



Aurora Pharmaceutical, Inc.  
Innovative Products Backed  
by Exceptional Service

Volume 4 Issue 1

# Business essentials



## Business Essentials Inside

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# Investing in The Next Generation of DVM Professionals



**Bob Rehurek,**  
Director of Sales and Marketing  
Aurora Pharmaceutical, Inc.

There's a saying that reads, "An investment in knowledge pays the best dividends." In our opinion, nowhere is that truer than in veterinary medicine. Our founder, Dr. Michael Strobel, is a firm believer that a veterinary medicine education is an investment with an unbelievable return. It is also the reason he is dedicating \$50,000 towards assisting students of veterinary medicine offset the high cost of education with the **Aurora Pharmaceutical DVM Student Scholarship Program.**

"The costs associated with pursuing a degree in veterinary medicine can be daunting," outlines Matt Klotz, DVM, Equine Technical Service Veterinarian at Aurora Pharmaceutical. "As a veterinarian who has gone through it, I am thrilled that Aurora has decided to share some of our good fortune and ease some of the financial strain of deserving students."

With a total of \$50,000 allocated to the program in its first year, the scholarships are available to applicants who are current third-year students pursuing their doctorate in veterinary medicine at an accredited school within the United States. Log onto [www.aurorapharmaceutical.com/scholarships](http://www.aurorapharmaceutical.com/scholarships) for all the rules and application guidelines.

"When we decided to create a program to support DVM students, it was important to us to find ways to show our support to the next generation of DVM professionals," says Grant Weaver, DVM, Swine Technical Service Veterinarian at Aurora Pharmaceutical. "Supporting the future leaders within the veterinary industry was really our driving force when developing these scholarships, and I look forward to bringing the program to life."

The application deadline for the Aurora Pharmaceutical DVM Student Scholarship Program is **Friday, April 30, 2021**. A committee of Aurora team members will review all applications and will notify all applicants of their status 3-4 weeks after the deadline. Aurora looks forward to sharing additional information on the chosen applicants in a future issue of *DVM Business Essentials*. (Special consideration will be given to students who are tracking in food animal or equine.)

If you know of a third-year veterinary student who could benefit from additional scholarship funding, have them apply at [www.aurorapharmaceutical.com](http://www.aurorapharmaceutical.com) or email us at [scholarships@aurorapharmaceutical.com](mailto:scholarships@aurorapharmaceutical.com).

**Scholarship recipients will be selected based on a combination of the following criteria:**

1. Academic achievement
2. Related work experience
3. Community and University involvement
4. Goals
5. Essay
6. Letters of reference

**\*\*Special consideration will be given to students who are tracking in food animal or equine**

**\$50,000 in Scholarships**  
will be allocated as follows:

10 scholarships of \$2,500

3 scholarships of \$5,000

1 scholarship of \$10,000

## Kudos to Aurora Manufacturing

As is the policy at Aurora, we try not to bring a new generic product on the market without making substantial upgrades to either the delivery system, inert ingredients or packaging. I want to thank Rich Mihalik, R&D

Director/Business Development and his production team for being awarded "Best in Pharma" by the Tube Council for their Twist'n' Apply tube design available in every dose of Revolt® (selamectin) Topical Parasiticide for Dogs and Cats. **a**





Randy Byl started working for VetPharm – the company that is now part of the AHI/Patterson group – right out of college (Western Iowa Tech). That was 35 years ago – making Byl one of the most tenured salespeople in the animal health industry. It also makes him one of the most respected.

“When I started with VetPharm, I did it all – took orders, went on to the warehouse floor and packaged and shipped the order to my customers. It was very hands on back then,” recalls the Sioux Center, IA, based Byl. “I did that for about three

would allow them some extra special pricing, vendor and manufacturing programs and



rebates, buying programs, etc. They know when I call, I have valuable practice profitability information to share with them, not just a cheaper price on an item.”

Byl admittedly leans on a very strong ISR team to make his job easier. “The other three ISRs that work in my region with me are familiar with my clients and me with theirs. If I need to step in on a call, I’m ready and informed,” he states. “We’re not just order takers; we are truly salespeople with our accounts’ best interests in mind. We team up and work directly with our OSRs who remain our eyes and ears in the clinics. We

an salesman, the biggest changes to his accounts in his 35 years as an ISR, is their buying trends. “For the most part, clinics are not buying into the big manufacturing load-up programs as they once did. Putting that much money out on a product is no longer seen as a major clinic benefit,” he observes. “Rather, they want us to manage their inventory cash flow that best benefits them. They would rather be one-to-two months out and not have to worry about moving huge supplies of a product. Consequently, they rely on our inventory management skills to keep them purchasing at the right prices and at the right times.

## Client-Centric Preparation and Team-Focused Sales Keep ISR Relevant to Veterinary Accounts

years and then started working specific territories. Those territories have changed over the years, but now I work exclusively in Wisconsin as an ISR working closely with our OSR team in the state. I have been in this territory for 25 years calling on veterinarians and their staffs.”

The reason Byl is so good at what he does, is he is never static. “I work hard to be valuable to my customers,” he explains. “That means I have to be able to bring them information they don’t have, and in a way that helps them plan their inventory and purchasing in a more efficient manner. I spend a lot of time prepping myself prior to making a customer call to make sure I’m aware of special programs they may be interested in, if they are close to reaching max sales on a program that

discounts they may not be aware of, etc. It’s something I work at every day and would never consider calling a customer unless I have all their key information in front of me. It’s the level of expertise they have come to rely on and trust that I keep them in the best pricing position possible.”

Byl admits that when he calls on an account, he recognizes that three or four other distributors may have already called them and discussed some of the things he’s going to discuss with them. However, Byl focuses on bringing them new and valuable information others may not have access to.

“I hang my hat on my customers trusting that I’m going to have their best interest in mind regarding new products, possible price increases, inventory issues, manufactures’

like to occasionally travel with our OSRs to meet our clients and put faces with names. It means a lot to them and us to have that personal connection.”

Byl says AHI/Patterson ISR teams pride themselves on clinic inventory management expertise. “With the pandemic, there have been a lot of inventory issues, especially on products that were in short supply,” outlines Byl. “Our inventory management program is designed to protect our customers. We utilize their monthly product and service usage to help them manage their inventory. This eliminates someone coming in and say, cleaning out the available inventory of a certain product. We don’t allow that type of purchasing and this helps keep the supply going out the door to benefit each clinic.”

