

Take A Trip and Never Leave The Farm

Keith Edmonds, EMT
 Marion County Emergency Management, Director
 Arkansas Governor's Trauma Advisory Council, Member
 Bruno Fire Department, Chief, Training Officer, FF, EMR
 Arkansas EMT Association Board of Governors

Contact Information:
 870-656-5394
 mcoem911@marioncounty.com

Farming Injuries

THE FOLLOWING SLIDES WILL ILLUSTRATE MANY DIFFERENT TYPES OF FARMING INCIDENTS AND ACCIDENTS. THIS LECTURE WILL ASSIST IN PROVIDING FOOD FOR THOUGHT ON HOW TREATMENT TRANSPIRES, AS WELL AS SOME OF THE INJURIES AND SITUATIONS RESPONDERS MAY ENCOUNTER IN THE FIELD.

Farming Injuries

In the Midwest, there are 2 major types of farming that we encounter:

- 1) Livestock (includes cattle, horses, hogs, commercial poultry, etc.)
- 2) Commodity (includes grains, plants, etc.)

Farming Injuries

There are many different potentially dangerous supplies, tools, and implements that you can find on any farm, ranging from hazardous materials to many sharp objects to machinery. Each has its own capability of causing significant injury to not only those who operate them, but to those who respond to the call for help.

2015 Statistics

- ▶ 4,836 Fatal Occupational Injuries in the US.
- ▶ 117 in Missouri
 - ▶ 108 in Private Sector
 - ▶ 25 in Agriculture, Forestry, Fishing, and Hunting Sector
 - ▶ 13 Listed as All Other Crop Farming
- ▶ 284 Agriculture, Forestry, and Fishing Related Deaths in the United States.
 - ▶ 180 Fatalities Among Agricultural Workers
 - ▶ 25 Fatalities Among Fishing and Hunting Workers
 - ▶ 69 Fatalities Among Forest, Conservation, and Logging Workers

2014 Statistics – Primary COD

- ▶ 38 Agricultural and Garden Machinery
- ▶ 127 Tractors, PTOs
- ▶ 162 Off-Road Powered Vehicles
- ▶ 18 Exposure to Harmful Substances
 - ▶ 3 Exposure to Temperature Extremes
- ▶ 6 Chemicals or Chemical Products
- ▶ 26 Caught In or Compressed by Equipment or Objects (23 in Running Equipment)

Farming Injuries

Cattle Farming:



Cattle Farming

- ▶ Large livestock are powerful, quick, protective of their territory and offspring, and especially unpredictable during breeding and birthing periods. Mothering livestock often protect their young aggressively.
- ▶ Dairy bulls, which have more frequent contact with humans than do beef cattle, are known to be especially possessive of their herd and occasionally disrupt daily feeding, cleaning, and milking routines.



Actual Cases...

Case 1. In August 2005, a 65 year old Missouri woman was removing a dead, newborn calf from a pasture when a cow knocked her down, stomped her, and butted her while she was lying on the ground. The coroner reportedly stated that death resulted from blunt force trauma to the woman's head and chest. No autopsy was performed.

Case 2. In November 2005, a 65 year old man in Iowa was helping his son sort beef cattle for loading onto a truck. He was attempting to guide one of the animals toward the truck when it turned into him, crushing him against the barn door. According to witnesses, he stopped breathing immediately. The medical examiner's report stated that death was caused by blunt force trauma to the man's chest.

Case 3. In April 2006, a 63 year old man in Iowa was herding cattle into his dairy barn for milking when a bull came into the barn and repeatedly butted him, pinned him against a fence, and stomped him. According to the attending physician's death record, the man sustained multiple rib fractures, lacerated pulmonary arteries, and head injuries. The man's family said that the bull was known to be dangerous and had been threatening in the past.



Case 4. In August 2007, a 45 year old man in Iowa who was working alone in a pasture was attacked by a bull that had been bottle-fed and raised by the family, but according to family members, had become more aggressive recently. The attack was not witnessed, but the man was able to call his wife for assistance on his cell phone before he died and told her he had been attacked. According to the state medical examiner's autopsy report, he died of blunt force injuries to the chest.

