

THE COW CONUNDRUM

BY RICK HENNINGFELD

When Landyn and Lena show up to the dairy farm for their class field trip, they quickly realized this trip would be far from what they expected. With a sick cow and the veterinarian on site, Landyn and Lena get a firsthand look at the process of diagnosing a sick animal and getting her healthy again. Help Landyn and Lena as they work with a farmer and veterinarian to find out what is wrong with one of the dairy cows!

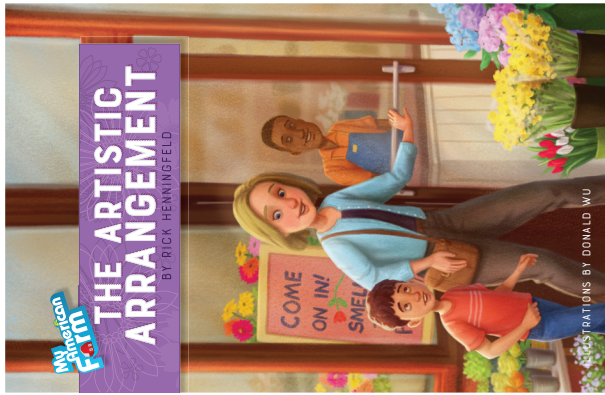


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ILLUSTRATIONS BY DONALD WU





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CHAPTER 9: THAT NIGHT AT DINNER

That night at dinner, my mom asked how the field trip was as she poured me a glass of milk.

I proclaimed, “I want to be a farmer or large animal veterinarian! I saved a cow’s life today...” and I went on to tell my mom all about our exciting trip to the dairy farm.

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Mrs. Boldger responded, "That is great to hear, I was worried."
"So was I," said Farmer Frank. "Thanks to the great work of Dr. Ayla, our veterinarian, and with Landyn and Lena's help, this cow is back to normal! In a few days, she will rejoin the herd."

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To all the people who made for a vibrant childhood on Romari Farms.

For the kids that inspire me with their curiosity each day!

Love you all.

R.D.H.



CHAPTER 8: BACK TO NORMAL

After Farmer Ron took us through the milking parlor, we returned to the barn where Dr. Ayla was doing the surgery. The cow was standing in the pen eating some hay.

I asked, “Dr. Ayla, is the cow alright?”

“Yeah, we had a successful surgery! I untwisted the cow’s abomasum, or stomach, and she is back eating again. She is on the road to recovery!”

CHAPTER 7: FIXING THE PROBLEM

Dr. Ayla looked at Farmer Frank and said, “We are going to need to do surgery on this cow.”

“Let’s do whatever is needed to get her healed and healthy,” said Farmer Frank.

Then Lena chimed in, “My uncle had surgery on his knee last year, and now he is back to normal.”

“After this surgery, this cow will be back to normal too!” said Dr. Ayla as she headed out of the barn to her truck.

Just then, Farmer Ron, Mrs. Bolder, and all our classmates came into the barn.

“Mrs. Bolder this cow has a twist in her stomach!” I said.

“Close,” said Farmer Frank. “She has what is called a displaced abomasum. Meaning part of her digestive system moved out of its normal place creating a twist, and food cannot move through correctly.”

“Wow!” Mrs. Bolder said. “What does that mean for the cow?”

“Well at the moment, it means she needs immediate surgery,” said Dr. Ayla as she walked back into the barn and began scrubbing the side of the cow with something that looked like soap.

Farmer Ron said, “Alright, class, let’s go check out where the cows get milked! We will come back and check on this cow before you leave.”

Lena and I wanted to see how the cows were milked, so we asked Dr. Ayla if she needed our help anymore and she said, “I’ve got this now that you helped me figure out what was wrong. Go check out the milking parlor!”

BOOK TITLE VOCABULARY:

COW [noun]: mature female cattle that has given birth to at least one baby, called a calf

CONUNDRUM [noun]: a hard problem with many joined parts

HIGHLIGHTED CAREERS:

VETERINARIAN: A medical doctor for animals

DAIRY FARMER: A person who cares for the daily needs of dairy cattle

CHAPTER 1: THE DAIRY FARM FIELD TRIP

My name is Landyn, and today I am really excited for school because it's a field trip day! Mrs. Boldger told us we are going to a dairy farm. I have never been to one of those. We are going to see lots of cows and learn about how the milk we have with our snack each day is produced.

