frequent observation, is required throughout the grazing period.

Once the animals have reached the desired weight or the grazing season is over, they are shipped to feedyards for finishing. These heavier stocker cattle do quite well in the feedlots because they have been castrated, dehorned, vaccinated, de-wormed, and treated for external parasites previously. This does not prevent the receiving crew at the feedyard from revaccinating, administering parasite controls, and re-implanting. Revaccination will immediately raise the resistance level in previously vaccinated cattle; that is the intent of the feedyard.

VACCINATIONS FOR STOCKER (BACKGROUNDING) CALVES

All newly arrived stocker calves need to be vaccinated for diseases to which they will be exposed. If the cattle are from unknown origins (commingled marketing), chances are that you may be starting the vaccination program for many of the calves. If the calves originated from a direct sale, find out the vaccination history of the calves; ideally, the calves will just need booster vaccinations. In either case, the objective is to raise the calves' resistance level to certain diseases as *rapidly* as possible.

What do we vaccinate against? We need to vaccinate the calves against IBR (infectious bovine rhinotracheitis), PI3 (parainfluenza type 3), BVD (bovine virus diarrhea), BRSV (bovine respiratory syncytial virus), *Haemophilus somnus*, *Pasteurella*, 7-Clostridial (Blackleg), and 5-Leptospirosis diseases.

When do we vaccinate? We need to begin vaccinating the calves the day after the calves arrive. This allows them sufficient time to rest; however, vaccination as well as other processing should be done in the early morning, just after daylight.

What forms of vaccine do we use? How rapidly the resistance is raised is largely based upon the *form* of the vaccine used. The three types used are: replicating, non-replicating, and intra-nasal.

Replicating Vaccines

These vaccines must replicate (reproduce) throughout the animal's body before the resistance level is increased. Usually one (1) dose of replicating vaccine will stimulate high levels of long-lasting resistance in an animal. Failure of the vaccine organism to replicate will mean failure to stimulate a rise in the animal's resistance.

When replicating vaccines are used, most failures occur because poor vaccination techniques are used (the vaccine is killed) or because the vaccines are administered into a calf under 4 months of age (maternal antibodies still present). **In the case of stocker operations, it is assumed that personnel knows how to handle vaccines and that calves purchased are over 4 months of age.**

Non-Replicating Vaccines

These vaccines do not replicate throughout the body. Because of this, the animal will require at least two (2) doses of the vaccine to stimulate adequate levels of resistance. The first dose will usually only trigger the memory mechanism in the body; a second dose, given no sooner than 21 days, will stimulate the production of high levels of resistance. How long the resistance remains high depends upon the animal's ability to respond and the quality and quantity of the vaccine. Most non-replicating vaccines will require **at least one (1) booster** each year to maintain the high resistance level in the animal.

Intra-Nasal Vaccines

These vaccine forms will stimulate localized resistance in surface cells of the upper respiratory tract. To work properly, the intra-nasal vaccines must be administered **before** the disease organism enters the animal's nose. Once the vaccine organism enters the surface cells of the upper respiratory tract, the disease organism is essentially "blocked" from entering the cells.

However, if the disease organism enters the surface cells first, it will block the vaccine organism from entering; hence the animal is not vaccinated. In general, these types of vaccines provide quick, short-lived rises in resistance and trigger the memory cells in the body. Because of the triggering mechanism, booster vaccinating the animal at a later date with a replicating or a non-replicating vaccine containing the same organisms will stimulate a high level of resistance for a longer period.

Suggested Vaccine Regimes

Figure 3 illustrates an animal's relative response to the three different forms of vaccine.If we could vaccinate against all diseases using the intra-nasal form of vaccines, we could stimulate a rapid resistance rise in the animal. Unfortunately, only IBR and PI3 vaccines are available in the intra-nasal form. Table 1 illustrates the availability of the vaccine forms, the suggested vaccine forms to use, and the number of doses required for use in stocker calves.

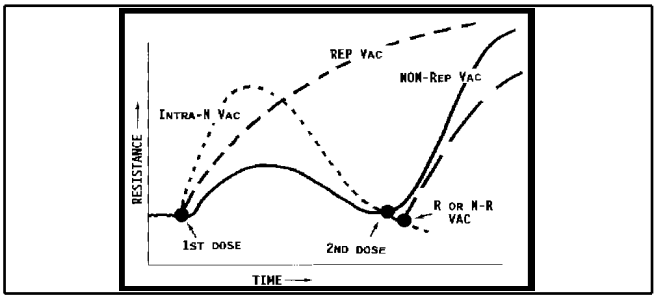


Figure 3.

IBR & PI3: Vaccinate with both the intra-nasal and replicating forms **one time**. The intra-nasal form would stimulate a rapid rise in resistance against IBR if administered before the disease viruses arrive in the upper respiratory tract. If the disease viruses arrivein the tract before the vaccine viruses, the vaccine viruses would be "blocked" out. Because of the uncertainty as to which viruses arrived first, a replicating IBR & PI3 vaccine should also be administered intramuscularly to each calf. Using the replicating form at this time would eliminate the need for booster vaccinating with IBR & PI3 at a later date.

BVD: A non-replicating (killed) form of BVD vaccine should be used in these calves. The use of the replicating form of BVD vaccine in *stressed calves* has been reported to cause a setback and prolong the straightening-out period. A booster dose of non-replicating BVD vaccine is required in 21 days.

BRSV: Only non-replicating forms of BRSV are available. Both the killed vaccine and the modified live vaccine are classified as non-replicating. A booster dose is required in 21 days.

Pasteurella: A non-replicating (killed, inactivated, or subunit) form of *Pasteurella* vaccine should be used. The organisms in replicating (live) *Pasteurella* vaccine are very susceptible to antibiotics; therefore, its use during periods of potential antibiotic use is not recommended (this is a period of potential antibiotic use). A booster dose of a non-replicating *Pasteurella* vaccine is required in 21 days.

Haemophilus somnus, 7-Way Clostridial, & 5-Way Leptospirosis: These vaccines are only available in non-replicating forms. A booster dose of each is required in 21 days.Figure 4 illustrates the anticipated animal responses to the different vaccines and vaccine forms. Using the various forms of vaccines in such a combination will allow the vaccinated calves to achieve a high level of resistance as rapidly as possible. Vaccines are available that contain

combinations of replicating and non-replicating viruses; such combinations will reduce the number of injections required.

This is not excessive thinking. Most stocker operators that use this approach to vaccination "thinking" see less sickness, fewer deaths, and improve the future marketability of the calves.

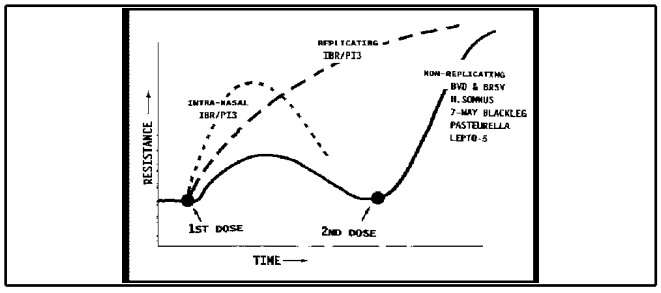


Figure 4.

