LOOKING TO THE FUTURE
Animal health’s contribution to society
Looking ahead...

A vital contributor to both animal and human health, now and into the future, HealthforAnimals is the voice of the animal medicines industry globally. We provide value to society through ensuring healthy food-producing animals and sustaining their productivity. We protect the public from disease and keep pets healthy. We make food supplies safer and more secure whilst maintaining an efficient, environmentally sustainable production. Better animal health forms an integral part of animal welfare and it also means better public health. With three out of four emerging diseases coming to humans through animals, this reality makes dependable, quality veterinary medicines a necessity to prevent life-threatening disease in people.

Healthier animals, means healthier people and leads to a healthier planet – this is what we call One Health. Our vision is to create an understanding of the benefits of animal health products and how vital they are to preventing disease not only in animals but also in people, and to securing a sustainable food supply. How global agriculture will maintain and indeed optimise productivity with fewer resources is intrinsically linked to innovative solutions for animal health, and that is what we do best.

Executive Director,  
Carel du Marchie Sarvaas  
President,  
George Heidgerken
EMERGING DISEASES AND ZOONOSES

Issue

Emerging diseases are a growing issue for society. Increasing globalisation, world trade, wider travel, climate change. These advances in the way we live mean that the impact of emerging diseases and zoonoses on animal health, businesses, economies, tourism, trade and public health has grown exponentially. Examples have been Bluetongue and African Swine Fever that have hit trade and economies badly in the past and have had a great impact on animal health. The problem is that diseases know no boundaries.

When it concerns zoonotic diseases that emerge/re-emerge, such as Avian Influenza the issue is compounded in that each time a different strain of influenza appears (just like human influenza). Being prepared and ready to deal with a new outbreak is anything but obvious. The animal health industry can work on solutions and have vaccines at the ready – this is where vaccine banks are of increasing importance – but if the strains mutate and are different, this requires a different vaccine each time meaning additional R&D expenses. The current regulatory processes across the world do not always facilitate a fast approval process for such vaccines when they are needed most urgently.

Approximately 75% of recently emerging animal diseases are zoonotic. They can be disabling or even fatal for people.

Our contribution

Solutions do exist and measures can be taken to prevent the occurrence and spread of disease. Treatments and vaccines created by developers of veterinary medicine have made huge strides in combating some of the most damaging diseases. Rabies is an excellent example of this. The FAO and OIE have made it their goal to eradicate Rabies and there is no reason why this disease should not already be eradicated. Because it is possible. Theoretically. We have a vaccine. All the tools are there but 70,000 people die every year across the world of Rabies, mostly children, and mostly in South-East Asia, Latin America, Africa and in some small parts of Eastern Europe. Infrastructure, politics, cultural aspects play a role in why Rabies has not yet been eradicated but organisations such as the Global Alliance for Rabies Control do amazing work in raising awareness of this deadly disease and how it can be prevented to protect animals and people alike.

“70,000 people die from Rabies every year across the world. We have a vaccine to prevent the spread of Rabies.”
CASE STUDY:
Meet Sebastião and Tito

Sebastião is seven. He lives in São Paulo, Brazil with his parents and two sisters. Sebastião’s household has another important member of the family: the family’s six year old dog, Tito. Sebastião loves Tito dearly and helps out with keeping him fed and exercised with toys. As Tito is an adventurous dog who loves the outdoors, Sebastião and his family make sure he is protected against the health risks from his active life, and ultimately this protects the family he lives with. Tito has regular visits to a veterinarian who ensures he is healthy and free from infections and parasites he could pick up outdoors. This might seem a small matter, but it’s desperately important for both Tito and Sebastião. Some of the risks Tito is exposed to outdoors are reasonably benign irritants like fleas (although fleas can carry and spread serious diseases), others are deadly serious, like Rabies.

Rabies is a viral disease that affects the nervous system of mammals. It’s one of the most widely known and dangerous examples of a zoonosis, a disease that can be passed from animals to humans and vice-versa. The Rabies virus is present in saliva, and is most commonly passed through bites or through wounds of the skin and mucous membranes. Since the disease causes animals to behave aggressively and erratically, the risk of transmission between animals and humans that come in contact with them is high. Rabies not only has deadly consequences for animals, but for humans in most cases as well, unless early treatment is available. If Tito were to pick up Rabies outdoors by bites or scratches from a rabid animal, Sebastião would be at serious risk of infection. Of the nearly 70,000 people killed by Rabies each year throughout the world, nearly half are children, who are perhaps less able to recognise the first signals of aggression or the changes in behaviour of familiar animals.