Loading the bus for the field trip, I asked Mrs. Boldger, "What are we going to do at the farm?"

"We'll have to see what Farmer Frank has planned for us," replied Mrs. Boldger. "I am sure we will see lots of animals, Landyn." Mrs. Boldger knew I liked animals!

CHAPTER 6: DIAGNOSIS... A FANCY WAY TO SAY, "IDENTIFYING THE PROBLEM"

"Ok, I think I have this figured out. Let's check our data and make sure we are right," said Dr. Ayla. "Landyn, can I see the clipboard?"

I handed it to Dr. Ayla, and she said, "Take a look at this: recently gave birth, not eating well, decreased milk production, ketones in milk, loud ping on left side. This cow has a displaced abomasum!"

"That's what I thought too," said Farmer Frank.

"What does that mean?" I asked.

Dr. Ayla explained, "A part of the cow's stomach gets twisted cutting off movement of any food through its digestive system. Think of it like a kink or twist in a hose. When the hose kinks, water stops moving though. But in the case of this cow, a part of her stomach twisted and food stopped moving through her digestive system. We need to fix this so she can start eating and digesting again!" said Dr. Ayla.

"Wait, so she can't eat?" said Lena.

"It's not that she can't eat; she does not want to. There is nowhere for the food to go because it cannot move through her digestive system when part of it is twisted," said Farmer Frank.

“Yeah!” said Dr. Ayla. “This powder turns purple when there are ketones in milk. Ketones are produced in animals, and humans, when an unusual amount of fat is being broken down by the animal to create its energy to live.”

Lena and I both looked at Dr. Ayla with a blank stare.

Farmer Frank said, “Have either of you ever heard of the Keto diet?”

“Yeah, my parents talk about that. I think they are doing it!” Lena said.

“That diet works in a similar way, except as humans we are trying to burn extra fat. My cows do not have a lot of extra fat, so if this shows up, something is wrong with the cow’s digestive system,” said Farmer Frank.

“Absolutely,” said Dr. Ayla. “Landyn, can you write, ‘positive ketone test’ somewhere on the page?”



CHAPTER 2: A CHANGE OF PLANS

We got off the bus and Farmer Frank was nowhere to be found. We headed inside the barn and saw Farmer Frank in a pen with a large cow and another person.

“Oh, hi everyone! Come on over! I’d like you to meet our veterinarian.”

“Hi, I’m Dr. Ayla,” said the veterinarian who was holding onto a clipboard and had one of those things I’ve seen in doctor tv shows hanging around her neck.

Farmer Frank began, "Well, today is not going as planned, but we are still going to do your field trip. It will just be a little different than we thought. Dr. Ayla just got here, and we need to diagnose, or figure out, what is wrong with this cow. Who would be interested in helping Dr. Ayla?"

My hand shot straight up and so did my friend, Lena's. Everyone else looked at Mrs. Boldger kind of unsure what to do.

"Okay," said Farmer Frank. "Mrs. Boldger, would it be okay if these two stayed with us, and I will have my brother Farmer Ron give you and the class the normal tour?"

As Farmer Ron walked up to the class, Mrs. Boldger said, "Landyn and Lena are the class animal lovers; I think they will enjoy helping you!"

"Yes!" Lena and I exclaimed as the class walked away for their tour.

some specific sounds to inform me on what is going on inside the animal," replied Dr. Ayla.

Dr. Ayla began moving the stethoscope along the side of the cow with one hand and tapping the cow just under the stethoscope with the other. She did this to both sides of the cow.

"Mmmm-hhhh, that was what I was thinking. Landyn, can you write, 'sharp ping left side' on the bottom of the paper on the clipboard?"

"I got it," I responded.

Dr. Ayla removed the stethoscope from her ears and put it back around her neck.

"Okay, let's do a few more tests," she said.

Dr. Ayla went out to her truck and came in with something that looked like a tool box. She opened it and pulled out a thermometer.