MANAGEMENT OF SICK STOCKER CATTLE

A sucessful program for the management of sick stocker calves and yearlings must be simple and systematic: that is, a sick animal must be easily identified, and the treatment must be routine and require a minimum of judgement decisions by the working crew.

The key elements in this program include the following.

1. Identifying sick cattle as soon as possible.

2. Keeping adequate records.

3. Evaluating sick cattle daily.

4. Changing treatment, if necessary, until an improvement is noted.

5. Systematic treatment of sick animals.

A stocker operator wanting to use this program should consult a veterinarian prior to implementing these procedures.

Identifying Sick Cattle as Soon as Possible

The experienced stocker operator (backgrounder) can usually identify sick animals by visual inspection. However, the following technique is offered to the inexperienced stocker handler or anyone who does not have the "**knack**" for identifying sick cattle.

On the morning following arrival, routine processing of the cattle begins. At this time it is desirable to pull as many of the **sick** animals as possible. Elevated body temperatures and/or visible signs of illness are used to identify the sick animals. As soon as the animal is restrained in the chute, take its temperature using a rectal thermometer.

The processing crew should follow two rules for pulling sick cattle.

- Designate as sick all cattle with a rectal temperature of 104°F or greater.

- Designate as sick all visibly ill cattle regardless of the body temperature.

Visible symptoms of illness include excessive nasal discharges, labored breathing, harsh deep coughing, moderate to severe depression, or bloody diarrhea. Animals exhibiting only loose stools or non-bloody diarrhea are not pulled as sick.

Animals designated as sick should be identified with numbered backtags glued to the forehead or with numbered ear tags. In addition, sick cattle should be vaccinated, wormed and injected with vitamins just as are the non-ill animals.

Neutering bull calves and removing horns can be delayed if necessary. Neutering and removing horns require additional time, and it is important that the processing and treatment of the sick cattle be completed well before noon. In addition, neutering and removing horns are very stressful to sick cattle.

NOTE: The value of 104°F was obtained from experience and data accumulation. Occasionally, younger animals (recently weaned) will exhibit higher body temperatures. If you notice that you are pulling a great number of animals that appear to be healthy and are also on feed, then change the pulling temperature to 105°F. Be flexible; don't "get in a rut" and stay there when you know things don't fit.

USE OF BODY TEMPERATURE AND VISIBLE SYMPTOMS TO DETECT SICK, NEWLY ARRIVED CATTLE

To better understand the use of the two rules for identifying sick calves, it may be necessary to briefly explain the influence of infectious diseases on an animal's body temperature and physical appearance. (**NOTE**: It will be helpful to refer to Figure 5 while reading this section.) In untreated infected animals, the body temperature begins to elevate after the incubation period for the infectious organism. Some animals (as shown by curve A) will recover without exhibiting clinical symptoms, and in others (as shown by curve B) the body temperature will continue to rise, and clinical symptoms of illness appear. Gradually the animal's defense system overcomes the infection and as the animal begins to recover, the body temperature drops and clinical symptoms begin to disappear. Finally, the body temperature returns to normal and the animal is said to be in a convalescent state, on the way to recovery.

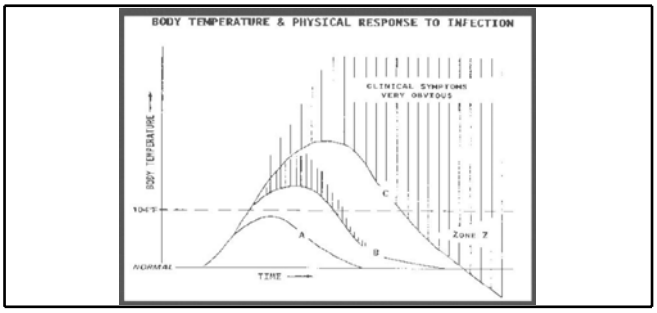


Figure 5.

However, in some animals (as shown by curve C) the body defenses fail to overcome the infectious process and the animal begins to succumb to the disease. The clinical symptoms continue to worsen and eventually the body temperature begins to fall. If the animal cannot overcome the infection, the body temperature will drop well below normal and death usually occurs.

When initially processing the animals, if you pull as sick those animals that "**have a rectal temperature of 104°F or greater**," you will have pulled most of the animals that are exhibiting clinical symptoms. In addition, you will have pulled some animals that are not yet showing clinical symptoms but, in time, will become sick if they go untreated.

Also, if you pull those animals that "**exhibit visible signs of illness regardless of the body temperature**," you will pick up those animals that have severe gross clinical symptoms and exhibit body temperatures below 104°F (zone Z). These animals can be noticed in the chute by anyone having just minimal cattle savvy. Without the correct treatment, these cattle are on the way out! They will become "chronics" or die.

What you will miss are those animals that are infected, but have less than a 104°F body temperature and show no clinical signs of illness. If the animal's natura1 defenses do not respond, or if your loving care is not adequate, those animals will begin to exhibit clinical symptoms a day or two later. The feeding personnel or pen rider will pick up these animals in the pen -- still early detection.

Electronic Thermometer/Body Temperature

The electronic thermometer is a tool that is very useful for detecting animals with elevated body temperatures. Cattle **do not** maintain a body temperature within a very narrow range, such as do humans. In the normal regulation of body temperature, cattle let their temperature fluctuate many degrees rather than expend energy to hold it constant. Under stressful conditions, cattle temperatures may range from about 100°F to 108°F, and follow a diurnal pattern. (Low temperatures in the morning and high temperatures in the afternoon, not dropping until between 4 am and 6 am.) The magnitude of the fluctuation is effected by the environmental temperature and humidity, as well as the stress of transportation. The diurnal; variation occurs regardless of the seasonal environmental changes. The magnitude of temperature fluctuation in cattle may be as great as 6°F to 7°F immediately after arrival, gradually settling into a normal diurnal variation of 2°F to 3°F after the cattle have adjusted to the new environment (usually 7 to 14 days).

Another problem encountered when using body temperatures is that the normal body temperature rises with movement or excitement of the animal. However, when body temperatures are at their diurnal lows and are not elevated by the stresses of movement, animals with fevers due to infections may be separated from cattle with normal temperatures. For the inexperienced stocker handler, the electronic thermometer has been a very useful tool for the identification of sick animals, especially when used with the following limitations.

- Newly-arrived cattle should be divided into groups of not over 25 head and allowed to rest overnight with free access to hay and water.

- Processing and the taking of body temperatures should start at dawn and be completed within three hours.

- No animal should be out of its pen or waiting for processing for over 30 minutes.

- Extra care must be taken to move the cattle through processing with a minimum of excitement or stress. Body temperatures need to be taken when the animal first enters the chute.

If the electronic thermometer is used under conditions that conflict with the above four guidelines, the results could be misleading. The sick animal does not elevate its body temperature above the diurnal high in a consistent manner.

There may be a little more latitude in using the thermometer to monitor treatment responses in the sick pen, where temperatures are recorded daily and a change in the body temperature is the criteria being watched. It is still advisable to obtain the body temperature during the early morning hours.

Therefore, when processing, **pull as sick all animals** that 1) have a rectal temperature of 104°F or greater, or 2) exhibit visible signs of illness, regardless of the body temperature.

Records

Complete and accurate records are a necessity; they tell tomorrow what was observed and done today. An example of a simple record system consists of using a 8-by-5-inch index card printed with a different form on each side. The first form used is the EXAMINATION portion, which is only filled out on the first day the animal is pulled as sick (Figure 6).