In a world without veterinary medicines Rabies would be an exceptionally pressing concern. Animals, even pets would be a constant threat to humans and each other. Pets like Tito would be a real and pressing danger to those in close contact with them.

Luckily, treatments and vaccines created by developers of veterinary medicine have made huge strides in combating this serious disease. In the United States of America (USA) and Canada, before 1960, the majority of Rabies cases reported came from domestic animals, cats or pet dogs like Tito. But immunisation programmes for pets greatly reduced the number of reported cases. Treatment of wild animals such as in the USA foxes, racoons, skunks, coyotes and bats using bait vaccination has proven highly effective and several areas have all but eliminated the disease in wildlife by the treatment of foxes and protection of pets (Switzerland in 1999, France in 2000, Belgium and Luxembourg in 2001, the Czech Republic in 2004). Now, vaccination and proper treatment methods can ensure that both Tito and Sebastião can enjoy a safer, loving and healthy friendship.

Rabies in Asia
Rabies is still a problem in many developing countries. Notably in India, where someone dies from Rabies every twenty-five minutes, bringing the yearly death toll up to over 20,000 victims. Mostly it affects poor people, and a substantial part of them are children. Some authorities are in favour of preventive vaccination in children, but then they can still be bitten by rabid animals – and mutilated as a result. So mass oral vaccination of stray dogs seems to be a good initiative and is applied in some regions. Projects exist where our industry helps with providing local funding, Rabies vaccine and also share expertise with partners to support successful implementation of the projects in villages surrounding Bangalore and Pune, India.
FOOD FOR THE FUTURE

Issue
A population of 9 billion by 2050. 70% more animal-sourced food needed. 20% of global agricultural losses due to animal disease. These numbers paint a picture that has led experts to warn us of an imminent food supply crisis. If we remain on our current course in terms of production and sourcing of food, we’ll need double the Earth’s resources by 2050 to be able to feed 9 billion*. This increase in population is accompanied by economic growth, which sees a trend in higher protein production and consumption. The result is a protein gap: even though dairy productivity has doubled in the past 50 years, it is not keeping pace with the population growth. Globally there is 14% less milk per person than in 1961, whereas the recommended intake of milk is two glasses a day, which at the moment is not being met. Similarly with eggs, we’d need to almost double the current hen population of 6.4 billion [Cady 2013], plus resources that are needed to support them if we’re to meet the projected demands in 2050.

Strategies are needed now to produce more food, sustainably, with fewer resources. Scientists and economists say that innovation is the way forward, as are practices that help farmers produce more food in a sustainable manner and that this is actually 70% of the solution. If through continued innovation in methods for preventing and treating diseases in food-producing animals, this 20% of global production losses due to disease in animals can be eradicated, it will make a huge difference to the amount of food available across the world.

We need double the Earth’s resources by 2050 to feed a population of 9 billion.

Our contribution
By reducing this 20% of agricultural losses due to disease in animals, there would be less sick cows and hens. Some innovations for disease control are already available. They are safe and have been regulated. They just need to be implemented more widely across all countries, regions and socio-economic groups. Through dairy innovation, one cow can increase its average production of milk per day from 2 gallons to 7. This would mean that the gap in the milk supply towards 2050 can be filled and the environmental footprint of milk production can be frozen – all thanks to innovation. Similarly, a hen lays about 184 eggs each year, but in some regions this is 300 thanks to innovation. It means we won’t need those extra 4 billion chickens by 2050.

Innovation in agriculture and especially on-going investments in the development of animal vaccines, medicines and other animal health products, alongside new technologies is crucial. The animal health sector remains at the forefront of innovation and must ensure its ability to invest in R&D and operate in an optimal, safe and sustainable manner.

One story where advances in animal health have made a difference is the eradication of Rinderpest. It is an infectious, viral disease which affects cattle and other cloven-hoofed animals. The death rate during outbreaks is often devastating, wiping out entire populations. It does not affect people in the health-sense, but the loss of a country’s cattle population would result in a severe loss of food resources leading to widespread suffering, starvation and poverty in the affected country. Luckily, Rinderpest was declared eradicated in 2011 – only the second disease ever after Smallpox in people was declared eradicated in 1980.