According to the veter-

Also, there are still a few vets that are extremely loyal to a particular manufacturer, but overall, they are open to new programs and alternative products at better margins. They are open to the fact that a lot of patents are expiring, and they are teaming up with good suppliers stepping into those ranks with better priced products. They are more open to those scenarios, especially if I can provide them price comparison and inventory alternatives that make their clinics more revenue.”

In conclusion Byl states, “I can’t emphasize enough, I’m only as good as the team I have around me. The younger reps have amazing social media and computer skills, where I have more direct sales training. As a team, we are all much better than we are alone.” **a**



# MADIGAN FOAL

John Madigan, DVM, MS, ACVIM

**R**esearch on neuroinhibitory steroids shows they work like sedatives in conjunction with other substances during pregnancy and parturition.

It usually evokes a sigh of relief when your client's mare foals successfully and the newborn scrambles to its feet in the first hour or two and begins to nurse. In the course of evolution, such precocious births enabled a foal to rise in the first few hours to obtain valuable nutrition and limb coordination to enable it to run with its mother to escape predators. The scene of a foal rising to its feet—albeit often a bit clumsy at first—and latching onto the mare's udder is heartwarming to both horse owners and their veterinarians.

But this doesn't always happen. One syndrome that practitioners are on the lookout for is that of the "dummy" foal, one that suffers from neonatal maladjustment syndrome (NMS), which occurs in 1-2% of foal births.

While a foal affected with NMS might seem normal for a few hours or even as long as a couple of days after birth, progressive signs of nervous system dysfunction appear, with the foal becoming weaker, less interested in nursing and often no longer recognizing its dam. Response to external stimuli worsens with time, and eventually a foal can lapse into recumbency with the potential for seizures or death.

Historically, an explanation of the cause of NMS suggested some degree of oxygen deprivation and/or systemic inflammation during the period proximate to foaling — before, during or immediately after. This condition goes by other descriptive names: hypoxic-ischemic encephalopathy or perinatal asphyxia syndrome. However, as researchers seek to identify the cause, histologic examination of the brains of dummy foals does not always show evidence of hypoxia, edema or hemorrhage in brain tissue. And nearly 80% of dummy foals recover to full function with treatment, something one wouldn't expect if there was irreparable nervous system injury.

With that in mind, clinicians John Madigan, DVM, MS, ACVIM, Monica Aleman, MVZ Cert., PhD, DACVIM, and Isaac Pessah, PhD, all of whom are well-versed in neonatal health, neurology and toxicology at the University of California, Davis, School of Veterinary Medicine, looked to other reasons for the syndrome.

Instead of neurologic changes related to hypoxia, the team identified a problem with concentrations of neuromodulating hormones (neurosteroids) of a fetus in the womb and soon after delivery. The presence of such neuroinhibitory steroids works like a sedative in conjunction with other substances (adenosine, progesterone and prostaglandins). These chemicals keep a foal quiet during gestation, so it isn't "galloping" around in the uterus, which could cause significant damage to the mare. The somewhat "sedated" state of the





# SQUEEZE REFRESHER

foal in utero also reduces oxygen needs and consumption by the foal. The foal needs to remain immobile as it transitions through the birth canal to the outside world.

The neurosteroids, or pregnanes, are normally in high concentrations at birth and typically begin to decline steadily over the first one to two days. However, the plasma pregnane concentrations in these dummy foals remain elevated as compared to normal foals. Measurements also reveal that pregnanes of dummy foals are elevated at even higher levels than foals affected by sepsis.


The neurosteroids exert a sedative effect on the central nervous system as they pass through the blood-brain barrier. With ongoing elevated concentrations in the bloodstream and central nervous system, the affected foal fails to “wake up” and interact with the world outside the womb.

Interesting findings resulted from the UC Davis team’s test of their theory. Administration of a pregnane (allopregnanolone) to healthy neonatal foals elicited transient signs of neonatal maladjustment syndrome, such as confusion and cessation of nursing. During the experiment, EEG measurements of brain electrical impulses demonstrated that despite standing, the foals’ brains underwent slow-wave sleep. As soon as the pregnane concentrations abated, these foals returned to normal, active behavior.

Under normal foaling circumstances, pressure exerted as the foal passes through the birth canal signals a decrease in neurosteroid levels. A foal born to a mare through cesarean section, or one that passes quickly through the birth canal without being subject to normal uterine contractions and pressure, is more at risk of developing NMS. These individuals retain elevated neurosteroid concentrations in the bloodstream because of a lack of signaling by pressure in the birth canal.

This revelation by the UC Davis veterinarians about signals within the birth canal stimulated them to mimic physical compression of the birth canal through the use of ropes around the foal’s thorax.

The foal is fitted with a rope harness. Gentle pressure causes the foal to lie down and enter into a somnolent state. Rope pressure is sustained for about 20 minutes, which is comparable to the time of second-stage labor as a foal passes through the birth canal in a normal delivery. This apparently signals the foal’s system to awaken, along with a hormonal surge from the hypothalamic-pituitary-adrenal axis that down-regulates production of pregnanes.

Once the rope pressure is released, the dummy foal immediately converts into an aroused, nursing foal engaged with its surroundings. If done properly, the foal experiences no adverse effects from the procedure. 

Photos courtesy of UC-Davis

## THERE ARE SOME CAVEATS SUGGESTED IN MADIGAN’S MANUAL OF EQUINE NEONATAL MEDICINE TO ACHIEVE THE BEST AND SAFEST RESULTS:

- The foal must be younger than 3 days old, and it works best if the foal is younger than 24 hours old.
- This is only used on foals that have stood up prior to showing signs of NMS.
- This is not to be used on a foal with respiratory distress, shock, sepsis, rib fracture, prematurity or congenital anomalies.
- A practitioner should be skilled in the procedure, and it should be performed only following a thorough physical examination of the neonate.
- Monitoring the foal following the procedure is important. The foal squeeze is performed in a softly bedded area, such as a stall.
- Supplies include a soft, 5/8-inch- to 3/4-inch-diameter rope of 16-18 feet in length that slides easily.
- Ideally, pressure exerted on the rope harness amounts to 10-20 pounds, which can be measured using a luggage scale pressure gauge for safety.