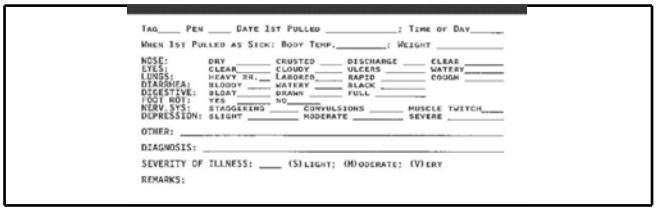

TAG____ PEN ____ DATE 1ST PULLED _____; TIME OF DAY_____
WHEN 1ST PULLED AS SICK: BODY TEMP._____; WEIGHT _____
NOSE: DRY _____ CRUSTED ____ DISCHARGE ____ CLEAR _____
EYES: CLEAR____ CLOUDY ____ ULCERS _____ WATERY_____
LUNGS: HEAVY RR.___ LABORED____ RAPID _____ COUGH _____
DIARRHEA: BLOODY _____ WATERY _____ BLACK _____
DIGESTIVE: BLOAT _____ DRAWN _____ FULL _____
FOOT ROT: YES _____ NO_____
NERV SYS: STAGGERING _____ CONVULSIONS _____ MUSCLE TWITCH___
DEPRESSION: SLIGHT _____ MODERATE _____ SEVERE _____
OTHER: _____
DIAGNOSIS: _____
SEVERITY OF ILLNESS: ___ (S)LIGHT; (M)ODERATE; (V)ERY
REMARKS:

Figure 6.

The assigned tag number, pen number, date pulled, body temperature, estimated body weight, and the time of day are recorded at the top of the card. Visible symptoms are recorded by checking theappropriate spaces. If a diagnosis is made, it is recorded. The severity of the illness is rated as slightly ill (S), moderately ill (M) or very ill (V).

NOTE: The same individual that evaluates the sick animal as to the "severity of illness" should continue to "reevaluate" the severity of illness on subsequent examination days. If this is not possible, then the cowboys must all agree upon the appearance of slight, moderate, or very ill animals; an effort must be made to establish consistancy between different individuals. Space is also provided for any additional remarks that pertain to the sick animal.

Remember, all this is to jog your memory tomorrow or, in your absence, to inform someone else why the animal was pulled as sick.

The reverse side of the card is the TREATMENT portion of the record (Figure 7). Its use will be discussed in the section entitled "Systematic Treatment of Sick Animals."

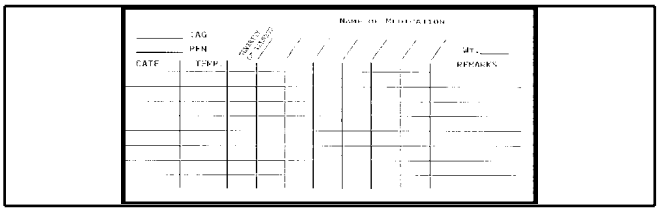

TAG
PEN
DATE
TEMP.
WT.
REMARKS

Figure 7.

Treatment of Sick Newly Arrived Cattle

When cattle arrive sick or get so shortly thereafter, there is usually insufficient time to diagnose or identify the causative organisms before beginning treatment. Bovine respiratory disease complex (BRD) and diseases resulting in diarrhea cause 99 percent of the health problems during the first three weeks after arrival. BRD is caused by a combination of respiratory viral infections and stress, compounded by bacterial infections.

The major stresses have already occurred, and the viruses are essentially non-treatable. Therefore, the bacterial infections must be controlled by antibacterial drugs (antibiotics and sulfa). The sick cattle are medicated for bacterial infections in general rather than specific diseases, with the exception of bloody diarrhea. In all cases, cattle designated and identified as sick are medicated while in the squeeze

chute for routine processing. The **sick** animals are medicated **one** of **two** ways, the deciding factor being the presence or absence of **bloody diarrhea**.

1. Sick animals **without** bloody diarrhea, pulled due to visible signs of illness or high body temperature, are treated with an injectable antibiotic or a combination of an injectable antibiotic and oral sulfa.

2. Animals **with** bloody diarrhea, with or without a fever (104°F or greater), are treated with a combination of injectable antibiotic and an oral drench containing medication to treat coccidiosis and an antibiotic to treat bacterial gut infections. (Bloody diarrhea is generally caused by either coccidiosis and/or bacterial gut infections).

Cattle displaying non-bloody diarrhea are essentially ignored when processed. The loose stools may be due to a change in diet or a heavy worm load. Put cattle on a high roughage diet and worm them during processing. This often alleviates the problem.

The processing crew should **not** be given a choice of treatment; treatments should be designated in advance by the vererinarian and the owner of the cattle. The only decision required of the processing crew the is determination of the presence or absence of bloody diarrhea. This judgement decision is usually made when a crew member is obtaining the body temperature.

It is necessary to record the medication administered to the animal on the TREATMENT portion of the record. The tag number, date of treatment, body temperature, severity of illness (S, M, or V) and the **amount** of **each** medication administered are recorded.

As cattle leave the squeeze chute, use the cutting gate to separate sick cattle from non-sick cattle. All animals (sick and non-sick) should be held near the working area until the processing operation is complete. This permits easy observation for the detection of reactions to vaccinations or medications.

After processing is complete, non-sick cattle should be moved to drylots or small pastures, observed twice daily for 14 days, and pulled when and if detected as sick. Non-sick cattle in drylots or on pasture should be pulled as sick by visual inspection alone. They should not be run through the chute and have their temperature taken each day. Those cattle pulled as sick after processing should be administered the same treatment program as the cattle designated sick at processing.

Evaluate Sick Cattle Daily

It is imperative that sick animals be rechecked and evaluated each day. Rechecking must be done as early in the day as possible -- well before noon -- to obtain useful body temperatures. Sick cattle need to be observed before they are moved to the working chute area. If possible, note appetite, respiratory difficulties, consistency of stool, and degree of depression for each animal.

After the animal is restrained in the chute, TAKE ITS TEMPERATURE! Next, pull the record card and check to see why the animal was pulled as sick the first day. Then record the new body temperature. Determine at this point if the animal's **physical signs** have improved; that is, does the animal appear less sick than the day before? Change in body temperature is not used to make this decision. The decision is based on a change in appetite, respiratory difficulty, fecal consistency, or depression.

Next, **rate the severity of the illness** ("S"=Slight, "M"=Moderate or "V"=Very ill) using visual observations. Now the record card for this day shows the date, body temperature, and severity of illness, as well as the previous day's information and treatment.

It is **not** necessary to change the examination portion of the record filled out the first day the animal was sick. The examination portion is used to "jog the memory" and remind you of why the animal was pulled in the first place. Changes in the physical signs can be noted in the "remarks" section of the treatment card.

When an animal starts on a medication, improvement must occur within 24 hours, or one

should assume the medication is not effective. **Did the sick animal improve?** The criteria for this decision are listed below.

- An animal with a temperature of 104°F or greater on the first day it was pulled has to show a 2 degree reduction in fever, or have the fever drop to less than 104°F within 24 hours following treatment to be designated as improved.

