

# Backyard pig stuff cow vets need to know

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## Abstract

Veterinarians develop and maintain skills allowing them to serve communities in a diverse set of ways. This is an opportunity and privilege, but can sometimes be daunting. Since graduating veterinary school in 2019, I have spent nearly every aspect of my professional career focused on swine – swine production, nutrition, safety of feed supply, etc. With a well-rounded education, knowledge and skills are still present, albeit likely in a disorganized manner in my mental filing cabinet. Bovine practitioners in the course of their routine clinical practice likely will be faced with the dreaded “show pig” question at some point in their career. The base skills of the bovine practitioner should serve as a solid foundation, and with some additional reading and a few phone calls, you should feel comfortable with the quality of medicine and services you can provide to swine clients with non-commercial operations. The goal of this manuscript and presentation is to highlight some of the key areas of swine medicine that bovine practitioners should be familiar with to best serve their diverse set of clientele. These include a brief overview of the production and show pig industries, bugs and drugs, and a short list of important procedures to be aware of that with some practice can readily be incorporated into your skillset. Terrific resources exist elsewhere and this is certainly not a single source for all relevant information, rather intended to be a refresher of key concepts to guide communication with small scale swine producers and owners.

**Key words:** porcine, show pig, swine

## Introduction

The swine industry is very diverse. Numbers are readily available summarizing numbers of pigs in commercial production and the U.S. currently has approximately 6 million commercial sows with 75 million hogs and pigs at any single point. This equates to roughly 120-130 million market animals produced per year. This, however, does not capture the smaller and yet important segment of the industry representing backyard and exhibition swine. Numbers are not as readily available for this segment, but as many would know if visiting the local fair or based on phone calls to the clinic, there are many small holding swine operations in the countryside. This creates challenges and opportunities for the veterinary community. The commercial swine industry is well-served with a strong veterinary community who use evidence-based decision making processes to best manage health and welfare of large populations of animals. The smaller industry, however, often relies on local practitioners with a mixed animal focus or relying on veterinary expertise that includes little, if any, swine experience. This is what makes the veterinary profession exciting and yet daunting at times (particularly as recent graduates, a category in which I would consider myself also!) when faced with questions that push the boundaries of our knowledge. The goal of this presentation is to summarize key aspects of swine veterinary medicine to take back to your practice and feel more confident with your ability to provide quality service to swine owners of all sizes.

## Swine industry overview

Before digging in further, it is relevant to briefly discuss and have a base understanding of the swine industry in the United States and globally. The U.S. is a major global player in swine production, producing approximately 11% of the world's pork. China is the largest swine producer globally with roughly half of the world's pigs being raised in China. The European Union ranks second in pigs raised, and the U.S. is the third largest swine producer globally. With this production of roughly 120-130 million pigs per year, export markets are a very important market and currently roughly 30% of all pork produced in the United States is exported to other countries with some of the major export partners being Mexico, Canada and Japan. Developing and maintaining this export market is critical for success of the swine industry as well as allied industries that provide support extending as far as grain producers. It is estimated that the U.S. swine industry uses approximately 1.7 billion bushels of corn and 11.2 million metric tons of soybean meal, representing a cost of approximately \$12.9 billion annually (National Pork Producers Council).

Why does this matter? If a foreign animal disease such as African swine fever virus (ASFV) is detected in the United States, our export partnerships are immediately shut off. This would have devastating effects on the swine industry and other allied industries. As veterinarians, we serve as the boots on the ground evaluating, diagnosing and prescribing therapeutics to maintain animal health. Having an understanding of high impact diseases such as ASFV is critical to effectively raise the red flag if abnormalities are observed. The commercial swine industry would seem like a logical place where a foreign animal disease would first be detected because of the large number of animals, but we also must recognize the often very limited biosecurity practices that backyard swine producers can employ so many are of the opinion we need to improve education of small producers to recognize abnormalities to increase the speed at which a disease would be investigated, diagnosed and actions be implemented to prevent further spread. The backyard swine industry is much smaller than the commercial swine industry. However, in terms of identification and response to significant disease incursions represent a major concern. Mixed animal and “cattle vets” are important stakeholders in this conversation. Thus, in addition to serving rural communities and being the one stop shop for veterinary advice across multiple species, we are partners in protecting animal health.

## Refresher of key swine bugs

This is not intended to be a comprehensive summary of bugs, drugs, pathology and practical field strategies to maintain swine health. We will briefly summarize key pathogens that veterinarians in the field are likely to face. For a more in depth level of information, two references I would recommend are: *Diseases of Swine* (11<sup>th</sup> edition) and the *Swine Disease Manual* (5<sup>th</sup> edition). *Diseases of Swine* is the gold standard for detailed information covering just about every aspect of swine health in great depth. The *Swine Disease Manual* is written in much simpler

terms and I find it a terrific resource with a 2-3 page summary of a specific disease and I would highly encourage those wanting to learn more about swine disease and how to incorporate swine medicine into your practice that the *Swine Disease Manual* should be on your desk!