“By 2050 we will need 70% more animal-sourced food. Innovation in animal health increases production.”
CASE STUDY: How the Rinderpest success story helped Aluna and her family

Aluna is 12 years old, and has been helping out on her family farm in Kenya for as long as she can remember. Her family owns a herd of cows, which provide meat and dairy products that are sold around the country. In order for her family to succeed, they need to maintain a herd that is healthy and productive. While Aluna helps with feeding the cows, her father regularly inspects each one to make sure they are healthy and free of any parasites or infections such as East Coast Fever, *Trypanosomosis* and *ticks*. Although Aluna’s father works with a veterinarian to make regular check-ups on the cattle, it is important that the animals are also vaccinated against diseases – some of which could be capable of killing not only the animal, but the entire herd, as well as those of his neighbours. One of history’s most notorious examples of a devastating animal disease is Rinderpest.

*Rinderpest* is an infectious, viral disease that affects animals like cattle and other cloven-hoofed animals. Its name, taken from German, means ‘cattle-plague’ and it has been a recorded threat to farmers for over 3,000 years. The mortality rate during outbreaks was devastating, often wiping out nearly the entire infected population. Disease symptoms include fever, nasal and eye discharge, and loss of appetite. While the disease does not affect humans directly (though the virus causing it is closely related to the human Measles virus), history is full of examples of instances where people were severely affected when the disease wiped out the vast majority of a country’s cattle, resulting in widespread suffering, starvation and poverty.

In a *World without Veterinary Medicines*, diseases like Rinderpest would run rampant, severely limiting the size and production of cattle and dairy farms. Aluna and her family would be particularly at risk, as warm climates allow diseases to proliferate quickly. Globally, the damage wrought by unchecked diseases would result in widespread starvation, as well as increasing the prevalence of diseases which could directly infect humans.

Luckily for Aluna and her family, this is not the case – and it will not be the case for her children either! Through an unprecedented collaborative effort between governments, scientists, and veterinarians for a widespread vaccination programme coordinated by the *Food and Agriculture Organization* of the United Nations and the *OIE*, Rinderpest was officially declared eliminated in the world in June 2011. Rinderpest is only the second disease ever to be given this status after the eradication of the Smallpox disease in humans in 1980.
ENSURING SAFE FOOD

Issue
When we’re in the supermarket browsing the meat and dairy counters, we don’t really stop and think about what is involved in ensuring the variety of safe, nutritious and fresh food. There’s a whole system behind it that ensures animals are healthy which helps protect the safety of our food supply with the monitoring and inspection of eggs, meat, fish and dairy products.

Salmonella is the most common zoonotic (a disease which can be transferred from humans to animals and vice versa) infection transferred by food. People predominantly get this potentially deadly foodborne disease by eating contaminated food such as eggs, meat, vegetables and fruit. Transmission of Salmonella through contaminated food is thought to cause 85% of human cases.

The reality is that like people animals can get sick and need medicines to ensure their health and welfare. Food produced from animals that are themselves infected can be contaminated and can make us ill.

Healthy animals mean safe food.

Our contribution
The animal health sector works with various organisations to ensure our food from animal origin remains safe. We actively participate in the Codex Alimentarius which uses the theme of ‘safe, good food for everyone’ to explain their international food standards.

In addition to preventing and treating disease in animals to ensure food from them is safe, the animal health sector is highly regulated as to the use of its medicines. The production of all veterinary medicines is strictly regulated by authorities, national/regional governments and bodies and the animal health companies must stick to these regulations. The medicines are licensed which means they must be proven to be safe, high quality and efficacious against disease in animals. Several safety factors are in place to make sure that products of animal origin are safe for the consumer as well. This means that there are no traces of any medicines used in animals that could pose a risk to consumers. Governments carry out regular monitoring to ensure that residues of medicines used do not exceed the maximum residue limits (MRLs) set by authorities.

Looking again at the Salmonella story, farmers, with the help of vets, do routine checks and take measures to reduce the prevalence of Salmonella in chickens. This can be done through vaccination, which is – under certain circumstances – compulsory in the European Union. It is only through these measures at the farm-level and with the help of vaccination tools that we can be more confident about the food we eat.

