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## History of the US Potbellied Pig

When Keith Connell was in his early 20's, he began raising rare breeds of pheasants. Five of the varieties raised were extinct everywhere else in the world. The first year, 3 hens hatched out 25-30 eggs.

The Connell's acquired the Crème of Barely Park which consisted of a trailer park, cabins and a swimming pool. They added animals to the park to draw the public. There were deer, llamas, the now thriving rare pheasants, a few wolves, and a kilroy bear, who loved orange soda pop, preferably with crushed ice.

For the first few years, Mr. Connell traded young pheasants for llamas, young deer for elk and so on, always trading for bigger and better stock without having to use money. It wasn't long before the Park became known as the Bowmanville Zoo.

In the early 1970's, Keith Connell traveled to Europe looking for Bactrian (2 hump) camels. He located some beautiful bulls while at the Helzinki Zoo in Finland. While negotiating for the bulls he noticed a crowd of people turning away from the camels and looking down a pathway. Everyone was pointing and laughing and snapping photos. Pushing his way through the crowd to see what the fuss was about he finally spotted...a small black sow running as fast as she could down the path ahead of him to get to the people holding treats out for her. She didn't get very far because 12 little piglets were more determined than she was, and managed to knock her over so they could suckle. At that point Mr. Connell knew he was hooked. The year was 1975.

Mr. Connell purchased 4 camels that trip but it took many more trips over a 10 year span to import Potbellied pigs into his Canadian Zoo. It is rumored that in the early 70's Sweden imported one boar and two gilts directly from Vietnam. How much European blood was mixed with that original trio of pigs is not known because there are no records. Helzinki Zoo worked with several species, but since pigs were not high on any priority list, no documentation was kept.

Canada, at the time, allowed pigs to be imported from Sweden but not other European countries. The agricultural red tape was considerable and time-consuming to complete. Mr. Connell hand-picked a group of 18 pigs to import which were then transported to Copenhagen and from there crossed the Atlantic to New York. Upon arrival in New York it was discovered that no transit permit had accompanied the shipment. Back to Copenhagen they went. One week later they arrived in New York for the 2<sup>nd</sup> time...Legal at last. They were quarantined in New York for several days before being transported to Mirabel Quarantine Station in Ontario, Canada. The year was 1985.

The original imports brought in by Mr. Connell consisted of 18 pigs and became known as the Connell Line, or Con Line. There were fourteen sows: Grizzabella, Honey Bun, Karen, Gretle, Heidi, Barbi, Lucinda, Twinkle, Prudence, Sheila (who later became Pancake), Valerie, Alisa, Claudette, and Annabel. There were four boars: Persi, Orland, Roger and Kirby. Combine the first letter of each of the boar's names and you have

PORK. The foundation stock was and continued to be the basis from which all potbellies come today. The 18 pigs were between the ages of eight and twelve when they died. The last one to die was Annabel who had just turned twelve. The year was 1995.

Over the last several years attitudes and expectations toward potbellies have changed. Amidst the fractures, fragments and struggles of a small industry, many positive qualities have kicked in. Responsibility, concern and loyalty to the breed have contributed to some success of the potbelly as a pet. The hard work of many people promoting these animals as pets is making a difference at a grass-roots level.

It is through the hard work of many dedicated people that these symposiums are made possible. We are all learning more and more about the care and management of these pigs. We are also learning there are many questions left unanswered. Sharing of health and medical information is important. So is documentation and record-keeping. We are only now beginning to find out what the life span of these pigs is. We certainly need to continue to address geriatrics, since we have nothing to compare to.

Medical records stored in the Duchess Fund database are a valuable resource. The more records gathered the more pigs will be helped in the future. On-going efforts to build the DF database with documented case histories will go a long way toward improving medical care, taking advantage of different treatment protocols and saving lives of potbellies in the years to come.

Registration is equally important. Genetics can and should be tracked, birth dates documented and health issues cross-referenced with different bloodlines. Sometimes knowing genetic background can enhance diagnostics. Improving record-keeping allows looking back eight generations or more to glean a medical/health history of a particular gene pool. Even pigs of unknown breeding can be assigned a number and be included in the tracking efforts. Statistics along with documentation of the total number of PBP in the US could certainly lead to funding for research.

In summary, we have traced the Vietnamese Miniature Potbellied pig back to its origin in Asia where they and their ancestors may have thrived for thousands of years. We have little or no documentation on how they evolved and survived. We can only surmise that they were hardy and adaptable.

The year 2005 will mark the 30<sup>th</sup> Anniversary of Keith Connell's discovery of these unique animals. 2005 will mark the 20<sup>th</sup> Anniversary of Potbellied Pigs As Pets. We have much to learn. We have much to do.  
The year is 2004.