# RESEARCH DRIVEN

## DELIVERING CUTTING EDGE, PROBLEM-SOLVING

Grant Allison, DVM (ISU, 1984) had his veterinary destiny lined out for him early in his life. While not raised on a farm, he spent a large part of his early childhood working with his grandfather's small sow herd and, as he puts it, learning to love pigs. "My grandfather made being around pigs, fun."

That was also a major influence for his educational steps. First, his undergrad in



Grant Allison, DVM

biology at Kansas State and then on to ISU for his DVM. "Like all students back then, I had a job during college. Mine just happened to be in the molecular genetics lab at KSU, where I fell in love with the process of research and lab work. When I went to vet school at ISU, I was able to land a job at the Vet Med Research Institute behind the vet school.

"It was a swine research lab with Dick Ross, DVM (former CVM Dean and recipient of the Stange Award for Meritorious Service, retired in 2004). When I met Dr. Ross, he was on the leading edge of mycoplasma research as well as *H. parasuis* and *E. coli*. I was hooked. This was what I wanted to do. After vet school I worked in South Dakota to get some solid work experience in production animals before heading to Walcott (IA) in 1985.

"After working five years with mixed animals and small animal clients, we decided to move to an all-production animal clinic in 2000," recalls Dr. Allison. "All of our clients own family farms, no integrators. These farms are almost all

exclusively farrow-to-finish with most of them owning Century Farms, so they've been on their land for well over 100 years. The most expensive ground in Iowa is in Scott County near Walcott, so these growers/farmers are attached and fully committed to the land and livestock production."

Dr. Allison notes, "The practice has changed completely since I started in 1985. In the 80s we had hundreds of clients with 40-60 sows. Our largest being 400 sows which we considered huge. We were constantly running calls, but never drove more than 15-20 miles to reach our clients. Now we routinely drive 70-100 miles to reach a client. We're adding additional state licenses, so we can service clients in other states as well, some as far away as 6-8 hours. It's the only way we can grow (or maintain) our business. With four additional vets in the practice, we manage our time extremely well and limit our road-time when possible. As we add clients, windshield time has become a part of the business."

However, you won't hear Dr. Allison, or his veterinary team, complain. "We mainly utilize our windshield time to work on our on-going client research projects," he points out. "I worked for three years in a swine research lab, so my tendency is to move the practice towards solving swine issues via client and industry-funded controlled research studies," he outlines. "We can't wait for university research to eventually trickle down to us," he notes, "so we have to find the answers ourselves, before it costs our clients thousands of dollars in production losses."

Which brings Dr. Allison full circle, back to when he got out of vet school. "When I joined the practice in 1985, it was specifically to start an in-house diagnostic lab," he outlines. "My internship senior year was with Dr. Roy Schultz in Avoca, IA. I wanted to make autogenous vaccines for swine and he wanted to build a diagnostic lab in the practice. My wife, who has years of diagnostic laboratory experience at ISU, and I started a diagnostic lab in conjunction with Dr. Schultz. He taught me how to make effective, herd-specific vaccines. When I started practice in Walcott, I immediately started gathering isolates and developing

client-specific autogenous vaccines. It allowed us next-day turnaround time, which our clients appreciated."

What Dr. Allison quickly learned making autogenous vaccines – and admittedly has been invaluable in his career – is when he just makes occasional farm calls, he couldn't possibly see the whole health situation. He says it requires routine visits to finally see what's wrong and then find ways to fix it.

"Depending on the problem and how severe of an impact the problem is causing – the producer will help fund the search for an answer. However, sometimes you've got to do it yourself to keep production losses to a minimum," he says. That time commitment and cost led Dr. Allison to start reaching out to industry stakeholders to help him find/fund the research. It is also the underlying reason he hired Allison Knox, DVM (U of IL, 2019).

"Dr. Knox was hired because of all the students I interviewed, she had a personality much like mine," he smiles. "To be honest, I wasn't looking for just any veterinarian. I was looking for one that was curious and wouldn't take 'no' for an answer. It also helps she had a ton of research experience prior to joining us. It has been a perfect fit."

Dr. Knox, much like Dr. Allison, did not grow up on a farm, but her father is a PhD in swine reproductive physiology at the U of IL which Dr. Knox notes meant she grew up in research barns. "I enjoyed working with and around pigs, so it wasn't a long jump when I finished my undergrad in Animal Science to get my DVM," she notes.

Allison Knox, DVM



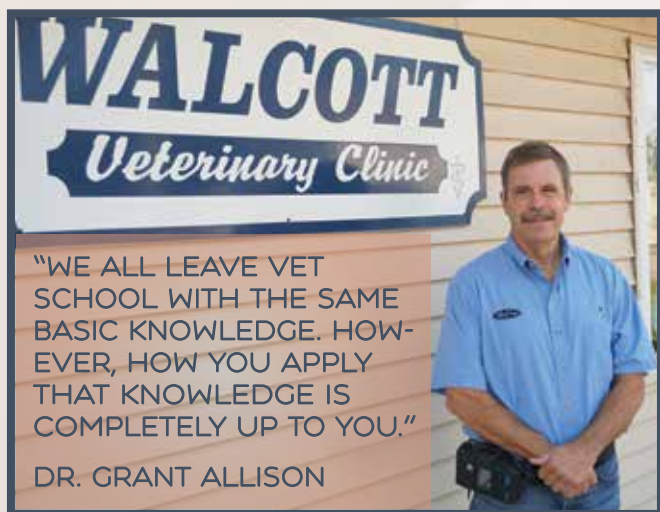


# SWINE PRACTICE ...

## AVING RESULTS FOR THREE DECADES

"I love the field aspect of veterinary medicine, but my heart is in researching clients' problems. I enjoy the challenge of finding out why something is wrong."


When Dr. Knox did her two swine internships, she had the chance to not only get a lot of valuable herd health management experience, but she also got to do hands-on research funded by Merck to look at PCV2 with veterinarians at Carthage Veterinary Services (Carthage, IL) and parainfluenza with Suidae Health & Production (Algona, IA) veterinarians. Both projects provided her the opportunity to follow through on projects and write papers.