- An animal with a rectal temperature of less than 104°F on the first day has to improve physically within 24 hours following treatment to be designated as improved (i.e., from **V**ery ill to **M**oderately ill, **M**oderately ill to **S**lightly ill, or **S**lightly ill to less than Slightly ill).

If an animal has improved, **repeat the medication** administered the day before. In sick animals **without** bloody diarrhea, the same treatment is repeated. In animals **with** bloody diarrhea, the oral drench should be repeated even if a significant firming of the stool is not noted. If the fever has dropped 2 degrees or below 104°F, or if a fever was not present the previous day, the injectable antibiotic is repeated also. The bloody diarrhea treatment (injectable antibiotic and oral drench) should be continued for a total of four days.

Changing Treatments

Since these animals often are of unknown origin, when a sick animal walks off the truck, there is no way of knowing whether this is the first day or the fifth day it has been sick. Experience has shown that if an animal isn't medicated swiftly and correctly, it may develop into a "chronic" or even die. For this reason, when a sick animal does not improve within 24 hours following treatment, change the medication.

However, it is very important to follow a set schedule of treatment when changing medication. Change treatments daily until the animal begins to improve. When the "successful treatment" is found,continue that treatment until fever, depression, lack of appetite, and other clinical signs of illness are absent for two consecutive days.

Using a predetermined sequence of treatments eliminates having to determine what drugs to use next if the previous treatment did not work; changing to the next treatment becomes systematic. The advantage to this procedure is in combatting drug resistance: if a disease organism is resistant to certain drugs, medication is changed frequently until an effective treatment is found. The sick animal is essentially used as a laboratory test. If the treatment does not work, then the animal will not improve and treatment must be changed. Therefore, it is essential that a sequence of different treatments be developed in advance of the arrival of the cattle.

1. TREATMENT #1: If unsuccessful, try next treatment.

2. TREATMENT #2: If unsuccessful, try next treatment.

3. TREATMENT #3: If unsuccessful, try next treatment.

4. TREATMENT #...n: If unsuccessful, try next treatment.

If an animal designated as sick was administered TREATMENT #1 this morning, by tomorrow morning it would need to show definite signs of improvement *or* TREATMENT #2 would have to be administered. In twenty four hours, the animal would need to be re-evaluated again; if satisfactory improvement is not noted, TREATMENT #3 would have to be administered. This sequence would continue until a treatment worked. At that point, continue using the successful treatment until the clinical signs are absent for two consecutive days. The animal can be released then.

Construct a **sequence of treatments** to be used for the three major health problems confronted: sick animals **without** bloody diarrhea, animals **with** bloody diarrhea, and animals **with both** bloody diarrhea and a body temperature greater than 104¡F. It is advisable to consult a veterinarian for help in selecting the proper sequence of antibacterial (antibiotics & sulfas) agents for the different health problems.

The sequence of treatments must take into consideration that some antibacterial agents have several "trade names." Therefore, you may not be changing treatments just by changing "trade names"; you're probably just changing manufacturers. Certain antibiotics can interfere with the action of others. In which case, using them back-to-back may actually be nullifying the activity of one of them.

There is more to making a **sequence of treatments** than just listing antibiotics. Ask the following questions.

- What has worked in the past?
- Is there anything new on the market?
- Does it require more than "once-a-day" administration?
- What is the cost?
- How much tissue reaction can I expect?
- How long is the withdrawl period?
- Does its use interfere with other drugs?
- Is the medication, the dosage, and the route of administration approved by the U.S. Food and Drug Administration (FDA)?
- Which of these available drugs are appropriate?

Micotil 300 (tilmicosin phosphate) injectable

Naxel (centiofur sodium) injectable

Oxytetracycline injectable

Erythromycin (Gallimycin 200) injectable

Tylosin (Tylan 200) injectable

Procaine Penicillin G injectable

Amoxicillin injectable

Sulfadimethoxine (15 gm) boluses

Sulfamethazine (15 gm) boluses

Amprolium (Corid 9.6% solution) oral drench

Neomycin Sulfate (200 mg/ml) oral drench

With this information, construct a sequence of treatments to handle health problems. The following is an *example* of a treatment sequence for sick animals without bloody diarrhea.

TREATMENT #1 Naxel (centiofur sodium) injectable **TREATMENT #2** Oxytetracyine injectable and sulfa dimethoxine (15 gm) boluses **TREATMENT #3** Erythromycin (gallimycin 200) injectable **TREATMENT #4** Procaine Penicillin G injectable **TREATMENT #5** Tylosin (Tylan 200) injectable **TREATMENT #6** Consult with your veterinarian and begin treatment for 3 days with injectable Oxytetracycline. If no improvement, treat for 3 days with Sulfadimethoxine boluses. If no improvement, treat for 3 days with injectable Procaine Penicillin G.

When an animal is pulled as sick without bloody diarrhea, start it on TREATMENT #1. If the animal does not improve adequately to that treatment then change to TREATMENT #2. Continue the daily re-evaluation of the treated animal and change treatments if required.

Once the animal begins to improve adequately, stay with that treatment until the clinical signs are absent for two consecutive days. Then release the animal from the sick pen. When there is a definite pattern as to which medication works, then rearrange the sequence of treatments using the successful medication as TREATMENT #1 for other sick animals. Be flexible, don't get stuck in a rut; be willing to change.

Bloody diarrhea in newly arrived, stressed cattle is usually caused by coccidiosis, salmonella infections, or both. Because laboratory tests may take several days to complete, an accurate diagnosis may be disastrously delayed. For this reason, when bloody diarrhea is observed, begin treatment while waiting for the results of laboratory tests. Treatment consists of medications that usually provide coverage for both coccidiosis and salmonellosis.

In general, experience has supported the use of amprolium for treatment of coccidiosis and neomycin sulfate for treatment of salmonellosis. Both are available in liquid forms and are easily mixed with water to allow for drenching sick animals.

Each medication could be administered separately; however, separate administration would require separate drenching. By mixing the two products with water in the correct proportions, you can save an extra drenching. The dosage and mixing instructions for each medication, as well as a mixture of the medications follows.

AMPROLIUM(CORID 9.6% solution). To be diluted and used orally as a drench for coccidiosis. Pour 6 oz. of Corid into a quart container and then fill with water. Use 1 ounce (30 ml) for each 100 pounds of body weight daily for 5 days.

NEOMYCIN SULFATEsolution (200 mg/ml). To be used orally as a drench for bacterial gut infections. Dosage is 3 cc/l00 pounds body weight. Dilute that in at least 3 times as much water; administer orally.

AMPROLIUM - NEOMYCINdrench. To be used orally as a drench for coccidiosis and bacterial gut infections. Add 24 liquid ounces (1 and 1/2 pints) of undiluted 9.6% amprolium to a gallon container; add 1 pint of neomycin sulfate solution (200 mg/ml); and then add enough water to the container to make a gallon of the mix. Administer orally as a drench 1 liquid ounce per 100 pounds body weight for 4 days (Table 2).

Since bloody diarrhea is evidence of damage to the intestinal lining, it becomes obvious that bacteria present in the gut now have a portal for entry into the animal's blood system. For this reason, administer an injectable antibiotic to the animal while it is being treated with the Amprolium-Neomycin drench. Treatments for bloody diarrhea with and without the presence of an elevated body temperature are outlined in Table 3 and Table 4.