## 40<sup>th</sup> Anniversary of Pet Pigs in England

### Heather Powles

This is one anniversary we can't let pass without a mention. It is now 40 years since potbellies were first introduced into England. All those years ago when those first pigs made that journey from Europe little did we know of the pleasure and in some cases the problems these delightful animals would bring. As you will see from the following information, these pigs were not imported as a food source, but as zoo exhibits

1) **Vietnam** We have learned that the Potbellies that were exhibited in European zoos in the late 50s to 60s came from Vietnam. We received a lovely letter from The Vietnamese Embassy in London, they have given us an address in Hanoi and told us that the Ministry of Agriculture and Food Industry in Hanoi will be pleased to help. We have since written and are currently awaiting a reply. From what we have been told the Vietnamese Potbelly is still kept by Vietnamese farmers.

2) **Tierpark Zoo East Berlin** In 1958 Tierpark Berlin got Potbellied pigs with *short noses* directly from Vietnam. Political reasons prevented a direct transfer to England at that time so in order to overcome this some of the offspring from Tierpark were given to Cologne Zoo in 1959.

These pigs bred at Cologne Zoo and some of the adults and offspring were shipped to England.

3) **London Zoo 1959**. On the 4-8-1959 London Zoo received for quarantine Vietnamese Potbellied pigs which had originated from Tierpark Berlin. Most of these animals went to Whipsnade Zoo. The two piglets that remained at London Zoo had offspring, but none of the young survived.

4) **Whipsnade Zoo 1959**. Unfortunately we have been told that Whipsnade have not kept any records of these original pigs. It is thought around 50 were bred from these animals and were sold on to zoos and private individuals throughout England

5) **Iain Grahame 1970's** We found out about Mr Iain Grahame from our friends in Germany. Mr Grahame is a writer and has a Wild Fowl farm in Suffolk. When he was planning his farm many years ago he thought it would be nice to have some Potbellied pigs. He set about the task of finding some, in the search he found that the Whipsnade population has decreased over the years but they had one remaining boar and were told that Whipsnade would let them have this boar if they could find a mate for it. Then began the task of tracking down a female, Mr Grahame and his family were sure that somewhere in England there was still lurking one of the Whipsnade females or her progeny. They advertised in national papers and farming journals and found the response to be tremendous, all the replies from zoos and Wildlife parks begged to be put on top of the list when the breeding programme began. But still no sign of a female, until one day a battered Ford van drew up at the farm. The driver explained that his mother had a passion for old and rare breeds of sheep and pigs, and had kept a breeding pair of Vietnamese

Potbellied pigs on her smallholding in Yorkshire. Only one litter of 7 had been born and the sow had crushed all but two at birth. The original pair died also the young boar leaving one female that was five years old. Mr Grahame was told that this lady had seen his advert in the Farmers Weekly, the female was purchased for 20 and twelve Silkie pullets.

It turned out that this sow was pregnant when she arrived and went on to have four piglets, one male and three females. In the excitement of her arrival they hadn't thought to write down the address of the previous owner. They knew for certain she had been born somewhere in Yorkshire, that her brother had died from some obscure complaint not long before they got her, so it was assumed that she had been served by her brother before he died. The piglets certainly seemed to be pure Vietnamese Potbellies.

The boar arrived from Whipsnade and eventually served the female, but the shock must have been too much for him as he dropped down dead after performing. The sow went on to have fourteen piglets.

We have been very lucky and have talked to Mr Grahame on the telephone, he told us that the Potbellies he bred have been sold to zoos and private individuals all over the country. We hope that Mr Grahame will write soon as he has records of his stock. We feel that he was one of the first people in this country to actively breed and market the Potbelly.

All the information above is documented in a book that Mr Grahame has written, it is called Flying Feathers, we have recently read it and found it to be a wonderful down to earth look at the trials and tribulations of setting up a Wild Fowl farm.

**6) Present day Potbellies in England.** From the information we have managed to gain so far we feel that the Potbellies we have today have originated from the pigs that came from Germany in the late 50s, more recently these original imports will have been crossed with the imports from USA.

**7) Imports after 1959** Over the years we have been given information that in late 1989 there were three imports of potbellies from the USA to England. The owners of these imports were advised we were trying to trace the history and were asked if they would get in touch with us, sadly none of them have done so. The law states that the government body dealing with the imports can not give us names or addresses, but have advised these breeders/owners we would like to contact them, and have passed our address and telephone number on to them. If any of our readers in the USA know any breeders who have exported to the UK around this time we would be very grateful for some information.

**8) Sweden (Stockholm area) ?** We had heard from a reliable source some small white pigs came to England from Sweden. (Swedish Royal White, a small breed of pig similar to potbellies) Possibly in the late 70's early 80's. We were told that a lady in Blackpool, LANCS area imported a number of this breed. We are still researching this

area. We know that Mr Fred Tilsley of Deane School Lancs., documented the history of his pigs for America, Mr Tilsley has bred White Potbellies for many years, we are still awaiting a reply from Mr Tilsley.