"WE ALL LEAVE VET SCHOOL WITH THE SAME BASIC KNOWLEDGE. HOWEVER, HOW YOU APPLY THAT KNOWLEDGE IS COMPLETELY UP TO YOU."

DR. GRANT ALLISON

"I'm currently working with Merck on management strategies for PCV3 that we are seeing creep into our farms and present itself with reproductive failure in the form of increased stillborn and mummies," says Dr. Knox. "We definitely see PCV3 as an emerging disease and are doing research trials on several clients' farms to find out vaccine effectiveness, new diagnostic tools, etc. We just wrapped up our vaccine trials. To date what we are seeing is promising, and suggestive that vaccination reduces the incidence of reproductive failure and viremia. Our clients will be pleased to have a possible new tool for this emerging disease."

In conclusion Dr. Allison notes, "All the research we do at Walcott is for the betterment of our clients. However, we feel obligated to bring our findings to our colleagues who may be facing the same herd issues. We make sure the swine industry is kept up to date via papers in the journals, presentations at AASV and working with the lay press to get the word out. We all benefit from the research." 



### WALCOTT VETERINARY CLINIC SWINE-SPECIFIC RESEARCH OVERVIEW

***Prevention and control by oropharyngeal scraping inoculation***  
(AASV 2003 Annual Meeting)

***Response to Fostera PRRS Vaccine in Six Sow Herds*** (Zoetis Swine Vet Symposium 2006)

***Evaluation of the Economic Benefit(s) of Suvaxyn PCV2 Vaccine***  
(Zoetis Swine Vet Symposium 2010)

***Viral Induced Myelitis – A Practitioner's View*** (2013 Swine Disease Conference [ISU] 2013)

***Administration of Oral Pro® Vitamin D3 plus E in drinking water of gestating sows*** (AASV 2014)

***A case study: Oral Pro® Vitamin D3 plus E to aid in control of PRRS virus circulation in three sow farms*** (Presentation)

***Single fixed-time insemination of swine using OvuGel® (triptorelin acetate)*** (Presentation)

***Case Study: Response to PEDv Vaccine in a Herd Endemically Infected with PEDv*** (Zoetis Swine Vet Symposium 2015)

***PEDv positive bioassay shows evidence of transmission of PEDV to susceptible pigs by houseflies (Musca domestica)*** (Leman 2018 Poster and IPVS 2021)

***Fostera PRRS field evaluation in vaccinated piglets at processing during a reproductive outbreak***

***Implementation of PRRS surveillance using processing fluids (PF) RT-PCR Ct value as predictor for nursery mortality***



# Kentucky Based Equine Vet Stays Focused

**B**y day, Jeffrey Berk, VMD (U of Penn, '81) is an Associate Veterinarian at Equine Medical Associates in Lexington, KY, where his practice is focused on Thoroughbred sales work both in the U.S. and abroad. But in his spare time, he continues to be focused on the betterment of the equine athlete and the health of the sport of horseracing in the U.S. as chair of the AAEP Racing Committee.

"I am licensed in CA, FL, KY, NY, MD and the United Kingdom. I can usually set up

my travel and work schedule a year in advance based on the sales dates," says Dr. Berk, a member of the Royal College of Veterinary Surgeons who attends about 30 sales per year. He starts the year with the mixed sales in January which include brood mares, short yearlings and race horses before coming into the two-year-old sales season which starts in March at the OBS and Fasig-Tipton sales in Florida.

The two-year-old sales season usually culminates in the OBS June Sale in mid-June, and then the yearling sales cycle starting at the Fasig-Tipton Sale in Lexington in July, the mammoth Keeneland September Sale midway through the season, and ending with the Fasig-Tipton Kentucky yearling sale at the end of October. Then the cycle starts over with the Tattersalls December Foal Sale in Newmarket England followed by the French mixed sale hosted by Arqana in Deauville.

"As a veterinary adviser, I am hired by clients who are interested in purchasing horses for racing or resale," outlines Dr. Berk.

"The clients, after physically inspecting the long list of horses and eliminating many based on their own criteria, provide me with a 'short' list of horses they're interested in.

**Dr. Berk's role consists of basically three main elements:**

- 1 A thorough physical examination
- 2 A review of the radiographs of all the horse's limbs that are held in the repository at each sale
- 3 An evaluation of the upper airway that can be done either by scoping the horse or by viewing a videoendoscopic exam, if there is one provided in the repository

I provide a complete evaluation of the findings along with a relative risk assessment for each horse to the clients prior to the horses going through the sale ring. They use this evaluation to make an informed decision to purchase or not."

Dr. Berk says he spends a lot of time making sure he fully understands the uniqueness of each client's specific needs and especially what their level of risk tolerance is and how they like their information communicated.

"I have clients that do all communications via text. Others, though, want to talk to me to better understand the findings



Jeffrey Berk, VMD







# on HISA Implementation

and their significance. Every client is different, and I work hard to facilitate their communication preferences.”

When Dr. Berk, a past president of the AAEP, is not working directly with his clients, he spends his time working for the betterment of racing as chair of the AAEP's Racing Committee. While the horseracing industry is a significant economic driver in the United States, with an economic impact of over \$15 billion and support of over 240,000 jobs, the industry had been in the headlines last year for an unfortunate spate of racetrack fatalities.

Also last year, the federal indictment in New York of 27 people, including trainers, equine veterinarians, and drug companies, only added to the call for increased regulation of the industry.

“Many within the industry, including track operators, owners, breeders, trainers and veterinarians have been frustrated by the inability of the U.S. racing jurisdictions to adequately address inappropriate medication of racehorses and inadequate safety measures, and this significantly affects the social license to operate racing that the public grants us,” says Dr. Berk.

“Currently, a patchwork system of 38

unique state-racing commissions each has its own set of rules and regulations regarding the conduct of racing, and over 55% of Thoroughbred, Quarter Horse and Standardbred racehorses participated in multiple U.S. jurisdictions,” he adds.

“One of the most important events in the recent past that will affect racing in the U.S. is the passage of the Horseracing Integrity Act of 2020,” Dr. Berk highlights.

“Prior to its passage near the end of 2020, the AAEP changed its official position regarding the federal bill from one of monitor to support. Several groups within the AAEP, including the Racing Committee, had been studying the various versions of the federal bill for years, and had identified areas in the bill which could be improved upon.”