“85% of human cases of Salmonella are caused by contaminated food. Vaccinating chickens helps prevent Salmonella in both animal and man.”
CASE STUDY: Ensuring safe eggs for Karin

Karin, a seven year old girl from Germany, loves eating scrambled eggs on Sunday mornings with her grandmother, Astrid. Every weekend, they get up early before breakfast and walk to the market to buy fresh eggs from a local farmer, Oliver. Oliver has been selling eggs produced from his flock of chickens for over twenty years and is acutely conscious of ensuring that his products are safe and healthy. One of his main concerns is Salmonellosis, a potentially deadly foodborne disease that is predominantly contracted by humans through the consumption of infected food such as eggs, meat, vegetables and fruit.

Salmonell is the most common zoonotic infection often transferred by food. It was first identified in 1884 by Dr. Daniel E. Salmon, who isolated the bacteria from the intestines of a pig. Almost 80 per cent of human cases today stem from chicken meat and eggs (Salmonella enteritidis) and the gastrointestinal tract of animals (Salmonella typhimurium). Salmonella bacteria residing in untreated water is also known to cause Typhoid fever.

In humans, the disease can cause nausea, vomiting, abdominal cramps and diarrhoea; it can even result in death. In fact, Alexander the Great’s death in 323 BC is said to have been caused by the bacteria. Although in most cases symptoms are temporary and self-limiting, they can sometimes be more severe in young children like Karin and the elderly like Astrid, which is why it is vital for farmers such as Oliver to prevent their poultry and eggs from being infected with Salmonella.

In a world without animal health products, Oliver would not be able to reduce the risks of disease in his food products. With the help of livestock veterinarians to ensure his animals are as healthy as possible, Oliver routinely checks his flocks for Salmonella and takes measures to reduce the prevalence in his chickens. Although no single measure alone can achieve effective Salmonella control, vaccination and prevention (also known as biosecurity) can help to reduce the risk of infection significantly. In some quality assurance programmes the use of Salmonella-vaccines is obligatory. As a matter of fact vaccination is obligatory across the EU under certain circumstances to reduce the prevalence.

Although measures to control infections in animals reduce the risk of Oliver selling contaminated food, it is still important for Astrid and Karin to take measures into their own hands to protect their health by good kitchen and hygiene practices. Once they return home from the market, they scramble the eggs at a high temperature (above 75°C) and wash their hands with soap and hot water after handling them. By taking these precautions, Astrid and Karin are able to enjoy their breakfast without the fear of Salmonella infection.

Preventing Salmonella infection is important at every stage of the food chain; from Oliver’s farm to the end consumer, in this case Astrid and Karin. (See CDC diagram on “prevention from the farm to the table – salmonella”.)
NEW TECHNOLOGIES, VACCINES AND INNOVATION

Issue
Technology has radically changed and enhanced our day to day lives: internet, high speed trains, email, nanotechnology, etc. A similar revolution continues to take place in the medical sector, both human and animal. This is mainly due to the constant emergence of new diseases, or re-emergence of diseases which can mutate and change, or diseases which are currently impossible to vaccinate against. With climate change we are seeing more and more diseases move due to ticks, mosquitoes and flies appearing in countries where they previously were not seen. Disease essentially knows no borders and it is only through new developments in technology and science that we can remain at the ready to control them.

New diseases are constantly emerging and the animal health sector sees this challenge and the important role it plays. If we look at Bluetongue for example, each of the 25 different serotypes of the disease requires a different vaccine. Over the last 15 years, there have been six different Bluetongue serotypes in Europe alone. Avian influenza viruses, to take another example, are estimated to have led to the culling of 200 million birds in Asia alone, with losses of more than 10 billion US dollars for the region's poultry sector.

Diseases are constantly mutating and new diseases are emerging. Cutting-edge research and biotechnology are vital to combat these.

Our contribution
Investing in R&D and ensuring innovation remains at the core of our business is vital. The first use of biotechnology in the medical world is recognised as the first production of human insulin in 1978. Advances in science and technology have come to the fore in the development of new or improved vaccines to prevent and control diseases such as Avian Influenza, Foot and Mouth Disease, Rabies, and Classical Swine Fever.

One of the earliest developments in animal health was the Aujeszky’s disease vaccine. It allowed a successful eradication programme in several European countries. Similarly, Rabies is a success story which affects people and animals. There is a Rabies vaccine which has been highly successful in large parts of Europe. If we look on a global level and see that each year 55,000 people die of Rabies, mostly children, and know this is preventable, you can see how a Rabies vaccine can change lives and societies and know the value of vaccines and new technologies.