It is now more than five years since we started documenting the History of the Potbelly in the UK and have never had any reply from Mr Fred Tilsley or have been able to confirm that these white pigs were imported from Sweden.

All of the information in this section has been put together in good faith and to the best of our knowledge. Anyone wishing to see copies of the letters we have received in our search please send a SAE

If anyone has further information on this subject please do get in touch.



## **Biosecurity for Pet Pigs**

### **Dr John Carr**

#### **THREATS TO A PIG UNIT**
















**They are in order of importance, but the order can change depending on many circumstances**

**The number one threat to a pig unit is any sick pig currently on the unit  
Ensure good management of the hospital pen**

<b>Other pigs</b>
<b>Pork products (ham, salami, sausage, pizza)</b>
<b>Knackerman (placement of dead pig disposal area)</b>
<b>Transportation systems</b>
<b>Locality of neighbouring pig units</b>
<b>Presence of a major road</b>
<b>Purchased second-hand equipment</b>
<b>Clothing from another unit</b>
<b>Birds, Rodents, Cats, Dogs, Flies</b>
<b>AI and Embryo transfer</b>
<b>Feed and water</b>
<b>Bedding and straw (note source of manure for straw)</b>
<b>Staff owning their own pigs</b>
<b>Staff visiting pig markets, shows, other pig units and slaughterhouses</b>
<b>Veterinarians and other pig advisors</b>
<b>Visitors (note electricity and gas service people)</b>
<b>New utensils</b>

<b>Location of farm/small holding</b>		
		
General area number of farms	Too close to another farm	Is there a major road near farm?
<b>Perimeter of farm</b>		
		
Fencing needs to be adequate right round the farm/home	Signs and adequate gating	Communication off farm to limit visitors
<b>Visitor security</b>		
		
Visitor book	Shower and toilet facilities	Farm clothing
		
Boots	Electricity and gas meters	



<b>Internal biosecurity</b>		
		
Feed delivery from of farm – do not allow feed wagons on farm	Feed storage – bagged food should not be stored on the floor	Straw storage
		
Water storage	Manure storage/disposal	Rodent control, too much rubbish
		
Bird and fly control	Hospital pen location	Cleaning protocols -batching
		
Dead animal disposal	Knackerman	Isolation facilities and location
		
Loading facilities		Animal Truck

<b>Animal Contact</b>		
		
Other pigs	Other livestock	Other animals
<b>Medicine use</b>		
		
Disposal	Hygiene	Food products
<b>Staff and family members</b>		
		
Their own pigs	Visit other farms/markets/shows	Visiting Slaughterhouses

## **Foot and Mouth Disease – the 2001 UK Pet Pig experiences Heather Powles**

Introduction.

Hello I'm Heather Powles. As you probably know, I am from the North of England. I Founded and run The Potbellied Pig Club of Great Britain. I live on a smallholding around 6 acres. I attended Agricultural college and have been a student for years at the University of life. ( although just how many years is my secret.) I am not politically inclined nor am I an activist.

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I first became aware of potbellied pigs in 1989 and having had some experience with pigs. I decided they would make a nice addition to our menagerie.

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With a breeder nearby, I soon became the proud owner of my first pig Boris, the only advice I was given at that time, was, don't let him get too fat, and sketchy details on what to feed him.

I began thinking there must be more information on how to care for these animals, so I began to search.

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All I found in the UK was a small book written by three vets from Liverpool University, one of whom was Dr John Carr.

Then I came across an American book on the subject and this pointed me in the direction of P.P.R.S.I. (The Potbellied Pig Registry Service INC) which was at that time run by Betty Beeman.

I subscribed to their newsletters and found them to be just what I wanted.

The Registry was taken over by Jenny Blaney and she suggested that I started something similar in the UK, it sounded a bit daunting as I had no experience what so ever, but by this time I had amassed plenty of contacts, and more people were keeping these pigs as pets, These new owners required information.

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I contacted Liverpool University and spoke to Dr John Walton one of the pig specialists there. I braced myself for the verbal attack, about silly women taking up precious, valuable, time but instantly he put me at ease. He was very enthusiastic and actively encouraged me to go ahead with the promise of help with vet articles for the newsletter.

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So the Potbellied Pig Club UK was born, within a short time we had over 400 members. John Walton continued to help us until his early and sad death in August of 1996.

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I was left with a bit of a dilemma, not for long though, some one gave me a contact number for John Carr (he probably regrets that!!). Like John Walton, John Carr has been the back bone of the club, nothing is too much trouble for him and he has helped save the lives of many peoples pet pigs through his advice to owners and vets alike.

We were devastated when we found out he was leaving us and coming to you! Some members had a plan to kidnap him and keep him locked away in someone's barn, then perhaps pass him round, each having him a week at a time.

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But joking aside he is still there for us, and I want to thank him for that.

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During the F&M outbreak he was such a calming influence to myself and others, he took time out from his family to calm me down when I phoned sobbing so much that I was unable to speak, no it wasn't my animals about to be culled, it was my friends, luckily she still has them.