Achieving uniformity of rules regarding racing medication in the U.S. has been a major goal of the AAEP, and this bill accomplishes that.

Now that the bill has passed, the AAEP Racing Committee is making recommendations regarding specific areas of necessary expertise as their Nominating Committee populates the HISA Authority's Board of Directors and Standing Commit-

tees (Anti-Doping and Medication Committee & Safety Committee) in order to optimize the functioning of the Authority and the implementation of their plan.

“Getting the right people with the appropriate level of expertise will be critical in the success of the HISA Authority, and the AAEP is committed to being a resource that they can draw upon,” states Dr. Berk.

The HISA establishes an independent, non-governmental regulatory body, under the jurisdiction of the Federal Trade Commission, and modeled after the U.S. Olympic Anti-Doping Agency (USADA), to ensure the wagering public's confidence in the fairness of horseracing and to strengthen and harmonize anti-doping and medication control rules and sanctions for horseracing. The Authority is scheduled to be fully functional by July of 2022.

“There is a need for the highest level of integrity and transparency in horseracing, and it is the intent of the HISA of 2020 to fulfill those expectations. The intention of the AAEP is to work closely with the HISA Authority in such a way as to promote the goals of the Authority and the health and welfare of all horses racing in America,” Dr. Berk concludes. **a**



By: Grant Weaver, DVM  
Swine Technical Services Veterinarian  
Aurora Pharmaceutical, Inc.

# Understanding the Various Roles Vitamin D Plays in Maintenance of Health Critical to Swine (and Humans)

**COVID-19** has given us time and reason to re-examine many aspects of our lives, especially anything related to health. Vitamin D, and how it effects the health of both humans and animals, is one of those issues. Due to the many important functions of vitamin D including bone and muscle metabolism, cognitive function support and reduction of cancer risk, there has recently been increased interest for the role it plays in the maintenance of health.

But the role it plays in the development and function of the immune system has gotten the most scrutiny as of late. The importance of maintaining adequate levels of vitamin D has recently been exposed due to COVID, and its importance in swine is just as significant.

A 2006 report showed that 41.6% of all Americans were vitamin D deficient and in confined swine, that deficiency is even more pronounced. Below is a table showing the working standards for serum vitamin D levels in swine.

These numbers are recommendations focused mainly on Ca:P maintenance and rickets prevention. Scientific studies establishing recommended levels for maximization of vitamin D effectiveness, including immune system support in swine, have not been done to date. Human serum levels generally run parallel to swine and it is known that 15 ng/mL is the cutoff for rickets prevention in humans.<sup>1</sup>

Testing that we have done at Aurora has shown that non-supplemented weaned pigs raised in confinement generally have serum levels in the 5-7 ng/mL range. Our experience has found that confined sows usually have serum levels that are about 25 ng/mL. Offspring are typically born with serum vitamin D levels that are about 33-50% of dam levels.<sup>2</sup>

Piglets receive a little additional bump in vitamin D level via colostrum absorption, which is about 20% of dam serum concentration. Sow's milk is a poor source of vitamin D as piglet serum levels will wane as weaning approaches, resulting in deficient levels in weaned pigs.

Biologically active vitamin D is sourced from a couple of different places – from the skin after vitamin D is exposed to UVB light and the other is orally from either feed or water. When the skin is exposed to UVB light, cholecalciferol is formed which is carried to the liver via the blood. In the liver, cholecalciferol is converted to 25-hydroxy vitamin D (25-OHD). This compound is known as the storage form of vitamin D and is most useful for determining the vitamin D status of the animal.<sup>3</sup>

This conversion occurs in tissues where vitamin D is active including kidney, bone and those of the immune system where it acts to bolster the host immune response. Review papers have shown the relationship between low vitamin D levels in people and influenza epidemics<sup>4</sup> and increased mortality and infection rates in humans due to COVID.<sup>5</sup>

Oral forms of vitamin D are capable of elevating serum levels in spite of absorbability limitations. When delivered through drinking water, a faster response is achieved with peak levels at or above what are seen in outdoor housed animals. Although with added feed supplementation, sow serum levels can be seen in the range of 40+ ng/mL<sup>6</sup>, typically confined sows have serum levels of 30-35 ng/mL.<sup>1</sup> In confined animals, both of those situations lead to low levels in weaned pigs due to deficiencies in the transfer of vitamin D from dam to offspring.

No time is a good time for any kind of deficiency, but weaning time is especially poor due to the fall-off of passive antibody and the role vitamin D has in stimulation of active immunity. In 2013 West, *et al.*, presented a poster at the AASV Annual Meeting summarizing the results of a vi-

**Table 1. Normal serum levels for vitamin D by age**

Normal reference range for serum vitamin D	
Age of animal	25-OH-D3 (ng/mL)
Neonate	5-15
10 days	8-23
Finishing pigs	30-35
Mature	35-70
At Parturition	35-100



tamin D supplementation study done in weaned pigs.<sup>11</sup>

The groups that received 516, 1032 or 1546 IU/kg body weight in the drinking water achieved significantly higher vitamin D levels by day 5 and maintained above normal levels until the end of the study (day 19). Control animals that received a supplemental level above NRC recommendations in the feed didn't see a response until day 19 and the levels achieved were still below what is considered normal.

One case report showed that supplementing nursing piglets with vitamin D resulted in heavier pigs at weaning and fewer failure-to-thrive pigs for the first week in the nursery after weaning.<sup>7</sup>

Another study presented at AASV in 2013<sup>8</sup> showed the optimal dosing regimen for Oral Pro® Vitamin D3 plus E. In that study it was found that giving 1-40,000 IU/head dose orally by 1 week of age, followed by supplementing in the drinking water according to label directions for the first 5 days in the nursery, was necessary to get offspring to protective vitamin D levels and maintain protective levels through the time of life when pigs are the most immunocompromised.