Now let's look at a few examples of handling sick, newly arrived stocker cattle and see how to apply the key elements previously discussed.

On January 6, a load of 100 steers (actually 89 steers and 11 bulls) arrived at the stocker operation during the late afternoon. The cattle were immediately unloaded and allowed access to fresh grass hay (no water) for 3 hours before being equally divided into 4 pens. In each pen the cattle were given free access to clean water and fresh grass hay. At daylight the following morning the cowboys "walked" each pen and visually evaluated the cattle. Mental notes were taken on any cattle that appeared sick, were slow risers, or had isolated themselves from the rest of the cattle.

Immediately following this quick evaluation, each pen was trough fed a high protein pellet at the

rate of 2 lb/head. Again, quick mental notes of how many animals readily accepted the pelleted ration were taken to get a rough estimate as to how many of the cattle "knew what a feed supplement was." Within one half hour the routine processing of the cattle began.

Only 1 pen at a time was brought to the holding pens; that particular pen of cattle was completely processed before another pen of cattle was brought to the holding area. This was an attempt to reduce any stress or excitement that could cause the animals' body temperatures to rise.

The body temperature was obtained immediately after restraining the animal in the chute. The cowboy taking the temperature would indicate if the body temperature exceeded 104°F or if bloody diarrhea was evident. As soon as the rectal thermometer was removed, routine processing began.

Each animal was dewormed, treated for lice, vaccinated, injected with Vitamin ADB_{12}, and tip dehorned if needed. If the animal was recognized as one of the obviously sick animals detected earlier in the pen; or if the body temperature exceeded 104°F; or if it was exhibiting bloody diarrhea; that animal was designated as sick.

Each designated sick animal had a numbered backtag glued to his forehead and was treated according to a predetermined medication regimen. The treated sick animals were turned to a "sickpen" area and not allowed to mingle with "non-sick" animals until released from the sickpen.

In this particular load of cattle several animals were designated "sick" on processing. The following examples have been selected from sickpen records of these cattle to illustrate how key elements in the management of sick stocker cattle were applied.

EXAMPLE 1. Treatment of an animal without bloody diarrhea, having a body temperature above 104°F on the first day it was pulled. Animal responds to treatment.

During normal processing at 8 am, a steer assigned to Pen #1 was found to have a body temperature of 106°F, a heavy nasal discharge, and watery eyes. This steer also had a cough and was moderately depressed; however, the steer had a "full belly," indicative of recent feeding (key element 1 from *Management of Sick Stocker* section: Identifying sick cattle as soon as possible).

The next thing was to start a record on this animal (key element 2 from *Management of Sick Stocker* section: Keeping adequate records). This information was recorded in the "Examination" portion of the record card (Figure 8).

Because the animal was designated as sick, Treatment #1 for sick animals without bloody diarrhea was administered to the animal and recorded on the "Treatment" portion of the animal's record (Figure 9). In this particular load of cattle, Treatment #1 consisted of injectable oxytetracycline and oral sulfadimethoxine boluses (key element 3 from *Management of Sick Stocker* section: Systematic treatment of sick animals).

The first treatment (Oxytetracycline and Sulfa boluses) reduced the temperature from 106°F to 102.1°F. Since the temperature dropped more than 2°F or to below 104°F within 24 hours after treatment, the animal was designated as "improved". The severity of illness status also upgraded from moderate to slight; (key element 3 from *Management of Sick Stocker* section: Evaluating sick cattle daily).

The animal was evaluated daily, and the health status continued to improve. Because of this continued improvement, no change in medication was required (key element 5 from *Management of Sick Stocker* section: Changing treatment, if necessary....)and the animal continued to receive Treatment #1 until it appeared near normal for 2 consecutive days.

At that time it was released from the sickpen and returned to Pen #1. While in the sickpen the animal was seen eating on 3 consecutive days by the cowboys; this information was recorded under "Remarks."

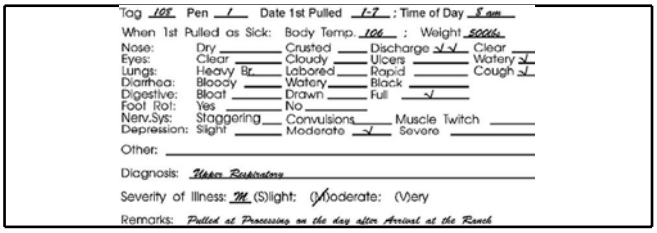

Tag 108 Pen 1 Date 1st Pulled 1-7 ; Time of Day 8 am
When 1st Pulled as Sick: Body Temp. 106 ; Weight 500lbs.
Nose: Dry ___ Crusted ___ Discharge √√ Clear ___
Eyes: Clear ___ Cloudy ___ Ulcers ___ Watery √
Lungs: Heavy Br___ Labored ___ Rapid ___ Cough √
Diarrhea: Bloody ___ Watery ___ Black ___
Digestive: Bloat ___ Drawn ___ Full √
Foot Rot: Yes ___ No ___
Nerv.Sys: Staggering___ Convulsions___ Muscle Twitch ___
Depression: Slight ___ Moderate √ Severe ___
Other: ___
Diagnosis: Upper Respiratory
Severity of illness: M (S)light: (M)oderate: (V)ery
Remarks: Pulled at Processing on the day after Arrival at the Ranch

Figure 8.

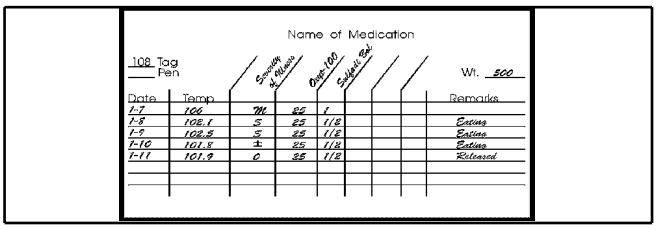

Name of Medication
108 Tag ___ Pen
Wt. 500
Date | Temp | Severity & Illness | Drank 100 | Subject Rel | Remarks
1-7 | 106 | M | 85 | 1 |
1-8 | 105.1 | S | 85 | 1/2 | Eating
1-9 | 102.8 | S | 85 | 1/2 | Eating
1-10 | 101.8 | ± | 85 | 1/2 | Eating
1-11 | 101.9 | 0 | 85 | 1/2 | Released

Figure 9.

Example 2. Treatment of an animal with bloody diarrhea and having a body temperature above 104°F on the first day it was pulled. Animal responds to treatment.

This particular animal was a steer that had been assigned to Pen #2, and during normal processing at 8 am was found to have a body temperature of 105.1°F, a slight clear discharge from the nose, and bloody diarrhea. This steer was moderately depressed and appeared to be "drawn" in the flanks (indicative of diarrhea or lack of appetite). Based upon the above criteria, the animal was given a severity of illness rating of (M)oderate.

Tag #111 was glued to his forehead, and a record card was started (Figure 10). This information was recorded in the "Examination" portion of the record card.

Since the animal was pulled with bloody diarrhea and had a temperature of 105°F, the "treatment for animals with bloody diarrhea and having a body temperature greater than 104°F" was applied while the animal was in the chute for processing. Treatment #1 consisted of injectable Oxytetracycline and oral Amprolium-Neomycin drench. The treatment was recorded on the "Treatment" portion of the animal's record Figure 11.