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Now an apology,  
when you talk on a subject it should be interesting and amusing, if for no other reason to keep your audience awake,  
I found nothing then and nothing now, amusing about the 2001 foot and mouth epidemic in the UK, it was a nightmare.  
It was the most traumatic episode I have ever experienced .

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I will tell you how F&M affected Me personally and other members of our Club.  
Everything that went on during those months affected us all either directly or indirectly. Some members lost their animals, some were under extreme pressure, self imposed imprisonment, daily veterinary inspections, intimidation and bullying, but we all took it personally, it filled us all with fear.

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No one could hide from the media reports, telling of daily horrors, you could try! Turn off the TV; unplug the phone and the computer, but what if you missed something?  
Something important that may affect you or your friends.  
Most of us know people who are farmers, and believe me most farmers love animals, they were equally as devastated when their herds and flocks had to go. It was out of control; too many movements of livestock had been made before it was discovered and movements halted, the disease had spread.

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Still, when I hear of a foot and mouth scare in the UK, I worry. The latest turned out to be Orf, (A viral infection causing warty type blisters on the mouth and feet of mainly young sheep and goats), this happened just before I left to come here.

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### **How did it all Begin?**

I remember vividly when news broke that there may be a case of the disease. It was a radio news bulletin late in the afternoon of the 21st February. A frantic phone call to my friend who keeps Alpacas and pet pigs; confirmed she'd also heard this news.  
Reports were it was suspected on a pig farm around 35 miles from me, and at an abattoir in Essex hundreds of miles away. I wasn't too concerned then seeing as it seemed quite a distance away, but set about straight away taking necessary precautions.

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I locked all my gates to keep people off my land confined my pigs to a small paddock, and then phoned my vet to find out if they had a supply of disinfectant that would kill the virus, this was for spraying car tyres, and for cleaning footwear etc. Now I've used the same vet practice for 25yrs so knew the vets well. The pig vet Alan answered the phone and his words chilled me to the bone, when I said, it's quite a distance away and did they have any disinfectant, he replied, *'Heather it's a lot closer to home than you think'*. I could tell by his voice it was serious.

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At that time he was unable to divulge just how close it was as they were waiting for test results; turned out it was only 4 miles. From then on the countryside was shut down, all public rights of way closed, we had to get used to the term **A** Notice and **D** notice.(Oh yes and that word – contiguous – it means neighbouring )

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An **A** notice meant your stock was going to be culled, the disease confirmed by test results or on suspicion of the disease after a clinical examination by a vet, all farms contiguous to a case were issued with **A** notices. This also meant the people were imprisoned on the farm, unable to move until after the animals were culled, removed, and the farm thoroughly cleaned and disinfected. A **D** notice meant you had to have daily vet inspections for up to three weeks to make sure your animals remained healthy.

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I made myself busy constructing tyre washes with plastic sheets and old carpet this was soaked in disinfectant to kill any virus that may have been picked up on the road. There was only my husband's car going out daily and mine only when necessary.

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I found a full set of waterproof clothes, some disposable rubber gloves and a shower cap for my hair. Near to the paddock where my pigs were kept I have an empty shed which I used for keeping these items of clothing and a disinfectant spray, every time I went near my pigs I wore those clothes, washing down with the approved disinfectant before entering and after leaving their area.

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I was the only one going near the pigs; to everyone else they were strictly out of bounds. This advice I also gave to our members. If I went out in my car to shop for food I would completely spray my car from top to bottom before re-entering the farm, then shower and change my clothes.

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It was scary going out, I was afraid of crowded places, frightened in case I accidentally brushed up against some one who had virus on them. Neither I nor our members were experts in the virus field so we had to rely on what we were being told about its spread, which a lot of the time seemed conflicting, especially the airborne spread; a constant check was kept on the weather forecast to see the temperature, wind direction and rainfall prediction.

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I had gathered from the information being broadcast, that the virus need cool damp conditions to survive (boy did I panic if we got a Northerly wind blowing). In the end I

stayed home and friends shopped for me, putting any necessary items over the gate, it was less stressful that way.

Any fruit I fed my pigs was scrubbed in hot water just in case it was contaminated, I stopped buying meat in case that was contaminated, paranoid you might think? Perhaps I was. Many of our members did the same, some never left their homes for months. Many suffered hardships, heating oil ran out, and people were afraid to buy any more, the delivery truck might bring some virus in. Friends and family were told not to visit. We were in isolation in the hope we might save our animals!

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Now I can remember the outbreak we had in the 1960's, although I was very young at that time, I used to visit a friend who's parents had a farm, they had straw soaked in disinfectant at the entrance, I was only allowed to visit as I wasn't in contact with any livestock. I can still recall the fear her parents felt. John probably won't remember that outbreak; he'd still be in diapers then.