The animal health sector holds to the premise that preventing is better than curing, and with this premise vaccination is vital. Vaccines are an essential part of the veterinarian’s toolbox. Through vaccination the vet can improve the natural immunity of the animal by stimulating the response before the disease strikes. It allows farmers to protect entire flocks or herds and it keeps our pets safe and healthy from deadly diseases. In addition it ensures our food safety in that it protects animals from harmful foodborne pathogens, such as Salmonella.

Advances in animal health have or could also benefit human health; the development of a vaccine for dogs against cancerous Melanoma is something that could be looked at from a human health angle.
Seventeen year old Ana helps her grandfather with the running of a small business breeding Dalmatian dogs on their farm in the Dalmatia region of Croatia, from which the animal derives its name. It is Ana’s responsibility to ensure that the dogs and their puppy litters are well cared for and healthy before they are put up for sale. “Prevention is always better than cure,” her grandfather Ivan repeats to her over and over again.

One method of disease prevention is vaccination. Vaccines are a safe and easy way to stimulate a body’s natural defence process to prevent disease and protect animal and human health and welfare.

Ana’s grandfather lived through one of the last massive Smallpox epidemics that occurred in the former Yugoslavia in the 1970s. Less than two decades later, following large scale international vaccination campaigns, the World Health Organisation declared Smallpox to be eradicated – the first disease ever to achieve this status.

The term “vaccine” derives from Edward Jenner’s use of Cowpox (Latin from “vaccia”, meaning “cow”) to inoculate humans to protect against smallpox in 1796. Cowpox was a less serious zoonotic disease related to Smallpox that milkmaids often caught through exposure to infected cows. Jenner noticed that milkmaids who had contracted Cowpox were later immune to Smallpox, and tested out his theory through the world’s first vaccine. Since Jenner’s first discovery, a close proximity between the development of human and veterinary vaccines has existed.

Like humans, when animals get sick, their immune system identifies the harmful virus or bacteria (also known as a pathogen) causing the disease, and creates antibodies to kill the pathogens. Vaccines improve natural immunity by tricking the body into believing it already has a disease without actually making the body sick. A similar principle applies when using antisera to help during infection too. The immune system remembers the pathogen and can then defend the body against any natural exposure to that pathogen in the future.

The basic principle of vaccination is that a small amount of a weakened (live attenuated) or inactivated (killed) organism is introduced into the body. This stimulates the body’s immune system to fight back. The immune system then remembers this organism and as a result can defend the body against any exposure to related organisms in the future. A ‘live’ or ‘attenuated’ vaccine means that the organisms used to make the vaccine have been made harmless. Other vaccines are made of ‘killed’ or ‘inactivated’ organisms – in either case, it means that the organism can elicit an immune response, but cannot cause disease. Vaccines are usually specific for a particular pathogen and disease and only in rare circumstances can a vaccine be produced from other related pathogens, such as in the case of Smallpox that was originally treated by a vaccine related to Cowpox.

Ana’s grandfather is well aware of the importance of vaccinating the cattle on his farm. He works closely with the local veterinarian to make sure that all of his livestock is vaccinated and healthy so that he can protect his family and customers from exposure to zoonotic diseases that can be passed through contact with diseased animals and contaminated food products. His healthy livestock means that his farm remains economically viable and reliable for livestock rearing.

Likewise, Ana must ensure that the breeding Dalmatians are routinely vaccinated so that the puppies can receive antibodies from their mother through their blood system during birth and through their first milk when they are born. It is necessary to boost and supplement these antibodies as the puppies get a little older, to protect against core canine diseases including Rabies, Distemper, Infectious Canine Hepatitis and Leptospirosis.

The local veterinarian is on call to administer the required vaccinations through injection, orally, nasally or via a scratch on the skin depending on the type of vaccine used. To ensure maximum protection, the veterinarian takes care to vaccinate the whole litter simultaneously. Ana must keep track of the dates of vaccinations and share this information when they sell the puppies because some vaccines require a booster shot annually or every few years to ensure that the level of antibody immunity remains high. Older pets need protecting too, as their immunity can decline.