Vitamin D supplementation has also been looked at for the effect it may have

on PRRS virus infection. A case study presented by Allison, Gauger and Strobel at the 2014 AASV Annual Meeting showed that Oral Pro® Vitamin D3 plus E was associated with a shorter than expected TTNP following PRRS breaks on two sow farms.<sup>9</sup>

A field study presented at the AASV Annual Meeting in 2014 by Allison and Strobel looked at supplementing gestating sows with about 200,000 IU/hd./day of vitamin D in the drinking water for five days using Oral Pro® Vitamin D3 plus E.<sup>10</sup> It was found that serum vitamin D maintained above baseline levels for about 8 weeks post-treatment. Oral Pro® Vitamin D3 plus E was effective at providing a fast increase in serum vitamin D levels which is needed in times of disease challenge or nutritional deficiency.

There is a lot more to vitamin D than just prevention of metabolic bone disease. Increased awareness of its importance has led to information discovery and a better understanding of the various roles it plays in maintenance of health, although there is still much more to learn.

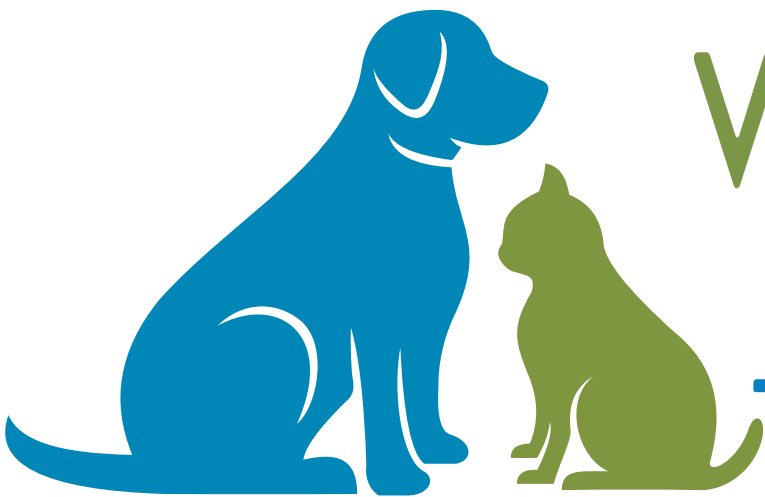
Targeted vitamin D supplementation is one of the tools we can use as veterinarians to enhance patient health and improve customer's bottom line that is safe, inexpensive and effective.

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# VETERINARIAN BIG-PICTURE TO BUILD SUCCESSFUL

*L*ance Baltzley, DVM (UF 2003) is a self-proclaimed “second career” veterinarian. After becoming disenchanted with the environmental consulting business, he decided to follow his true calling – veterinary medicine with an emphasis that allowed him to take full advantage of his entrepreneurial upbringing and passion. Now the CEO of Veterinary Healthcare Management and the Newberry Animal Hospital Group in Gainesville, FL, Dr. Baltzley oversees four small animal exclusive clinics in north central Florida.

In his true entrepreneurial nature, Dr. Baltzley purchased his first small animal hospital (after working there several years) in 2008. In 2012 he acquired two additional hospitals in the region and finally in 2013 did an asset purchase of the fourth hospital. He now has 10 full-time veterinarians working with him and a highly-trained support staff.

“I am constantly evaluating additional small animal practices that fit our client-first business philosophy,” says Dr. Baltzley. “The corporate consolidation that we witnessed in human medicine is happening in veterinary medicine,” he claims. “In my opinion, it’s growing geometrically. The area we live in is more than 80% corporate owned now. Just five years ago, it was less than 5%. That creates a great opportunity for our locally owned client-centric practice in the area.”

In Dr. Baltzley’s practices, generic products have become a strong price point benefit to his bottom line. “In the southeastern U.S., cats are viewed as the ‘second dog’ in the house. The incidence and severity of heartworms in cats is significantly higher than reported,” suggests Dr. Baltzley. “We find that to be consis-

tently true with our feline patients. It would be nice to see cat owners heighten their awareness of heartworms.

## SELAMECTIN IS STILL AN EXCELLENT HEARTWORM AND FLEA PREVENTIVE.

“When Revolution® (selamectin) was first introduced,” he explains, “it was touted as a heartworm preventive product. Nothing has changed with the active selamectin product. It is still an excellent heartworm and flea preventive. With a generic Revolution product like Revolt® (selamectin) as an option, there is a price point advantage that clinic owners should be excited about. Cost is the major benefit of topical products in this area.”

From an owner’s perspective, Dr. Baltzley says the internet has decimated his pharmacy revenue. “Consequently, it has dynamically and drastically changed the veterinarians’ fee structure,” Dr. Baltzley points out. “We, like so many clinics, have turned to an affiliate relationship with an on-line pharmacy that we try to keep pressure on regularly to keep them competitive. Margins have gotten so lean on products we carry or prescribe, that we have built that into our business model. I fought against increasing our fees to make up for lost pharmacy revenue and was just an angry veterinarian. Now, it’s an accepted part of practice.”

Like the online pharmacy challenge, Dr. Baltzley has had to adjust his mindset when hiring new veterinarians, too. “To manage new veterinary associates, we have built our own training programs,” outlines Dr. Baltzley. “It’s basically a six-month mentorship program that trains new veterinarians on how to have success as a practitioner in general. It gives them the confidence to recommend some of the more advanced medicines and procedures.



Lance Baltzley, DVM, left, and Newberry’s mobile pet transport.





# TACKLES ISSUES BUSINESS MODEL


"In my opinion, veterinary students are being taught to refer cases to specialists and taking the advanced medicines and procedures away from our clinics and crippling our higher-priced alternative medicines and surgeries that are discretionary income to the clinics' bottom line," he adds. "Vet medicine is mirroring what human medicine is doing and that's referring patients away for more complex procedures and advanced medicine choices."

## OUR ANSWER IS TO TEACH THEM OURSELVES.

"We want to maintain and perform 90% of what the specialized hospitals do. We still recommend specialists and refer, however, if it is in our veterinarians' skill sets, we give the client these options as well. Our goal is to offer affordable advanced care. There's a huge market (and need) for that specialized veterinary care in our area. In my opinion, the entire industry should be concerned and focused on offering great comprehensive care at a fair price."

Dr. Baltzley contends the number one problem of new veterinary students isn't technical knowledge, but rather leadership skills. "Understanding how to lead a team of other professionals is totally missing from veterinary school curriculums," concludes Dr. Baltzley.