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The policy in the 1960's was to cull the farm with the disease then burn the animals on a pyre, or bury them on the farm. I had worked it out that nearly 40 yrs have passed since the last major outbreak and science has come a long way hasn't it?, surely they won't cull and burn?

How wrong I was, what was to unfold over the next few months was horrific.

As soon as Foot & Mouth was confirmed, I got a letter off to all our members advising them of the strict precautions they must take.

I'd been contacted by one member who practices homeopathy about the benefits of Borax 30. I discovered that hundreds of people were using this, including farmers.

I found the following information on Borax.

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"Borax provides a natural organic protection against the Foot and Mouth virus. Animals may still become carriers but apparently only for an average of 3-4 days, and do not seem to display any symptoms or lose condition, but quickly recover.

I must stress we were using it as a preventative measure.

Suppliers of Borax say they cannot guarantee complete protection, nor do they advertise this product as the answer to Foot & Mouth. However many thousands of farmers are now using Borax as a preventative. Like us, they take the view that anything is worth trying, especially a remedy that has proved so effective in the past. It is also understood that a farm in Cumbria, right in the middle of an infected area, had escaped. It was using Borax 30.

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During the last major outbreak of Foot & Mouth in 1967, anecdotal evidence indicates that those farms using Borax escaped, even when their neighbors were infected with this highly contagious disease.

This information was also passed on to members.

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It wasn't long before phone started ringing, members asking questions, the one that sticks in my mind was from Janet who lived in Cumbria, I remember her saying to me "will it hit our area?"

At that time there was not report of it there, little were we to realise that Cumbria would be the county worst hit, in total they had 893 cases, then they culled every farm within 3 kilometres of each supposed infected farm.

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People were asking will they vaccinate? Will they cull, and if so will they kill our pets. The only thing I did know for certain was if any pet livestock became infected yes they would be culled, I certainly at that stage didn't think they would be killing anything that had four legs.

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The difference between the 1960's outbreak and 2001 was during the 60's we didn't have the internet, now with the click of a mouse you can be in contact with people country wide and source any information needed. Another friend who is an animal health inspector also became a good source of information, as he was working at one of the disease control centers.

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Tony York was a breeder of Rare breeds of pigs, he wrote some wonderful articles for our newsletter, his story I will touch on later, he called me and pointed me in the direction of help groups on the internet, they were country wide groups and through this I became aware of what my husband would probably describe as more information than was good for my health.

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We were frightened people all of us, every call I got from members told me they felt the same. You don't feel like eating, stomach constantly churning, feeling sick, sleeping is nigh on impossible, the worst part was trying to sleep with a churning stomach, managing to doze of then waking to find that fear thumps you in the gut again because you know that the morning brings no change. Will it be mine they come for today? I can tell you there were a lot of Anorexic Alcoholics during that time.

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I found though that helping other people through this and advising them did take my mind off my problems, and although my phone was forever ringing, I was grateful for those calls.

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People from all walks of life including vets, virologists, farmers, pet owners, and even a dairy farmer called Gary from Kansas were involved with these groups and helped to support us. The group was also in contact with Proff Fred Brown of Plum Island who was one of the world's experts on F&M. Sadly he passed away in February this year. [www.warmwell.com](http://www.warmwell.com) one of these groups is still running now, continuing to inform us.

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These groups were only set up when it became obvious that the disease had got out of control and the government bodies dealing with it were not coping. In another scenario these groups would not have been necessary.

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By early March the cases were growing daily and it became obvious that vaccination wasn't going to be used yet, although the government were saying vaccination is still an option! Farmers leader Ben Gill and just a few others were oppose to it as it would take longer to regain our disease free status allowing us to export again, I must point out here that Although Ben Gill was the president of our National Farmers Union I can tell you for a fact that he only spoke for a minority of our farmers.

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A big dairy, and a supermarket chain stated that they would refuse to take produce from vaccinated animals. their reason, consumers wouldn't buy products from these animals, but I thought hang on! We have been eating meat from animals vaccinated against F&M for years. Corned beef from Argentina for one! That's still selling in the UK. Other Countries were vaccinating and had been for years. None of their animals were been slaughtered like ours. Their meat was still being sold and eaten

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I was confused, because at that time our exports were equal to our imports, I know we have to trade within Europe etc., but what's the point!

Our then Minister for agriculture Nick Brown started appearing on television, I can still picture it now, him saying, 'everything is under control', we knew from our internet groups that this was far from the truth, I could have nicely punched him in the nose!

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On the day of my birthday in early March my husband and son trying their best to cheer me up, had bought me this,- (show stuffed pig singing happy birthday) I sat at the kitchen table with my glass of Brandy, another yearly birthday treat, when the phone rang, It was my friend the animal health inspector, it was late, around 9pm, cold and dark he told me he was sitting outside a pig farm just two miles from me, the test results from the farm had come through as positive this was the third test in this farm, he had to stay until they slaughtered all the pigs. I looked at this singing happy birthday and wept.