As Ana and her grandfather know first-hand, vaccines are an essential tool in the veterinarian’s toolbox that have profoundly influenced and improved world health. Until Louis Pasteur and Emile Roux developed the first Rabies vaccination in 1885, every Rabies infection resulted in death. Today, vaccines can prevent Rabies in both humans and animals, and vaccination programmes have eliminated this disease in many parts of the world. Vaccination was an essential tool in eradication campaigns against Rinderpest (cattle plague), the second disease ever to be eradicated from the globe as officially declared by the UN’s Food and Agriculture Organisation (FAO) and the World Organisation for Animal Health (OIE) in 2011. While at present vaccines are not available for all infections and new diseases are constantly emerging, modern research into vaccines holds great promise and opportunity for the future.
THE IMPORTANCE OF PETS

Issue

Pets are part of our everyday lives and part of our families. They provide us with companionship but also with emotional support, reduce our stress levels, sense of loneliness and help us to increase our social activities and add to a child’s self-esteem and positive emotional development. In return, as responsible pet owners we need to ensure that our animals are kept healthy, fit, get nutritious food, love and affection and proper housing and care.

Pets help out in many societal ways as well, especially dogs. Their sense of smell and the fact they can be easily trained have led to dogs being used to help people in an extraordinarily diverse range of activities: therapy dogs are taken to nursing homes, hospitals, care centres for the disabled to engage with patients to help their quality of life by making them more sociable and encourage interaction and activities. Rescue dogs have been trained to take on a number of tasks in searching for survivors after natural disasters such as earthquakes, tsunamis, fires, avalanches, etc. They assist firemen and policemen in tracking people and they rescue thousands of people across the world every year. Medical alert and detection dogs help in detecting cancer, but also have been trained to help people with severe forms of Diabetes, Narcolepsy, Addison’s Disease, and Epilepsy to ensure they get medical attention when necessary. These dogs save people’s lives on a daily basis. And then there are the assistance dogs we see regularly when we are out and about: they are trained to help physically impaired people (the disabled, blind and deaf people) in their everyday needs and perform a number of tasks to facilitate people’s lives from opening and closing doors to helping people undress, to emptying washing machines.

More and more people have pets who share our homes and daily lives. Like us, our pets live longer as well. We need new and improved ways to care for them as our pets are living longer than in the past.

Our contribution

One of our main responsibilities towards our pets is ensuring their health and welfare. When a pet is sick, it needs medical attention, and even on a yearly basis a pet should have a check-up by a veterinarian. Like us, our pets can get sick and need medicines too. Preventing and curing disease not only keeps them healthy, but it keeps us healthy too. The animal health sector is at the forefront of pet healthcare and is continuously developing new products to ensure our pets lead comfortable and healthy lives. This includes vaccination, deworming, flea and tick treatments, dental care and skincare. When a family decides to welcome a cat or dog into their home, it is important to have them checked over by a vet and ensure they are vaccinated against serious diseases such as Rabies, Hepatitis, Parvovirus or Leptospirosis in dogs or Chlamydiosis, Cat Flu, and Feline Leukaemia in cats. Anti-parasitics are vital if you want to share your home with a cat or a dog – ensuring they are free of fleas, worms, ticks will not only ensure your pet is healthy, it will mean you are kept healthy too and your house is kept free of these parasites.

“There are 223 million dogs and 220 million cats worldwide, excluding strays”
CASE STUDY
See how Jason helps protect his horse against parasites

In Australia, Jason and his family own a horse called "Lightning", and he takes the responsibility of caring for the horse very seriously. Occasionally, while giving him a good brush down following a ride, he will find a small unwelcome traveller that has also managed to hitch a ride on his horse – a tick! With an active lifestyle that involves trotting through fields and alongside bushes, it is not uncommon for this to occur, so Jason knows what to do. While the tick can be manually removed, Jason's vet made him aware that ticks can transfer serious diseases and recommends to protect the horse against ticks with for example a repellent spray.

Parasites are a common concern for animals and the people who take care of them. While many are harmless, some can present serious threats to animals and people. The parasite can cause disease itself (e.g., worms causing scarring and malnutrition, blood parasites causing anaemia) or parasite-borne diseases such as Lyme disease, Rocky Mountain Spotted Fever and Meningoencephalitis can be transmitted between animals and people (these diseases are called *zoonoses*).