Caution to Female EMR's



Cattle Farming

Treatment modalities for Cattle Farming Injuries:

- 1) Scene Safety
- 2) Scene Safety - Designate a Safety Officer that is constantly surveying the scene, as it can rapidly change. (If you have enough personnel.)
- 3) Locate someone familiar with the animals, if possible, and who may have witnessed the incident
- 4) Basic Life Support!!
- 5) Advanced Life Support anything that requires immediate attention!
- 6) Air Support for transport, if necessary.

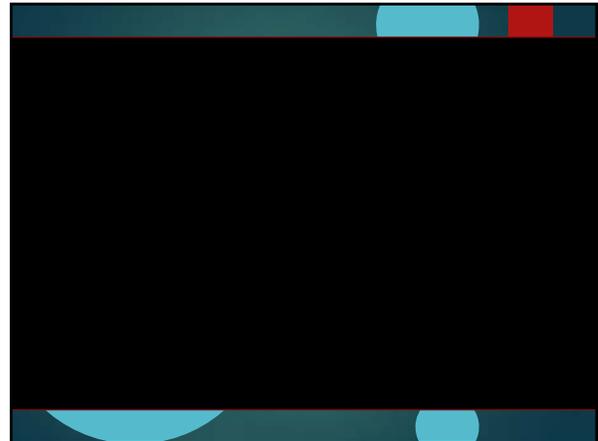
Cattle Farming

ALWAYS keep in mind that most cattle farmers will try to down play their injuries as only minor, however, these injuries are quite often life threatening.

ALWAYS try to encourage transport by ambulance to a trauma center!

Farmer: Not Your Average Patient

- ▶ Underlying Medical Conditions That Have Gone Untreated – Possible Complications
- ▶ Plays Off Injuries as Not Severe
- ▶ High Pain Tolerance
- ▶ Will Not Want Treatment Due to Costs or Requests Minimal Treatment as They Cannot Afford Time Off
- ▶ Who is going to take care of the farm?
- ▶ Contamination Leading to Infections and/or Sepsis
 - ▶ Diesel, Grease, Oil, Hydraulic Fluid, Manure



Horse Farming



Horse

- ▶ Horses fall in line with a lot of the same situations as cattle. Just like cattle, they are large animals and tend to bring some major injuries to those who are involved with them.
- ▶ A horse kick is equivalent to the impact of a vehicle operating at 20 mph OR 1,500-2,000 PSI.
- ▶ ALWAYS treat ANY animal as if it is wild, regardless of the situation you may find. Just because it has a saddle on it, doesn't mean anything!!

Horse Farming

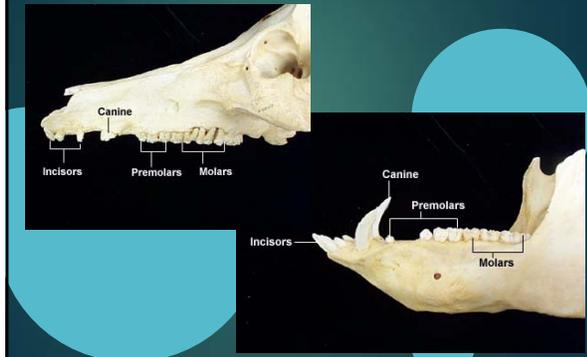
NOTE: Horses have a full set of teeth!!!



Hog Farming

- ▶ Once again, all animals should be treated as wild!
- ▶ Hogs have razor sharp teeth and a low center of gravity. They will take you off your feet and chew and cut extremities as well as anything they can make contact with.

Hog Farming



Hog Farming

- ▶ Hog bites are often severe with a high incidence of infection that is often polymicrobial with organisms including *Staphylococcus* and *Streptococcus* spp. (including *Streptococcus suis*), *Haemophilus Influenzae*, *Pasteurella*, *Actinobacillus* and *Flavobacterium* species.

Animal Farming Safety

- ▶ Avoid quick movements and loud noises when working around animals.
- ▶ Be aware of animal behavioral characteristics.
- ▶ Movement in an animal's blind spots may startle it.
- ▶ Animal pens should include person-gates to allow for a quick escape.
- ▶ Always maintain an escape route when working with animals in close quarters, such as chutes and stalls.
- ▶ Use corral designs that facilitate the safe movement of animals.