"We are trying to eliminate the 'hero model' where the veterinarian comes onto the floor and everything centers on him/her and nothing gets done unless that person dictates the order.

"We teach our veterinarians and technicians how to come in and be leaders, to delegate, to manage multiple tasks, personnel and scenarios for the betterment of the patient and the clinic workflow. The best veterinary students and vet techs are the ones willing to take on that challenge." 

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Revolt is a registered trademark of Aurora Pharmaceutical, Inc.





# Equine-Specific Facility One-Of-A-Kind Concept Clinic



Where once stood an empty field in north central Florida, now resides one of the country's most ultra-modern, equine-specific complexes. PHD Veterinary Services, the brainchild of longtime equine road warrior Michael Porter, DVM, PhD, DipACVIM (U of FL '98, 2001), is specifically designed to allow equine practitioners a specialized equine facility to treat problem horses.

"Our mission is to set the standards of excellence for specialized veterinary medicine in the equine patient," outlines Dr. Porter. "In doing so, we hope to improve the long-term health of every horse that walks through our doors. We are a purpose-driven company that aims to satisfy the client by bettering their horse."

Dr. Porter completed a residency in large animal internal medicine at University of Florida and earned the status of a board-certified internist in 2004. After Dr. Porter received his PhD in reproductive physiology, he did his three-year residency at UF and then helped them start a new Mobile Equine Diagnostic Service (MEDS) program designed to give veterinary students first-hand experience diagnosing and treating equine lameness and internal health issues.

"The MEDS program provided referral level veterinary services to horses throughout north central Florida from 2004 until 2010," says Dr. Porter. "It was highly successful and students loved it. However, any time the state university puts someone in the field 'competing'

against established equine vets, the pushback was felt, and the program was eventually dissolved. However, while it was going on, it was the best in-field experience any vet student could get – especially if they were interested in moving toward internal medicine."

That's when Dr. Porter decided to open PHD Equine, his own mobile internal medicine and equine performance practice. According to the internist, what separates his mobile practice from others





in the area is his veterinary background and specialized internal training. "If I look at a horse on the farm and it's not a lameness issue, I can scope the animal right there to determine if it's a stomach ulcer or something else," he notes. "The owner doesn't have to take the horse in for another vet to examine. My medical background comes into effect every day and that's what makes my practice unique. There are a lot of good lameness specialists on the road, but not many are trained internists."

After a 20 year "experience" journey where he drives 1,100 miles a week and, on average, treats 25-30 lame horses per week, Dr. Porter started formulating the idea of a stationary clinic totally devoted to the most modern treatment and care of horses in the region. "As a mobile veterinarian for most of my career, I can only provide so much attention and treatment options," he states. "For some problem horses, they need more specialized treatment." That "specialized treatment" dream became a reality when the new PHD Veterinary Services opened its doors in late 2020.

The facility has one building dedicated to exam rooms, several stalls for day patients, staff offices and a radiographic reading room. The second building has a new AquaPacer for specialized exercising and rehabilitation work, an outdoor area where farriers can work on horses and an outside arena and jogging area for horses so their gait can be examined, etc. "I would like to offer the facility to other specialty veterinarians that can have their clients bring their horse here and do specialized treatment," he adds.

A self-proclaimed planner, Dr. Porter saw this new clinic as a way to reinvent himself moving forward into

Michael Porter  
DVM, PhD, DipACVIM

the second half of his career. "In five years, I see myself on the road only one day a week for my select clients," he forecasts. "I see having one-to-three more veterinarians working for me and expanding the clinic's capabilities with another specialist. I even anticipate (sooner vs. later) enticing an equine surgeon to build on the property. This will help us get closer to being the one-stop specialized equine clinic I have envisioned."



# AMVC GLADLY INVESTS IN SMEC





# TO ENHANCE THE FUTURE OF THE SWINE INDUSTRY



Veterinarians in all disciplines agree, when it comes to new veterinary hires, they wish graduates had the knowledge and confidence to hit the ground running.

However, reality shows veterinary clinics must plan on many hours of internal and external training, job shadowing, mentoring and follow-up with these new hires. All practices – regardless of size – could benefit from more real-world, hands-on training prior to new hires graduating veterinary school.

The partners at AMVC Management Services, based in Audubon, IA, were no different. As they saw their pig management and veterinary clinics grow, (10<sup>th</sup> largest pork producer in the U.S.), they identified a potential employee shortage. As more new veterinarians are now coming from non-rural, city-based backgrounds, most young veterinarians have no idea what a swine veterinarian career looks like. That translated into fewer new swine veterinarians.

This is especially true in those veterinary schools that are outside the Swine Belt and have reduced budgets to help those students explore anything in food animal production.

The management team at AMVC and their educational partners at ISU knew that a new approach was needed to fill the needs of the industry and to assure their swine clients and producers of skilled, swine-focused veterinarians. So rather than just leave all the hard work to others, they jumped in with both feet, and with the collaboration of ISU, started the **Swine Medicine Education Center (SMEC)**. AMVC wanted to ensure this project was a success, so they hired Dr. Josh Ellingson in 2011 to implement the project.

As the center grew Dr. Paul Thomas (DVM, ISU 2013) joined AMVC after completing a post-doc at ISU, and now helps oversee the project as well.

"The SMEC is dedicated to providing veterinary students and practicing veterinarians from across the U.S. and around the world with extensive hands-on experiences and education in swine health and production," outlines Dr. Ellingson.

"Our mission is to collect and synthesize the best practices for clinical swine medicine and to translate and disseminate those practices to stakeholders who can apply them to improve swine health, ensure pork safety, maintain sus-

tainability and conserve resources."

The Board of Directors of the SMEC brings together recognized expertise in swine medicine and diagnostics, including Director Locke Karriker, DVM, MS, DACVPM (Miss State 1999) and Patrick Halbur, DVM, MS, PhD (ISU '86, '92, '95) along with representation from past students, the Iowa State Veterinary Diagnostic Laboratory and the Swine Medicine Section at ISU.

A long list of veterans of the veterinary field contribute expertise and work tirelessly to advance swine research and pedagogy to ensure the best opportunities in education and production for veterinarians, producers, students and consumers in the swine field.