In general, there are two types of parasites: endoparasites and ectoparasites. Endoparasites live inside the host (i.e., inside the animal that carries – or 'hosts' – it), affecting the gastrointestinal tract, liver, or other internal organs. The most common endoparasites of companion animals are worms. Ectoparasites live on the host, affecting skin, fur, or ears. The most obvious ectoparasites are fleas and ticks.

**Fleas**
One of the most notorious ectoparasites – and the bane of dog and cat owners around the world – is the flea. Fleas live off blood from their hosts and the intake of a female flea can be equivalent to more than 15 times its body weight. When receiving regular meals this way, fleas can survive on a host for up to 140 days. Several thousands of eggs are laid by female fleas and dropped wherever the host animal goes. The warm temperature and humidity in homes provide a favourable microclimate for multiple flea life cycles. Flea infestation can disrupt the general well-being of all animals, causing itchiness, redness, hair loss, and in certain cases severe skin infections. Once fleas have settled down in your home, it too will need to be included in the flea eradication programme. Fleas may also transmit tapeworms to your pet and if pet owners are not careful they may unfortunately be infected from their pet with the same tapeworm.

**Ticks**
Larger and easier to detect than fleas, but by no means less bothersome, are ticks. Most ticks seek hosts by crawling up the stems of grass or perch on the edges of leaves on the ground in a typical posture with the front legs extended (a behaviour called questing). Others are so-called nest parasites, questing in sheltered environments. As soon as a suitable host brushes against their extended front legs, the questing tick climbs onto its body, holds on tight, bores into the skin and begins to draw tissue fluids such as blood. A tick bite not only causes a localised infection, it can also serve as the portal through which serious diseases are transmitted. These can have a severe impact on the animal’s well-being. Ticks can transmit disease agents such as viruses, bacteria, and protozoa to not only animals but also to people.

**Worms**
Far harder to detect, and in many ways more dangerous are endoparasites, the most common of which are worms. Worm infestations rank among the most critical of parasitic infection in cats, dogs, and horses but also in livestock if not treated.

Worms can be very difficult to detect. The indications of disease depend on the defences of the affected animal and the extent of the infestation. They range from signs of general ill-health such as a dull coat and occasional vomiting to a weakened immune system due to massive loss of blood resulting in anaemia, intestinal obstruction, reduction of weight gain (livestock) and even death. Some of these worms can even be transmitted to people from pets if the infection is not checked.

Because the consequences of worm infestation can be so serious, it is easy to understand why veterinarians recommend that cats, dogs, and horses be dewormed regularly.

**Advances in treatment**
Broad-spectrum anthelmintics have been developed that are effective against parasitic worm infections in people and animals. Routinely applied, these products expel worms by either stunning or killing them. In the case of a high risk of tapeworms, extra special treatment may occasionally be necessary as these parasites grow much more quickly. Regular check-ups and preventative action and guidelines for owners are vital to avoid these kinds of infections and infestations.

In a world without animal health products, our pets and livestock animals would be at the total mercy of these invasive pests, causing irritation, pain and death. Due to the huge amounts of potential parasites that animals might be carrying, there is a risk that people may become infected or infested from affected animals and this could be severe. Thankfully, we live in a world where these pests can be detected and controlled, making for altogether more pleasant interactions between animals and peoples – like Jason and his horse.
Imagining a world without antibiotics is hard to do. Before antibiotics a trivial injury could lead to serious infections, often uncontrollable. People lived in fear of infectious diseases that could not be treated then. Most of these are now controllable. Thanks to antibiotics in part. The same has been the case for animal health. Like us, our pets are living longer and healthier lives and our livestock is raised a lot more successfully through our ability to control infectious diseases.

Farmers and pet owners do their best to prevent disease occurring in their animals by keeping their animals well fed, physically comfortable, ensuring good husbandry for farm animals and by following careful hygiene practices. Giving all the necessary vaccinations will hold many problems in check but because bacteria and other microbes are found everywhere in the environment it is virtually impossible to prevent animals coming into contact with organisms that can cause disease.

20% of global animal production is lost due to disease. We need new medicines now.

Our contribution
Antibiotics are a vital part of the veterinarian’s toolkit. They are necessary to fight bacterial infections in animals, farming animals and pets alike. From a welfare and an ethical point of view, it is necessary to preserve these antibiotics: inflammatory conditions like Mastitis and lameness are extremely painful for the animal concerned and farmers have a moral duty to avoid suffering.