The body temperature was used to evaluate the response to the injectable antibiotic. Since the body temperature dropped to below 104°F within 24 hours of the first treatment, the antibiotic injection (Oxytetracycline) was repeated as well as the Amorolium-Neomycin drench. After 4 days of improvement, the oral drench was dropped from the treatment. However, because the severity of illness rating was not quite normal after 4 days of treatment, the injectable Oxytetracycline was continued for another day. All of this information was recorded on the "Treatment" portion of the record card.

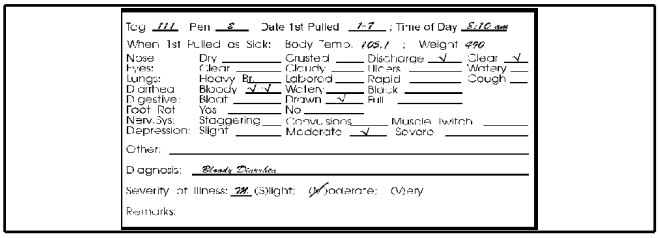

Tag 111 Pen 2 Date 1st Pulled 1-7 ; Time of Day 8:10 am
When 1st Pulled as Sick: Body Temp. 105.1 ; Weight 490
Nose: Dry ___ Crusted ___ Discharge √ Clear √
Eyes: Clear ___ Cloudy ___ Ulcers ___ Watery ___
Lungs: Heavy Br___ Labored ___ Rapid ___ Cough ___
Diarrhea: Bloody √√ Watery ___ Black ___
Digestive: Bloat ___ Drawn √ Full ___
Foot Rot: Yes ___ No ___
Nerv.Sys: Staggering___ Convulsions___ Muscle Twitch ___
Depression: Slight ___ Moderate √ Severe ___
Other: ___
Diagnosis: Bloody Diarrhea
Severity of illness: M (S)light: (M)oderate: (V)ery
Remarks:

Figure 10.

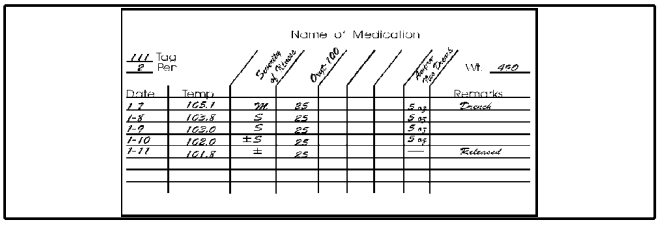

Name of Medication
111 Tag 2 Pen
Wt. 490
Date | Temp | Severity & Illness | Drank 100 | Subject Rel | Remarks
1-7 | 105.1 | M | 85 | | 5 pt | Drench
1-8 | 102.8 | S | 85 | | 5 pt |
1-9 | 103.0 | S | 85 | | 5 pt |
1-10 | 102.0 | ±S | 85 | | 5 pt |
1-11 | 101.8 | ± | 85 | | — | Released

Figure 11.

Example 3. Treatment of an animal with an upper respiratory infection, exhibiting a body temperature above 104°F on the first day it was pulled. Animal would not respond to the initial treatments.

This particular animal was a steer assigned to Pen #2, and during normal processing at 8 am on January 7, was found to have a body temperature of 106.1°F, exhibited a moderate discharge from the nose, and had watery eyes and a cough. This steer was severely depressed and appeared to be drawn in the flanks (indicative of a lack of appetite). Based upon the above criteria, the animal was given a severity of illness rating of (V)ery ill (Figure 12).

Tag #110 was glued to his forehead, and a record card was started. This information was recorded in the "Examination" portion of the record card.

Treatment #1 for sick animals without bloody diarrhea was administered to the animal and recorded on the "Treatment" portion of the animal's record. In this particular load of cattle, Treatment #1 consisted

of injectable Oxytetracycline and oral Sulfadimethoxine boluses; (key element 3 in *Management of Sick Stocker* section: Systematic treatment of sick animals). See the "Treatment" portion of the animal's record (Figure 13).

The following morning (January 8) the animal was again examined and was found to have a body temperature of 105.6°F with no improvement in the physical signs noted on the first day. Since the animal's body temperature had not dropped 2°F following the first treatment, a change in medication was required. Treatment #2 consisted of Erythromycin (200 mg/ml) intramuscularly at the rate of 1 ml/100 lb body weight. Again the body temperature, severity of illness rating, and change in treatment was recorded on the "Treatment" portion of the record card (Figure 13).

On the third morning (January 9), the animal was again examined. The body temperature was 105.7°F and the animal's physical signs still had not improved; another change in medication was required. Treatment #3 consisted of administering tylosin (200 mg/ml) intramuscularly at the rate of 4 ml/100 lb body weight. Again the body temperature, severity of illness, and change in medication was recorded on the record card (Figure 13).

On January 10, the fourth morning after the animal was pulled as sick, the animal was found to have a body temperature of 103.5°F and was exhibiting only moderate symptoms of illness. Since the body temperature had dropped 2°F following Treatment #3 (tylosin), the animal was retreated with the same medication. Again the body temperature, severity of illness rating, and treatment was recorded on the record card (Figure 13).

The following morning (January 11) the animal was eating and was looking better. On examination, the body temperature was 102.0°F, and the clinical signs had reduced in severity. Since improvement was continuing, Treatment #3 was repeated, and the body temperature, improvement in severity of illness, and medication administered was recorded (Figure 13).

On the next two mornings (January 12 and 13), the animal had continually improved and was eating. On each morning Treatment #3 (tylosin) was repeated, and the body temperature, severity of illness rating, and observed appetite was recorded. In addition, on the last morning of treatment (January 13), the animal was released from the sick pen and return to it's assigned pen. This also was recorded on the record card (Figure 13).

These were "simple" examples of how we treated sick, newly arrived steers by following the key elements in the management of sick stocker cattle. If you decide to go into the backgrounding or stocker business **please** start with a program that will allow you to follow some established guidelines.

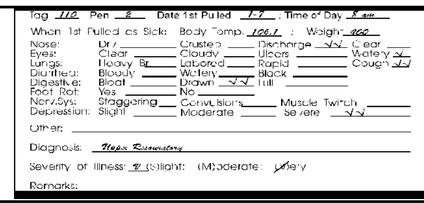
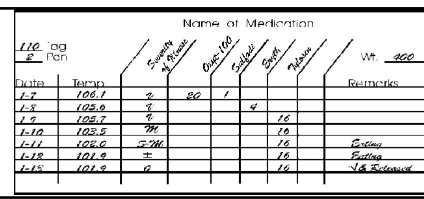

Tag 110 Pen 2 Date 1st Pulled 1-7 ; Time of Day 8 am
When 1st Pulled as Sick: Body Temp. 106.1 ; Weight 400
Nose: Dry ___ Crusted ___ Discharge √√ Clear ___
Eyes: Clear ___ Cloudy ___ Ulcers ___ Watery √
Lungs: Heavy Br. ___ Labored ___ Rapid ___ Cough √√
Diarrhea: Bloody ___ Watery ___ Black ___
Digestive: Bloat ___ Drawn √√ Full ___
Foot Rot: Yes ___ No ___
Nerv.Sys: Staggering ___ Convulsions ___ Muscle Twitch ___
Depression: Slight ___ Moderate ___ Severe √√
Other:
Diagnosis: Major Respiratory
Severity of Illness: V (S)light: (M)oderate: (V)ery
Remarks:

Figure 12.