Commercial Poultry Farming



Commercial Poultry Farming

- This is a continuously growing industry in Midwest.
- At any point, you can find more than 30,000 chickens/turkeys in these houses.
- Many different chemicals are used in these houses while the poultry is present as well as not present.

Commercial Poultry Farming

- Along with the Hazardous Chemicals, there are many different mechanical and machinery pieces used in these buildings.
- In most situations, when poultry is present, you will not be allowed into the buildings. The patients will be delivered to you, if any way possible.

Commercial Poultry Farming

Some safety risks that you need to be aware of:

- 1) Inhalation Injuries to the Rescuers
- 2) Explosion
- 3) Collapse
- 4) Animals

Farming Equipment

▶ Many different types of equipment are used on the animal farms including, but not limited to, the following:

- ▶ Tractor
- ▶ Bush Hog
- ▶ Hay Equipment
- ▶ Seeders
- ▶ Spreaders
- ▶ Combines
- ▶ Chain Saw

Farming Equipment

- Augers: Deserve their own special page!!
- You will find these used in many different aspects and many different styles that are not recommended by manufacturer. Especially standing on them to assist them with weight while trying to drill in heavy rock areas!

Auger Injuries



Equipment

Most of the equipment used in this type of farming has many working parts that can destroy a human life in a matter of a second. Many are very sharp and operate at a high speed, plus they sling different materials from their working parts.

Cab Tractors



Cab Tractors

- ▶ Weight is always a challenge with any tractor. Locally, most tractors are not only heavy when newly purchased, yet most add liquid to the tires as well as balancing weights or front end loaders.
- ▶ Many different injuries can occur involving tractors without the addition of accessories.

Cab Tractors

Common Injuries Involved with Cab Tractors:

- Rollover
- Glass Breaking Injuries
- Run Over
- Crushing
- Burns

Open Station Tractors



Open Station Tractors

- ▶ These tractors are the most dangerous of the tractor family with many dangers of work related injuries.
- ▶ There are several safety features added to the open station tractor yet most local farmers remove the largest portion of these safety devices in order to make them more practical for 'on the farm' work.



Open Station Tractors

- ▶ The most effective way to prevent tractor overturn deaths is the use of a Roll-Over Protective Structure (ROPS). In 2012, only 59% of tractors used on farms in the US were equipped with ROPS. If ROPS were placed on all tractors used on US farms manufactured since the mid-1960's, the prevalence of ROPS-equipped tractors could be increased to over 80%.



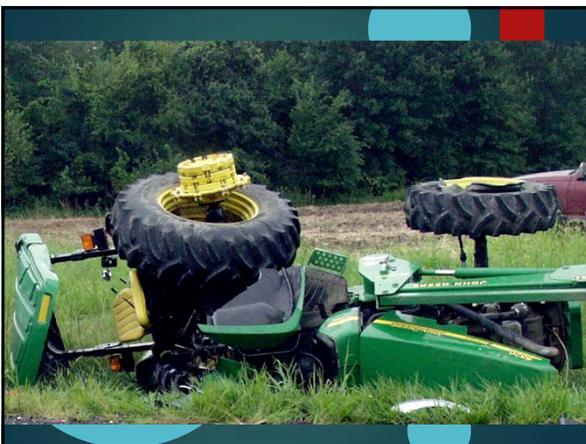
2005 — A man was crushed when the tractor he was operating with a full load of rocks in the front-end loader overturned. The older tractor with a tricycle front axle was not equipped with a ROPS and did not have counterweights installed. With the bucket raised to nearly hood height, the operator drove it forward at a slight upward angle on an uneven slope causing the tractor to suddenly overturn.

Overtured Tractor Extrication

- ▶ Overtured tractors present many challenges to the rescuers as well as those surrounding the incident.
- ▶ It only takes a 27 degree incline to overturn any tractor on its side.
- ▶ ALWAYS approach the overtured tractor with caution and expect a LONG extrication time.