"You both probably know what this is."

Lena and I both answered, "A thermometer!"

"That's right!" said Dr. Ayla. "Landyn, please write down, '99 degrees – slightly low' in the box that says, 'Temperature.'"

"Got it," I responded.

"Now, one more test," said Dr. Ayla as she pulled out a small cup and placed some white powder in it. "Lena, can you help me squirt some milk in this cup?"

"How do I do that?" asked Lena.

"Oh, that's easy," said Dr. Ayla. "Come here and I will show you."

Dr. Ayla showed Lena how to squeeze milk from the cow, and Dr. Ayla caught the milk in the cup.

"Landyn, what color do you see in the cup?" asked Dr. Ayla.

"The powder turned purple!" I exclaimed.



CHAPTER 3: WHAT'S A VETERINARIAN?

“Alright, why don’t you come on in, and we will start to figure this out,” said Dr. Ayla.

Lena asked the doctor, “If you are here, who is taking care of all the sick people at your doctor’s office?”

Dr. Ayla chuckled and said, “I’m not that kind of doctor. I’m an animal doctor. All my patients are animals. I’m what is called a large animal veterinarian.”

“So why are you called a doctor?” I asked.

“Because I am trained in medical information, similar to a human doctor, but my knowledge is specific to large animals,” answered Dr. Ayla.

That sounded legit, so I figured let’s get to it. “What’s up with this cow?” I asked.

“That is what I am here to find out,” said Dr. Ayla as she turned away from looking at the cow and looked at us. “How about you two help me do that?”

CHAPTER 5: COLLECTING DATA

Dr. Ayla handed me her clipboard and pulled the thing off her neck putting the ends in her ears.

I asked, “What is that? I see it on tv shows all the time when doctors are checking their patients.”

“This is a stethoscope. It helps me hear inside an animal,” said Dr. Ayla.

“What are you listening for?” asked Lena.

“If this is what I am thinking, I can use my stethoscope to hear

CHAPTER 4: ASKING QUESTIONS

Dr. Ayla continued, “Unlike humans, I cannot just ask the cow what is wrong or how it feels, so I need to do a lot of investigating to get the information I need to tell Farmer Frank what is wrong with his animal. Whenever I show up at any farm, the first thing I do is ask the farmer questions about what they have noticed.”

Without hesitation, Lena looked at Farmer Frank and asked, “What did you notice about this cow that made you call Dr. Ayla, the veterinarian?” She said “veterinarian” all proud now that she knew what it meant!

Farmer Frank started, “The first symptom I noticed...”

“What’s a symptom?” I blurted out.

Dr. Ayla said, “A symptom is something we can see that is unusual. Kind of like if you are sick and your mom puts her hand on your forehead to see if it is hot. Your forehead being hot is a symptom, or a sign, of you being sick.”

“I get it,” I responded.

Farmer Frank continued to speak, and Dr. Ayla wrote notes on her clipboard, “The first symptom is that the cow was not eating how she should.”

“How do you keep track of what this one cow eats out of all the cows you have?” Lena asked.

Farmer Frank pointed at the collar the cow was wearing around its neck and said, “This is what actually keeps track of how much it eats. This collar collects all kinds of data which is sent to a computer over our farms’ Wi-Fi.”

“Whoa, your farm has Wi-Fi?” I said.

“Sure does!” said Farmer Frank. He continued, “The computer program is set to analyze the data and send me notifications if something is wrong. When I milked this cow last night, I noticed she seemed agitated. This morning I had a notification on my phone that she was not eating well.”

Farmer Frank showed us a graph on his phone. “That is cool!” I said.

Lena jumped in, “Last night she was agitated, she is not eating well, anything else?”

Dr. Ayla smiled and said, “Great question Lena.”

“Yes, this morning when I milked her, she did not milk a normal amount. She produced very little milk,” said Farmer Frank as he looked at Dr. Ayla. Then he said, “You should also know she had her first calf two weeks ago.” Farmer Frank paused to think a bit and said, “That is about all I can think of, but I knew there was definitely something wrong and that is when I called Dr. Ayla.”