Name of Medication

110 Tag
2 Pen
Wt. 400

Date	Temp	Severity of Illness	Oxyt-100	Sulfadi	Eryth	Tylosin		Remarks
1-7	106.1	V	20	1				
1-8	105.6	V			4			
1-9	105.7	V				16		
1-10	103.5	M				16		
1-11	102.0	S-M				16		Eating
1-12	101.9	±				16		Eating
1-13	101.9	0				16		√ & Released

Figure 13.

EXTRA-LABEL DRUG USE

When treating newly arrived, **sick** cattle, always keep in mind the legal use of medications. "Just keep them alive; use whatever you want, no one will know," was an attitude that prevailed for many years. With many individuals that attitude may still exist, but most people, and that includes beef producers, realize that this is wrong.

Anytime the inappropriate use of medications in meat animals leaves "drug residue," that is **WRONG**. It is wrong because: many people are sensitive to certain drugs; some drugs can accumulate in body tissues and eventually reach a toxic level; and the consumers of meat and meat products have the right to purchase a clean wholesome product. A clean wholesome product is one free of "drug residues." Many times newly arrived **sick** cattle will not respond

to the some of the "approved" medications; some sick animals will not respond to the dosages recommended on the label or to the recommended route of administration. Experience has shown hat using "unapproved" medications, changing dosages, and even changing the route of administration quite often can **save the life of sick animals.** Doesn't sound legal, does it? If you take it upon yourself to use "unapproved" drugs, change the dosage, or change the route of administration **it is not legal**. However, these procedures can be legal if you follow the guidelines established by the Food and Drug Administration (FDA). FDA guidelines are very specific as to using drugs in meat animals, and cover both "Within Label Usage" and "Extra-Label Usage." FDA Guidelines for "Within Label Usage" restricts the use of a drug to the species of animals for which it is approved (beef cattle can receive only those drugs approved for use in beef cattle). In addition, the drug must be administered by the route(s) stated upon the label, and the drug must be administered at the dosage level stated upon the label. Any deviation from these guidelines will be considered as using a drug "Extra-Label." Extra-Label drug usage is **illegal** unless the FDA guidelines are strictly adhered to. The "right" to use drugs in an extra-label fashion is **strictly regulated** by the FDA. Before extra-label usage can legally occur, the FDA requires that the following criteria be met.

1. A careful diagnosis is made by an attending veterinarian within the scope of a valid veterinarian-client-patient relationship.

2. A determination is made that there is no marketable drug labeled to treat the condition diagnosed and that treatment at the label dosage is found to be ineffective.

3. Procedures are instituted to assure that the identity of the treated animals is carefully maintained.

4. A significantly extended period is assigned for drug withdrawal prior to marketing the treated animals, and steps are taken to assure that the assigned time frames are met and no harmful residues occur.

It is the FDA's intent that extra-label drug use be limited to situations where the animals are faced with death **unless** extra-label use is invoked, and that extra-label use be under strict supervision of the attending or consulting veterinarian.

Why does the FDA insist that a veterinarian be involved in the decision to use drugs in an extra-label fashion? Because the FDA, the beef industry, and most people know that to avoid producing illegal residues, extra-label drug use must be based on a sound knowledge of drug pharmacokinetics, backed with clinical experience, and take into consideration the disease condition being treated. The only person readily available to the cattle industry that meets these criteria is the attending or consulting veterinarian.

The **bottom line** for extra-label usage requires a valid veterinarian-client-patient relationship. The veterinarian must decide when and where to use drugs in an extra-label fashion, the drugs must be used only in accordance with the attending veterinarian's written recommendations, and the usage must be documented by the user.

Documentation includes 1) **written** instructions from the veterinarian stating when to use extra-label drugs, what cattle to use them on, instructions for use, precautions, and withdrawal times; and 2) **evidence** of the **user's compliance** -- evidence such as drug purchase records, treatment records, and withdrawal time records. The guidelines for extra-label usage apply to both prescription and non-prescription (over-the-counter) drugs.

The FDA has made provisions (although not easy ones) to use drugs in an extra-label fashion to save the lives of sick animals. The FDA's sole purpose in this particular matter is to **prevent drug residues** in meat!

AVAILABLE ANTIBACTERIAL AGENTS AND SUGGESTED GUIDELINES

NAXEL (centiofur sodium), 50 mg/cc.Use 1-2 cc/100 lb. injected into the muscle. This antibiotic requires a prescription for use and purchase. No withdrawl period from slaughter is required if administered at this dose.

MICOTIL 300 INJECTION (tilmicosin phosphate), 300 mg/cc.Use a single subcutaneous (under the skin) dose of 1.5 cc/100 lb. If improvement is noted in 24 hours, a second dose is required 48 hours after the first treatment. Inject only subcutaneously. Intravenous injection in cattle can be fatal.

OXYTETRACYCLINE, 100 mg/cc.Use 5 cc/100 lb (5 mg/lb). Inject into the muscle; administer no more than l0 cc per site. Do not sell or slaughter for 20 days after the last treatment with oxytetracycline. *A veterinarian, after establishing a client-patient relationship, may recommend the use of 5 cc/100 lb (10 mg/lb) injected under the skin to prolong the "uptake" of the antibiotic. Use no more than 10 cc per injection site. Do not sell or slaughter for 20 days after the last treatment with oxytetracycline.*[*]

SULFADIMETHOXINE BOLUSES: Oral use (15 gram boluses).Use one bolus for every 600 pounds on initial treatment. Re-treat once daily with 1/2 bolus for every 600 pounds. Do not sell or slaughter for 7 days after the last treatment with sulfadimethoxine boluses. Don't treat with sulfa boluses for longer than a 5 day period. Avoid use of sulfa boluses in severely dehydrated cattle or in cattle that are not drinking.

SULFAMETHAZINE BOLUSES: Oral use (15 gram boluses).Use one bolus for every 150 pounds on initial treatment. Re-treat once daily with 1/2 bolus for every 150 pounds. Do not sell or slaughter for 10 days after the last treatment with sulfamethazine boluses. Don't treat with sulfa boluses for longer than a 5 day period. Avoid use of sulfa boluses in severely dehydrated cattle or in cattle that are not drinking.

ERYTHROMYCIN (GALLIMYCIN 200).Inject 1 cc/100 lb (2 mg/lb) deep in the muscle. Do not sell for slaughter for 15 days after treatment with this dose of erythromycin. *If it is found that this dose is ineffective, then after a client-patient relationship has been established, the veterinarian may want to recommend a higher dose of 5 cc/100 lb (10 mg/lb) for treating respiratory disease in new cattle. Inject deep into the muscle. Use no more than 10 cc per injection site. Do not sell or slaughter for 30 days after the last treatment with this high dose of erythromycin.*[*]

TYLOSIN (TYLAN 200).Use 4 cc/100 lb (8 mg/lb) injected into the muscle. *A veterinarian, after establishing a client-patient relationship, may recommend the use of 5 cc/100 lb (10 mg/lb) injected into the muscle. Use no more than 10 cc per injection site. Do not sell or slaughter for 20 days after the last treatment with Tylosin.*[*]

PROCAINE PENICILLIN G.Administer 1 cc/100 lb (3000 units/100 lb) into the muscles. Not more than 10 cc should be injected in one intramuscular site. Do not sell for slaughter for 11 days after the last treatment with this dose. *If it is found that this dose is ineffective, then after a client-patient relationship has been established, the veterinarian may want to recommend a higher dose of 10 cc/100 lb (30,000 units/lb) injected subcutaneously. There is no limit on the volume used per subcutaneous injection site. Do not sell or slaughter for 120 days after the last treatment with this high dose of penicillin.*[*]

AMOXICILLIN (reconstituted to 250 mg/ml).Use 2 cc/100 lb injected under the skin. Up to 30 cc can be injected in one site. Do not use for longer than 5 days. Do not slaughter for 25 days after the last treatment with this antibiotic.