In addition, about 40% of the global spend on veterinary medicines is for pets. Antibiotics help control a range of common and often painful bacterial conditions in dogs and cats and other domestic pets such as ear, skin, respiratory and bladder infections, some of which can also be dangerous to people if not treated.

In order to ensure their future use the animal health sector across the world firmly advocates the responsible use of antibiotics, as for all veterinary medicines. Effective and targeted use of antibiotics will be an essential part of any strategy to turn back the tide of infectious disease and resistance. Within this larger context, the role of other treatment options such as the use of vaccines in preventing disease is important, as is good biosecurity, appropriate housing, good nutrition, and herd health programmes at the farm-level. All those engaged in animal health have a responsibility to ensure proper use of antibiotics, a commitment to transparency and monitoring of use, and to promote education on what responsible use of antibiotics means, in order to safeguard the health and welfare of animals, and ultimately public health and food safety.
Jorge’s responsible use of antibiotics helps keep his herd healthy

Jorge, a sixteen year old aspiring veterinarian in Mexico, has helped on the family farm for as long as he can remember. The farm, which has been supplying locally sourced, high quality and affordable meat to shops and restaurants in the Mexico City area for generations, is integral to the family’s livelihood. Jorge’s duties range from cleaning and feeding the animals to accompanying his father to cattle markets to buy new calves for the farm. One of his most important responsibilities is to look out for signs of disease. If a contagious bacterial infection was to spread amongst the herd, such as Bovine Respiratory Disease (BRD), this could have serious implications for his family’s business, as well as the butchers and restaurants that rely on the farm for supplies.

Bovine Respiratory Disease (BRD), also known as shipping fever or pneumonia, is an infectious disease that often affects young cattle. Over the years, Jorge has developed a close relationship with the local veterinarian who has taught him how to look out for the initial signs of BRD, which include depression, gaunt appearance, lethargy, laboured or rapid respiration, nasal discharge, dry muzzle, drooping ear, fever and rough hair coat. These signs are usually seen within the first weeks of purchasing an animal, so Jorge checks the pens with new or high-risk cattle on a daily basis.

If any signs do appear, Jorge immediately calls the veterinarian who will make the appropriate diagnosis and prescribe medicines to ensure early treatment for the infected animal and minimise the risk of the disease spreading through the herd.

The veterinarian is best qualified to select the most effective and efficient treatment to protect an animal’s health. In the case of BRD, antibiotics are next to vaccination essential for fighting bacterial infections, such as BRD.

The word <antibiotic> comes from the Greek anti meaning ‘against’ and bios meaning ‘life’. Bacteria are tiny living organisms that can sometimes cause illness to humans and animals. Some bacteria are harmful, while others are good for us. Our immune system regularly fights off bad bacteria but sometimes antibiotics are required to help.

Antibiotics may also be given to control an imminent disease threat. On farms, especially where calves are purchased from different regions, antibiotics are sometimes administered to high-risk animals in order to minimise the threat of BRD and other bacterial infections spreading in the first place.

It is essential that qualified veterinarians decide if an antibiotic is necessary and if so, what kind and how to administer it. Antibiotics play a hugely important role in maintaining human and animal health worldwide. They must, however, be used responsibly. This means that they are most effective when used as little as possible and as much as necessary, and for the right length of time and in the right way. Additionally this means they are used in conjunction with good animal husbandry, bio-security and herd health management plans on farms, including vaccination programmes.

Antibiotics are an essential part of any veterinarian’s toolkit; they are invaluable in treating infectious diseases in livestock and pets, ensuring that the animals are healthy and live longer, better lives. They are however not a panacea for dealing with all health problems, not in animals and not in people either. A balanced approach, with attention to good hygiene, nutrition and using preventive measures such as vaccination, will ensure that antibiotics remain useful for generations to come.

Jorge knows how important the health of the cattle is to the family business, so he takes great pride in doing his bit to prevent diseases from occurring on the farm by ensuring that the animals are well fed, physically comfortable and given all necessary vaccinations. He has learnt, however, that there is always the risk of diseases spreading, which has inspired him to become a veterinarian himself one day.

To read more about the benefits of antibiotics download our white paper here.
OUR SECTOR IN FACTS AND FIGURES

Global industry sales of $23.9 billion

The 10 largest animal health companies invest an average of 12% of their sales into research and innovation activities, a total amount of about $1.6 billion every year.
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