Two common clinical presentations that veterinarians in the field will often face include enteric disease – diarrhea or looseness, and respiratory disease. Diarrhea comes in all shapes, smells, textures and colors which can provide some preliminary indication regarding etiological cause. A common etiology often leading to diarrhea in pigs from birth until a few months of age includes *Escherichia coli*. *E. coli* can be isolated with high frequency even in animals without clinical disease, but a variety of virulence factors can result in clinical disease and this diagnosis is often established using multiplex polymerase chain reactions to look for genes associated with shiga toxin, heat labile toxin, heat stable toxin, etc. Other pathogens of interest resulting in enteric disease include rotavirus, coronaviruses (porcine epidemic diarrhea virus, transmissible gastroenteritis virus and porcine deltacoronavirus), *Salmonella* and ileitis (caused by *Lawsonia intracellularis*). Practitioners working with swine clientele should be familiar with these etiologies including clinical presentation, diagnostic strategies, and mitigation strategies both including prevention and therapeutic interventions when necessary.

Respiratory disease is also very common both in commercial swine production and backyard production. Key viruses to be familiar with include porcine reproductive and respiratory syndrome virus (PRRSV), influenza (influenza A virus), as well as bacterial pathogens such as *Mycoplasma hyopneumoniae*, *Streptococcus suis* and *Glasserella parasuis*. Like many other situations, respiratory disease in pigs (often called porcine respiratory disease complex [PRDC]) is multifactorial in nature. Management practices such as air quality should be thoroughly investigated in any situation where respiratory disease is the presenting complaint. In addition to understanding management practices that may be contributing to the situation, understanding of vaccination programs is an important area for veterinarians to have a base understanding. Given the diversity of the swine industry, exposure risk and goals, there is huge diversity in vaccination programs used. A great resource has been put together by Iowa State University providing relevant information for producers of all types (Iowa State University, 2023).

## Other miscellaneous topics of importance

Other areas of importance for the practitioner include understanding of the need of iron injections for pigs shortly after birth. Pigs are born with marginal iron status, and without supplemental iron, pigs quickly become anemic. When pigs are housed outdoors or have access to dirt, they generally are able to have enough iron intake to prevent this iron deficiency anemia. However, if raised indoors, young piglets will quickly become iron deficient, and it is very common to give a single or multiple iron injections shortly after birth. It is common to give 150-200 mg of iron either in the form of iron dextran or gleptoferron within the first week of life. Some research indicates a second dose may be useful, but my experience has been a single 200 mg dose of iron provided intramuscularly within the first week of life should be sufficient to avoid iron-deficiency anemia.

Mycotoxins are another area of importance where a baseline level of understanding is helpful. A more robust description is available elsewhere, but some key things to remember is that aflatoxin is important because of the potentially carcinogenic nature of the toxin which the Food and Drug Administration takes seriously, and there are FDA Action Levels for aflatoxin, meaning it is illegal for feed manufacturers to sell feed that has levels above that threshold. Fumonisin, deoxynivalenol and zearalenone are also mycotoxins to be aware of. Fumonisin can cause fatal pulmonary edema when fed at high enough levels, and we experienced this first hand in north central Kansas around 2020. Deoxynivalenol is well known to reduce feed intake and even cause vomiting, which gives rise to the common name for the toxin of vomitoxin. Zearalenone causes estrogenic-like effects, so if pigs are having issues related to abnormal reproductive function, investigating for presence of zearalenone would be warranted.

Parasites are a big deal for backyard and exhibition pigs. Simply put, any time a pig has contact with soil that has previously housed pigs, they are at a much more significant risk of parasitism. In modern, indoor swine production, parasites are not of significant concern generally, but when housed outdoors, parasites are an important topic. Good resources are available online summarizing parasites affecting pigs as well as therapeutic intervention recommendations based on the specific parasite.

And finally, minor surgical procedures are well within the scope of general practitioners' skillsets for backyard pigs. Procedures as simple as ear notching and clipping needle teeth should take very little reading to become familiar with and be able to perform. Castration, C-sections and repair of hernias (inguinal/scrotal, umbilical) are procedures that with some practice, can be incorporated into your practices. The success of C-sections in swine is not nearly as great as other species and I am by no means an expert in this procedure, but reports of colleagues in the field have reported well over a 50% survival for the sow which is highly successful. To perform these various procedures, there are a large number of anesthesia/analgesic protocols available for use. A common one combines telazol, ketamine and xylazine, although many others are available. The key here is to find a combination that meets your requirements and can accomplish your goals, then tweak that procedure as you go and become more familiar with the effects in relation to the desired plane of anesthetic depth. Find one that works for you and tweak from there.

As a veterinarian, you will likely be asked to help with animal health papers to allow clients who may be taking animals across state lines to different shows. As a USDA-accredited veterinarian, this process is very similar to other species. Ensure you understand the requirements for the state the animal will be traveling to, and help the client understand what requirements are needed to ensure a successful experience. Particularly with show pig clients, this likely will be a common ask and should be fairly routine for you in clinical practice, but ensure you understand the requirements of the state receiving the animals as well as any specific testing/certifications needed by the exhibition organizers.

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## Summary

Swine medicine is an exciting field, with numerous similarities and areas of crossover with other fields of the profession. Cow vets shouldn't be afraid of the "show pig" call. A base level of knowledge is needed to provide a satisfactory level of care, although with available resources this is very manageable with some practice and determination. Have access to good resources, and find yourself a mentor who knows more about pigs than you do, and don't feel bad giving them a call. Life, and especially the practice of veterinary medicine, is a team sport!

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