Overtured Tractor Extrication

- In an overturn, if your patient has not been thrown free, you usually will find them entrapped in the area of the rear tires. This extrication is much different than any other process we have approached.
- This will always be a slow steady process with many hands working to free the patient.



Overtured Tractor Extrication





Special Needs for Extrication

The equipment needed for tractor extrication:

- 1) Chains
- 2) Come A Longs
- 3) Cribbing (at least 2 full trees)
- 4) Air Bags
- 5) Consider MAST
- 6) Sterile water for irrigation

Extrication Patient Care

- As stated previously, usually extrication is quite lengthy. Fluid challenge is a MUST with entrapment.
- Expect a lot of fractures and burns as well as chemical burns to your patient.
- Prepare for a hike in to your patient and if possible, bring as much equipment as possible.

Overtured Tractor Don'ts

With some one entrapped under an overturned tractor, do not:

- 1) Assume Anything
- 2) Forget YOUR Safety
- 3) Pull on the Patient
- 4) Try lifting the tractor with another tractor
- 5) Try lifting the tractor with anything
- 6) Think that you can remove the tractor by yourself!!

Overtured Tractor Patients

When a piece of heavy machinery is lying on some one, you have to remember that the blood is being shunted to the area that is entrapped. It has to be a SLOW process of removing the equipment in order to allow the return of blood flow to resume to the patient without a sudden rush of blood from the heart.

Overtured Tractor Patients

Some of the most common injuries associated with an overturned tractor are:

- 1) Fractures
- 2) Burns
- 3) Internal Bleeding
- 4) External Bleeding
- 5) Amputations
- 6) Death

Farming and the ATV

Most farms today use the ATV in many different aspects. In many cases, the ATV is used in ways the manufacturers never expected them to be used.

Significant injuries can and will occur with the ATV on the farm.

I can assure you that 99% of the farmers today never wear protection while using these pieces of equipment.

ATV Injuries

With the ATV's on the farms today, the following are some of the most significant injuries you will find:

- 1) Fractures
- 2) Internal Bleeding
- 3) External Bleeding
- 4) Head Injuries
- 5) Crushing Injuries



UTV's



Hydraulic Injuries



Hydraulic Injuries

Do NOT cut hydraulic lines to relieve pressure!



Hydraulic Injuries



Power Take Off Injuries

- With all attachments to tractors, there is usually a PTO.
- Federal Regulations have made it mandatory that all tractors have some type of protection around the PTO.
- This is one of the first things removed by most farmers.

Power Take Off Injuries Disentanglement

- ▶ There are many different methods to remove someone from the PTO. The following is the recommended procedure from the US Department of Agriculture.
- ▶ Disconnect the PTO shaft from the rest of the tractor, and turn the shaft counterclockwise to unwrap the tightly wrapped cloth and tissue that may be around the shaft. This material will not slip off the shaft after the PTO shaft is disconnected, but must be unwrapped.



Power Take Off Injuries

- The smallest thread or lock of hair can cause entanglement in a PTO.
- Common Injuries due to a PTO:
 - 1) Multiple Fractures
 - 2) Multiple Lacerations
 - 3) Amputations
 - 4) Significant Spinal Injuries



Power Take Off Treatment

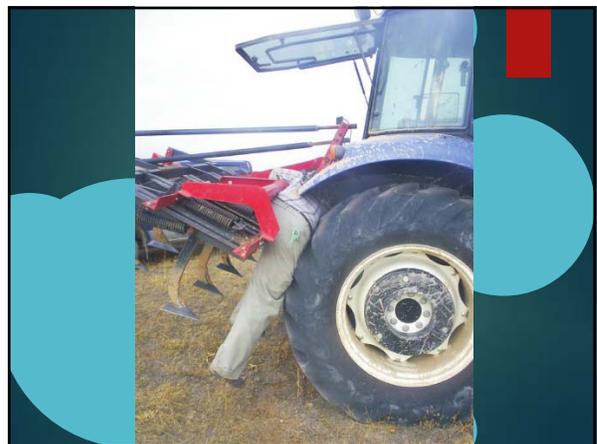
- ▶ Most of the book knowledge you have received will not be of a lot of assistance to you while working on an entanglement.
- ▶ Spinal Immobilization is usually not a possibility while extrication is in process.
- ▶ IV's may have to be started in lower extremities.
- ▶ Remember to bring everything with you to the trauma center!!!