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The following day a call came from a member living near an area called the Forrest of Dean, this area had a lot of free roaming sheep and she told me they were going to cull these, as, if I remember rightly some sheep were found to have antibodies in their blood. Lambing was in full swing and I was horrified at what she told me, allegedly some of the slaughter men had been killing the lambs by either stamping on their heads or swinging them against a wall. Sadly this was not the only instance of inhumane culling there were hundreds more reported all over the country some with eye witness accounts, photographic evidence and video footage, to this day no one has been prosecuted for this. We were told it was exceptional circumstances.

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Now you might wonder what this all has to do with myself and other members, but everyone had access to this information it was all we talked about, we were watching the events spread out before us like some horror story. Some thing should be done.

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There were terrible welfare problems for some animals, because of movement restrictions, farmers had been unable to move their flocks nearer home for lambing,



which meant they had to lamb outdoors in the fields they had over wintered in, by now they were fields of mud. Easter of that year the front page of a national newspaper published this photo, this little lamb was one of the lucky ones, it survived. Under normal circumstances should any farmer allow his animals to live in these conditions, he would have been prosecuted.

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I answered the phone one morning to find it was a chap who had been a member of our club for a number of years, he was sobbing, he said to me, 'they are here now, they are killing my pigs, the pigs were little potbellies and they were litter mates 6yrs old he'd had them since they were piglets.

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I was speechless. I felt so helpless, not being able to do any thing, or even console this poor chap.

There had been a positive case on a farm a mile away and they had decided they needed to cull all the livestock in the nearby village, most of which were peoples pets, to this day this gentleman is unable to keep any pet pigs as he couldn't go through that trauma again.

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Coming up to Easter that year cases were rising daily at an alarming rate and it was now very evident that official bodies were not coping. It was supposed to be, infected premises culled within 24hr and contiguous within 48. Only 64% of this target was ever claimed to be reached on the 24hr cull and nothing was ever published for the contiguous cull so we can assume their figures were nothing to shout about, not only that with the enormous scale of killing, dead animals were being left to rot in fields, barns and farm yards as there weren't the resources to cope. We were still being told it is under control and vaccination hasn't been ruled out!!

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We had an election coming up in a few weeks so Our Prime Minister declared he was taking control and the Army was drafted in. Funnily enough on the days leading up to the election the number of daily cases seemed to drop, media attention cooled off then, after the election they rose again and it was hot news once more.

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We began Fighting Back.

Through my friends on the internet support groups it became evident that the contiguous cull was not strictly legal, and there was a good firm of lawyers helping people fight the government and keep their animals, now it wasn't just pet owners but many farmers fought.

A network was set up through the group and at any given time should anyone need help to fight, support would be there in the form of people to help barricaded farm entrances, the media would be informed and the law firm contacted, none of the people who resisted the cull ever went on to develop Foot & Mouth. MAFF always withdrew from a case if it included a challenge to their legal right to slaughter healthy stock thus never allowing the legality of their actions (slaughter on suspicion of contiguous cases) to be challenged in a court of law.

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These people were known as the ‘thorn in MAFF’s side’ and life was made a difficult as possible for them. The way the cases were being reported after this made it evident these people resisting were not responsible for the spread of the disease.

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A second letter went off to members giving details of the Lawyers, and other advice to help with the fight. I made it clear that if you suspected your animals did have foot & mouth then it would be necessary to contact the authorities. This worried people as there were some inexperienced vets on the job and wrong diagnosis was not unheard of, but animals were slaughtered on suspicion, with out any tests being done.

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This again alarmed me as my male potbellies are sometimes prone to plain old zits on their chins and as luck would have it one came out in a couple of these zits, any other time I would not have been bothered but I was now.

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By the end of April I was surrounded by supposed infected farms, cases country wide were coming in as many as 40+ per day. In the worst hit Counties the experts had concluded that they would now need to cull every animal within a 3 kilometre radius round any infected farm.

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In Durham where I live we were slightly better off and for us it was everything within 1 kilometre, also the vets working in our area seemed an experienced bunch and were more professional and humane.

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From my sitting room window I could see at least 10 pyres burning, I curled up into a ball on the sofa, not wanting to look, just wanting it to go away. The wind would blow the smoke from these burning animals in our direction, I will never as long as I live forget that sweet sickly smell of burning flesh.

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By this time my pigs had been sealed up in our stable block I had sealed all the gaps with expanding filler and the only air they got in was through a vent at the top of the doors. On this I put sacking and kept soaking it in disinfectant. I left the lights on for them during the day and they had a radio to keep them company. They were now bedded on this type of bedding (Show Sample) as I wouldn’t bring any straw in from other farms. It is clean and they looked like black pigs lying on fluffy white clouds.