The SMEC was developed in response to a report by the American Association of Veterinary Medical Colleges that suggested the future of



Dr. Josh Ellingson and Dr. Paul Thomas

food animal veterinary medicine would require the development of species-specific centers of excellence that students would need to travel to in their fourth year of veterinary training.

Dr. Pat Halbur presented a vision of this for Iowa and swine medicine at a national meeting and Drs. Daryl Olsen (DVM, ISU 1982) and Jason Hocker (DVM, ISU 2005) literally jumped at the

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opportunity. The main program consists of four individual, on-farm, classes that are two weeks long, and they limit each two-week session to 12 students per group to enhance the teaching environment. The current training modules consist of the following:

- ✚ Swine production medicine clinical rotation
- ✚ Swine production management and consultation
- ✚ Swine clinical pharmacology and treatment management
- ✚ Swine emerging diseases, diagnosis and management
- ✚ Pig PROduction seminar (PIGSPRO)
- ✚ Swine medicine backgrounder

"We try to teach every student the necessary skills to be effective day one as a practicing swine vet," says AMVC Veterinarian and SMEC clinical instructor, Paul Thomas. "We walk students through a process of systematically looking at a group of pigs, discuss how to evaluate them based on physical appearance and other factors, how to safely bleed pigs and collect tissues, and how to prepare and send cases off to the diagnostic labs. We look at water quality, vaccine administration and feed ingredients. We take it to the next logical step, and that is once we have a diagnosis, we look at what

is the best treatment and prevention plan available for that specific herd, flow and producer. We try and provide the students with the resources to make decisions based on all factors. Doing this in modern swine farms adds important elements that are not possible in a classroom."

The program officially started in 2011 and has impacted the entire pork chain. Under ISU's and AMVC's watch:

- ✚ The SMEC maintains an active dialog with the swine veterinarians supervising health care for approximately 65% of the pig farms in Iowa
- ✚ The SMEC provides an average of 98,637 hours of student instruction annually
- ✚ Training 651 VM4 students from 31 different universities
- ✚ Training 127 international veterinarians and pig production executives from 35 different countries
- ✚ Training 15 domestic veterinarians and training 79 swine stakeholders
- ✚ The SMEC is providing swine medicine lectures for the University of Tennessee, Kansas State University, Mississippi State University and the University of Wisconsin third year required food animal medicine courses
- ✚ The SMEC established a swine medicine digital library in 2017 which now includes 101 videos and 1,378 minutes of instructional footage with 812 users for veterinary students, practicing veterinarians, clients and producers.
- ✚ In the 2019 calendar year, the SMEC had 32 active research or fee-for-service projects.

"The benefits of the SMEC program to the pork industry are multifold," adds Dr. Ellingson. "If a school can't afford to send a student, we have historically been successful finding sponsorship to support those students. We are committed to keeping these types of opportunities available for all students and thus providing talented people back to the swine industry. The results are

evident with graduating veterinarians that truly hit the ground running with the confidence in making diagnoses and developing plans. Most of all, by giving them practical experience at real world pork production yet in a controlled environment, we are removing the 'surprises' they may be apprehensive about when choosing swine as their specialty."

According to Dr. Thomas, funding remains the program's constant challenge. "We do a lot of fundraising with industry stakeholders to help offset the costs of educating students. Providing a top-notch education at a different swine farm each day comes with significant expense. The costs of instructors, sample collection and PPE materials, diagnostics, travel to farms, and lodging for students add up.

"Many of the students come from out-of-state and can't bring funding from their university with them," Dr. Thomas adds. "The challenge is to find a way to make up that shortfall, so the SMEC can educate every aspiring swine vet across the country. It's also in the best interest of the swine industry."

In conclusion Dr. Ellingson notes, "We have been lucky to have significant sponsors that have shared our vision, but more are needed, especially as the program continues to grow and evolve. Most universities are facing budget shortfalls, and we continue to see swine training programs shrink across the country. The SMEC can continue to help efficiently fill this void with continued support from industry stakeholders. Our goal is to make sure everyone has access to the training and opportunities they need to be future assets to the industry. We are excited to continue to improve our offerings and help both future students and producers. That's why the program was started in the first place." 





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# FINAL THOUGHTS



By: Mike Strobel, DVM, MS,  
President/CEO  
Aurora Pharmaceutical, Inc.

## Investing in the Future for Continued Veterinary Excellence

On February 15, 2021, Aurora Pharmaceutical announced the creation of a new annual veterinary scholarship fund. We are giving away a total of \$50,000 to deserving third-year veterinary students. Special consideration will be given to those who are tracking in equine or food animal.


We all know the challenge many students face as they struggle with the steady increase in the cost of veterinary education and the mounting debt associated with that. I want these aspiring future veterinarians to benefit from our success, and we are happy to give back to the profession that I am part of and who Aurora works with daily to help them better serve the patient.

There is a great need to expand the number of large animal and mixed animal practitioners in rural America. I am hoping these scholarships will encourage more veterinary students to seriously consider these paths.

For current veterinarians using Aurora products in their practice, I thank you, and it is because of your trust in us and our products, that we are to offer these scholarships.

Our veterinarian owners and the background we have as practicing veterinarians have given us the ability to understand what both veterinarians and our customers need. I am using that experience and perspective to guide the type and development of products we at Aurora choose to bring to market.

Aurora is a science-based organization. I view us as your partner in everything we do. I am using my experience as a veterinarian to help Aurora and its employees focus on the areas where we need both new and better products. Aurora is also focusing on product categories that need more competition to allow you to provide better value to your customer. Our generic pipeline will provide you this opportunity now and into the future.

I want to thank all my veterinary colleagues, and I hope you will help Aurora get the word out to all aspiring veterinary students about our scholarship program. Finally, as Aurora grows, so will this program. We hope we can be a strong supporter of future veterinarians and make it a little bit easier to afford a veterinary education. 





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One of the ways Aurora Sales Consultant Mike Duvall has been reaching out to make sure his customers' needs are being met through the pandemic (while still maintaining perfect social distancing at the clinics) is by having catered lunches prepared and brought in for busy veterinarians and their staff.

Many thanks to Dr. Debbie Spike-Pierce, CEO, at Rood & Riddle Equine Hospital in Lexington, KY, for helping to facilitate the luncheon. 



## How to Keep Customers Happy & Engaged During a Pandemic