PTO Injury



In the News...

- ▶ BELLEVILLE, Ill. – A suburban St. Louis man was killed after part of his body was pulled into a wood chipper on Friday, authorities said.
- ▶ According to a report, Richard Risinger, 54, of Alton, Illinois, was working at a residence for a tree-trimming service in Belleville, Illinois, on Friday morning around 11:00 a.m. when his clothes got caught on a limb being fed into the chipper. The wood chipper was attached to a truck.
- ▶ Paramedics pronounced Risinger dead at the scene.



Logging – Statistics (2014)

- ▶ 82 Machinery as Primary COD (National)
- ▶ 32 Fatalities in Construction, Logging and Mining Machinery
- ▶ 74 Trees, Logs and Limbs as Primary COD



Chainsaws

- These pieces of equipment account for some of the most frequent injuries on the farm. Most of these injuries result from lack of attention and can be resolved with simple communications with those working around the saw.
- We tend to forget how dangerous this equipment is and how to use it safely.
- Stop, Look, and Saw!!

Chainsaw Injuries

Over a 5 Year Period:

- 115,895 Chainsaw Related Injuries
- Majority of Patients Were Ages 30-59
- 95% Were Males

Injuries

- 81% Lacerations
- 29% Hand or Fingers
- 18% Knee
- 12.5% Lower Leg
- 11% Upper Leg



Commodity Farming

With Commodity farming, you will encounter a lot of the same injuries with the equipment that you will find with cattle farming. The difference between the two is usually the size of the equipment being used.

Commodity Farming



Commodity Farming



Commodity Farming

Some of the most frequent injuries and incidents involved with these processes will involve some type of hazardous materials, from many different pesticides and herbicides to different types of fuel and oils that are used for their equipment.

Commodity Farming

- ▶ Many different items are used in the treatment of the chemically covered patient, but as always, if you are not familiar with the chemical and its treatment, ASK!
- ▶ Mega doses of Atropine should be kept handy in these areas for organophosphate poisoning plus large amounts of sterile water.

Pesticide Exposure

- ▶ Today, farm workers are exposed to “non-persistent” pesticides which are metabolized by the body within days.
- ▶ They may enter the body through ingestion and inhalation, but they are primarily absorbed through the skin.

Pesticide Exposure

Farm workers frequently encounter pesticides through direct contact with the chemicals, contact with pesticide residue on treated crops or equipment, and drift of pesticides into untreated areas.

Pesticide Exposure

- ▶ The Environmental Protection Agency estimates that 10,000-20,000 physician-diagnosed pesticide poisonings occur each year among the approximately 2 million U.S. agricultural workers.
- ▶ Approximately 1.1 billion pounds of pesticides are used annually in the U.S.

Hazardous Materials

- Just a friendly reminder to never enter your ambulance until your patient has been completely decontaminated from the chemical, which includes clothing.
- Drape your cabinets and squad bench with plastic if possible and always PROTECT YOURSELF before anything else is done.