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They seemed content enough, I had my own sweet hay from the previous year and they nibbled on that instead of grazing outdoors, one mistake I did make though was allowing them to become a bit overweight, I kept thinking each meal may be their last and made sure it was a good one. My friend had done the same with her animals even buying a fogging machine to keep the air pure in her barn. And we’d both strung raw onions everywhere as we’d been told these also helped purify the air, desperate people take desperate measures.

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Cumbria now had it's own killing field an old airport at Great Orton where sheep from all over Cumbria were taken by the wagon load day after day to be culled then buried in mass graves each half a mile long, many of these sheep were giving birth while in transit or while being slaughtered. Slaughter men were paid for every animal they killed which meant the faster they went the more money they could earn. As you can imagine some animals were buried alive. Still we were told vaccination has not been ruled out, well were the hell was it we were thinking!!!!

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#### Winners and Losers

A Call from Kristy in Cumbria was worrying; she had two pet Kune pigs, like a lot of people's animals they were sealed up in their building. MAFF had culled all the sheep in her area, but not the cattle. Without warning they turned up on her doorstep with slaughter men and wanted her pigs, she refused and got straight in touch with the Lawyers, they advised her and MAFF backed off, she allowed them to inspect her pigs on a regular basis and all was well, many weeks later I got a lovely card from her thanking me and saying she would never have though the lives of her pigs would depend on her being a member of our pig club.

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This touching email came from a farmer with the heading:-  
**TO FARMERS WHO ARE AFFECTED BY FOOT & MOUTH**

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Eight farmers have lost all their stock in **Roe-burn-dale** Valley due to one case. I was one of those farmers. "*May the road rise with you*" is a Celtic blessing, which I used for my sheep before they were slaughtered on Wednesday 11th April. The vets slaughter men and the army were present. I found this very appropriate and hope that other farmers in a similar position can use it.

Prior to the slaughter I also gave the sheep some Bach Flower remedy called Aspen, which is for "Fear of Death" and gives a feeling of Euphoria, "Once released, we are beyond pain, suffering, care, worry and fear and become participants of joy". I took this remedy as well as some of the other participants.

It was then sprayed on the sheep so that it touched their eyes and noses. Within minutes of using it the sheep and lambs settled down peacefully in the pen. I then said the blessing.

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**May the road rise with you,  
May the wind be always at your back,  
May the sun shine warm upon your face,  
May the rain fall soft upon your fields,  
And until we meet again,  
May God hold you in the hollow of his hand.**

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I hope that this will help other farmers cope with this devastating time.

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Anne from Yorkshire lost her pigs, they were healthy but Foot & Mouth had hit her village and she felt she it would not be right to fight as all her friends had given up their stock. I felt particularly sad about these pigs as we had re-homed with Anne, they had belonged to a Lady who was dying from cancer and needed to know her pigs would have a good home.

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Carolyn Hoffe lived on the borders of Scotland, had 5 pet sheep she had moved there after her husband died and she led a peaceful life with her pets. She was living in an area where they were culling in the 3 kilometre range.

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Not having any buildings she had sealed her sheep in her living room, removing the carpets and furniture and placing straw on the floor. It soon became evident that she fell just inside the zone and they wanted her sheep.

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Carolyn's case was a high profile one, very much in the media spotlight and the whole country would see this dreadful plight. Living in Scotland the laws can be different to England. She went to court and the Judgement gave her leave to appeal but then issued an immediate destruction order for her sheep.

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Police, Army and vets turned up at her home, it was more like a scene from some terrorist movie. They forced their way into the property roughly manhandling Carolyn's 70 year old mother in the process. On TV you could see a police officer laughing while they were inside killing Carolyn's pets.

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I wondered how I would be able to cope if this happened to me, then I realised I wouldn't, If MAFF came for my animals and they were healthy, I would have been suicidal.

In the South West of the country, the County of Devon was also badly hit, one of our members living on the Devon Exeter border had two pet pigs, 'my girls' he fondly called them when he spoke to me of them. His wife had died a number of years before, and his whole life revolved round his girls. He was terribly worried, as most of us were when the disease seemed to be creeping closer to him.

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Sadly I had a call from his daughter to tell me her father had committed suicide; he could not cope with the fact he may lose his beloved girls. Even sadder was the fact that he wouldn't have lost them, cases in that area started tailing off and it didn't get any closer to him. His girls are still alive and well being cared for by his daughter.

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Tony York whom I mentioned earlier had an urgent call from a friend living in the Leicestershire area. A farm about a mile from him had been culled on suspicion and MAFF wanted to cull the 4 neighbouring farms one of which belonged to Tony's friend.

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They kept rare breed pigs and Kunes. Tony dropped everything left his wife to look after his Pig Paradise Farm and headed down to Leicestershire armed with all the legal info he

could find. There wasn't just one farm to save there were 4 and what followed was an emotional rollercoaster ride for three long weeks. After about 10 days the test results came back from the farm that had been culled, they were negative.