AMPROLIUM (CORID 9.6% solution).To be diluted and used orally as a drench for coccidiosis. Pour 6 ounces of CORID into a one-quart container and then fill with water. Use 1 ounce (30 ml) for each 100 lbs of body weight daily for 5 days.

NEOMYCIN SULFATE solution (200 mg/ml). To be used orally as a drench for bacterial gut infections. Dosage is 3 cc/l00 lb body weight. Dilute the dose needed in at least three times as much water, and administer orally.

AMPROLIUM - NEOMYCIN DRENCH.To be used orally as a drench for coccidiosis and bacterial gut infections. Add 24 liquid ounces (1 1/2 pints) of undiluted 9.6 percent AMPROLIUM to a gallon container; add 1 pint of NEOMYCIN SULFATE solution (200 mg/ml); and then add enough water to the container to make a gallon of the mix. Administer orally 1 liquid ounce per 100 pounds body weight as a drench for 4 to 5 days.

[*]*The route of administration and the dosages suggested may be different than the manufacturers' label guidelines. However, on the advice of an attending veterinarian, these changes may be recommended to provide adequate serum concentrations for approximately 24 hours, and control susceptible bacteria by treating only once a day. The withdrawal periods must be substantially lengthened to compensate for the higher dosages.* To summarize, most successful backgrounders have a "plan" for handling newly arrived purchased cattle. They have a plan to keep calves alive, for getting the resistance level above the disease challenge level, and for preventing or getting out of a "wreck." This plan should include key elements.

- Identifying sick cattle as soon as possible.
- Keeping adequate records.
- Systematic treatment of sick animals.
- Evaluating sick cattle daily, and
- Changing treatment, if necessary, until an improvement is noted.

Once the animals have reached the desired weight or the grazing season is over they are shipped to feedyards for finishing. These heavier stocker cattle do quite well in the feedlots because they have been castrated, dehorned, vaccinated, de-wormed, and treated for external parasites. This does not prevent the receiving crew at the feedyard from re-vaccinating, administering parasite controls, and re-implanting. Re-vaccination will immediately stimulate a rise in the resistance level in previously vaccinated cattle; that is what the feedyard is expecting to do.

Table 1.

Table 1. Vaccine availability, forms, and dosages.

DISEASE	REPLICATING	NON-REPLICATING	INTRA-NASAL
IBR	yes, 1 dose	no	yes, 1 dose
PI3	yes, 1 dose	no	yes, 1 dose
BVD	no	yes, 2 doses	---
BRSV	---	yes, 2 doses	---
H. somnus	---	yes, 2 doses	---
Pasteurella	no	yes, 2 doses	---
7-Blackleg	---	yes, 2 doses	---
5-Leptospira	---	yes, 2 doses	---

(YES: recommended form; NO: not recommended; ---: not available; 1 DOSE: only administered on arrival; 2 DOSES: administered on arrival AND repeated in 21 days)

Table 2.

Table 2. Mixing instructions for amprolium-neomycin drench.

Oz. AMPROLIUM	+	Oz. NEOMYCIN	+	Oz. WATER	---->	Amt.of DRENCH
24	+	16	+	88	---->	1 Gal
12	+	8	+	44	---->	à Gal
6	+	4	+	22	---->	1 Qrt
3	+	2	+	11	---->	1 Pt

Table 3.

Table 3. Treatment for animals with bloody diarrhea.	
TREATMENT DAY	SUGGESTED TREATMENT
1st Day	A.Drench with 1 ounce of Amprolium-Neomycin for each 100 pounds body weight.
	B.Inject with first antibiotic of choice.
2nd Day	A.Drench with 1 ounce of Amprolium-Neomycin for each 100 pounds body weight.
	B.Inject with first antibiotic of choice.
3rd Day	A.Drench with 1 ounce of Amprolium-Neomycin for each 100 pounds body weight.
	B.Inject with first antibiotic of choice.
4th Day	A.Drench with 1 ounce of Amprolium-Neomycin for each 100 pounds body weight.
	B.Inject with first antibiotic of choice.
	C.Release the animal from the sick pen.

Table 4.

Table 4. Treatment for animals with bloody diarrhea and body temperature greater than 104°.	
TREATMENT DAY	SUGGESTED TREATMENT
1st Day	A.Drench with 1 ounce of Amprolium-Neomycin for each 100 pounds body weight.
	B.Inject with first antibiotic of choice.
2nd Day	A.Drench with 1 ounce of Amprolium-Neomycin for each 100 pounds body weight.
	B.If the body temperature has fallen 2¡F or to below 104¡F, then repeat the injectable antibiotic used on first day of treatment.
	C.If the body temperature has **not** fallen 2°F or to below 104°F, inject with second antibiotic of choice.
3rd Day	A.Drench with 1 ounce Amprolium-Neomycin for each 100 pounds body weight.
	B.If the body temperature has fallen 2¡F or remains below 104¡F, then repeat the injectable antibiotic used on second day of treatment.
	C.If the body temperature has **not** fallen 2°F or to below 104°F, then inject with third antibiotic of choice.

Table 4.

Table 4. Treatment for animals with bloody diarrhea and body temperature greater than 104°.	
TREATMENT DAY	SUGGESTED TREATMENT
4th Day	A.Drench with 1 ounce Amrpolium-Neomycin for each 100 pounds body weight.
	B.If the body temperature has fallen 2¡F or remains below 104¡F, then repeat the injectable antibiotic used on third day of treatment. If the body temperature has been below 104¡F for three days, then release the animal from the sick pen.
	C.If the body temperature has **not** fallen 2°F or to below 104°F, then inject with fourth antibiotic of choice.
5th Day	A.If the body temperature has fallen 2¡F or remains below 104¡F,then repeat the injectable antibiotic used on fourth day of treatment. If the body temperature has been below 104¡F for three days, then release the animal from the sick pen.
	B.If the body temperature has **not** fallen 2°F or to below 104°F, then inject with fifth antibiotic of choice.
6th Day & Longer	A.If the body temperature has fallen 2¡F or remains below 104¡F, then repeat the injectable antibiotic used on fourth day of treatment. If the body temperature has been below 104¡F for three days, then release the animal from the sick pen.
	B.If the body temperature has **not** fallen 2°F or to below 104°F, then consult the veterinarian and begin treatment for three days with injectable oxytetracycline. If no improvement, treat for three days with sulfadimethoxine boluses. If no improvement, treat for three days with injectable procaine penicillin g.