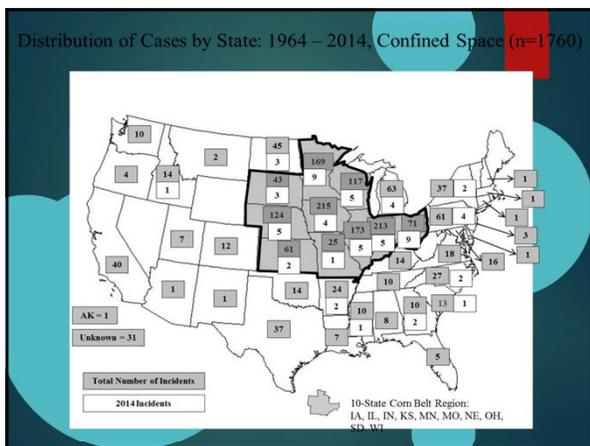
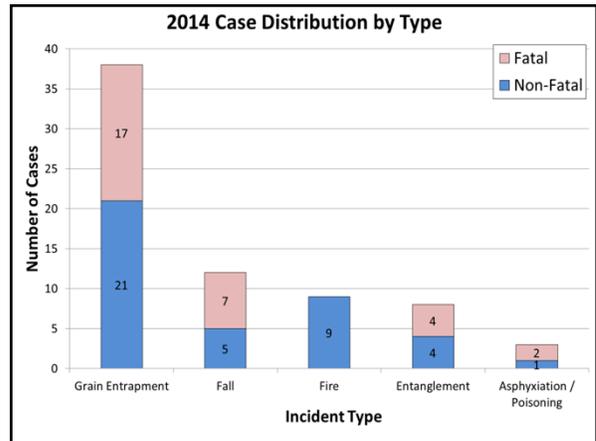
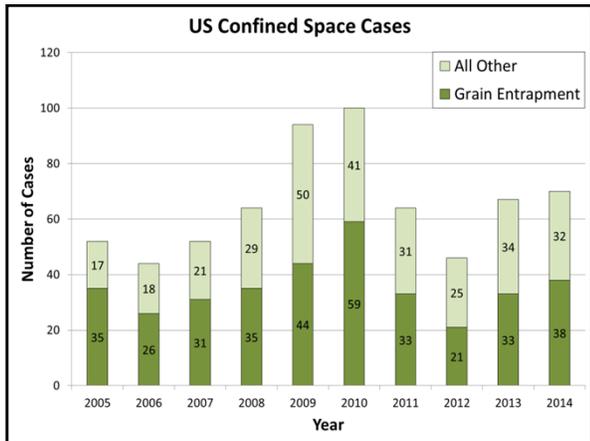
Hazardous Material

- Become very familiar with your resources that can assist you in this situation.
- Most of your farmers are very familiar with treatment modalities involved with their chemicals and can teach us what we need to know to take care of them.



Silos and Grain Storage

- National statistics show that farming is one of the most dangerous occupations in America. Over the past 50 years, more than 900 cases of grain engulfments have been reported—and the fatality rate is 62 percent. With a 10-inch auger, it takes just 25 seconds for a 6-foot person to be completely buried in grain.



Silos and Grain Storage

- These have become one of the deadliest situations to the rescuers in this type of farming. Many rescuers find themselves engulfed in the quicksand like grains and become suffocated themselves.
- Don't become a statistic!! If ropes don't work, call for extrication with air chisels.



July 28, 2010 Mount Carroll, Illinois

- ▶ Over 200 Emergency Workers spent over 13 hours trying to free 3 teenage boys from a grain bin entrapment.
- ▶ Only one survived.



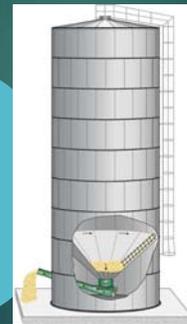
Source: NPR



Source: NPR

"It's just like being shrink-wrapped and it's constantly pushing against you like quicksand," Newcomb says. "If you're trapped in grain up to the waist, it takes over 600 pounds of force plus your body weight to free you from the grain."
~ Dave Newcomb, who teaches grain bin safety and rescue at the Illinois Fire Service Institute.

Silos and Grain Storage



Silos and Grain Storage

- ▶ The injuries associated with storage facilities include:
 - ▶ Crushing Injuries
 - ▶ Amputations
 - ▶ Lacerations
 - ▶ Electrocutions
 - ▶ Suffocations
 - ▶ DEATH!

Infectious Diseases

Do you know where that hand has been?



Infectious Diseases

- ▶ Infectious diseases among the farm worker population are caused by poor sanitation and crowded conditions at work and housing sites, including inadequate washing and drinking water.

Things to Remember

- Every day, 243 agricultural workers suffer lost-work-time injury. Five percent of these injuries result in permanent impairment.
- Farming accidents and injuries present in different manners with different jobs. As with many things we find in emergency services, nothing presents the same in most situations.
- Always maintain scene safety and personal safety while dealing with these situations and expect the unexpected.