We were kept informed by daily emails of this fight, they swung from euphoria to the depths of despair on a daily basis. Everyone tried to keep their spirits up through phone calls, text messages and ordinary post sending cards and letters. Then on the morning of around day 21 we got a message through in bold capital letters simply saying WE HAVE WON! This was repeated about a dozen times. I can just see Tony jumping up and down shouting this.

All 4 farms were saved.

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Since that victory Tony had been having a battle of his own with DEFRA/MAFF and sadly this one hasn't got a happy ending. Due to the restrictions imposed on him Tony had to give up Pig Paradise Farm. It was a heart breaking decision for him, but one that was necessary .

He wrote:-

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“Despite my best efforts and trying everything I know (legally!) Maff has had a victory in their own way. We are now faced with closing 'Pig Paradise Farm' whilst also selling the house, the pasture land and woodlands to clear our mounting debts. We shall be advertising the property in the next week or so and once we find a buyer we shall start planning the rest of our lives”.

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Tony is now living in France, but comes to the UK on a regular basis to run his pig keeping courses from Blackfordby Hall the farm helped save

The Rumor mill

Being in country wide contact, we started hearing stories of bits of carcasses left in fields on clean farms, this came from the Cumbrian area. Why would anyone do that? Well there was a lot of money to be made, in the way of compensation to farmers for the loss of their stock, and the slaughter men paid per animal they killed, the wagons who removed the dead stock, the clean up teams that went in behind them. They all had reason for it to go on.

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One sheep dealer from the Devon area had been bragging in his local pub one night that he had made over a million pounds through compensation payments for the animals he had to have culled, he was given a good thumping when he emerged from the pub that evening as many thought he was responsible for the spread of the disease in Devon.

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Now most farmers love their animals, but there has to be the few who don't, tales were emerging of some **un-scrupulous** ones faking the disease by pouring boiling water on their animal's tongues hoping they would be culled and they would get a nice compensation payment

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By the end of June the daily cases were, with the occasional blip, falling, we were still keeping up strict bio-security precautions and still praying for the end. I can remember my friend and I on our daily phone calls, wishing we had our normal 'boring' lives back. Now that I have that, I wouldn't swap it for the world.

In April of that year, my nearest case brought me within only a few yards of the one kilometer Zone for our area. In August of that year had a visit from two vets, I found them outside my still locked gate, both were from the US. I would not allow them to come in and see my pigs, such as the shortage of vets during the outbreak, one could not guarantee that they were clean, by that I mean, hadn't been near infected animals for at least a week. They were very nice and respected my wishes.

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When I did venture out again later that year what I saw shocked me, mile upon mile of empty fields, the silence was eerie, even the birds weren't singing.

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What caused the outbreak? Well it is reported to have started on a pig farm in the north of England, the farmer was a swill feeder, swill is waste food. It is supposed to be treated at a high temperature before being fed to ensure any disease is killed, it is reported that this farmer hadn't done this and thus started the outbreak.

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Some vets did report they had sheep with antibodies that could not possibly link to the original source.

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There were reports of sheep that were exported to France being found with antibodies in their blood this was in the October before the outbreak. MAFF were contacting timber merchants to see if they could supply timber for pyres weeks before the outbreak, we were told this was just routine. There were many more rumors as to how it started. Another one was our government wanted to reduce the number of sheep, another it was a biological attack. I wonder if we will ever know the real truth

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I phoned My friend the animal health inspector last week, to find out what our governments stance would be should we have another outbreak. He told me, they seem to change their minds week by week, but at present it would be cull the infected farm, vaccinate contiguous farms to create a fire wall. But later they would go back and cull the vaccinated animals. I just hope to god they either change their minds and vaccinate to live or pray we don't get F&M again.

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The clubs newsletters dried up as no one wanted to write happy letters about their pets anymore.

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The members of our pig club, among them occurred three heart attacks, 5 had nervous breakdowns, 1 confirmed alcoholic still in recovery and 1 suicide! Not one reported case of F&M in Potbellies was ever recorded.

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At a meeting in Cumbria, after the outbreak, which was attended by 385 farmers, 384 voted for vaccination one abstained, saying he said he simply just didn't know.

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I was one of the lucky ones I still have my pigs, I used to take them to pig shows, even did a few TV programs with them. Now I would never take them out again. My gate is still locked and the postman still has to put our mail in a bag attached to the gate.

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Britain is now free from Foot & Mouth disease, but the cost in terms of livestock is far greater than the Government has previously admitted. Investigations revealed the number of animals slaughtered, nearly three times the figure released by The Department for Environment, Food and Rural Affairs (DEFRA) The department has now admitted they neglected to count millions of sheep and cattle. The final total was at least **10million 849,000** animals killed. Over 60 Farmers committed suicide.

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What effect did Culling have?

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It meant the Slaughter of Millions of healthy animals.

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Disposal of all these carcasses, created problems.

Firstly there was transportation,

Lorries were carrying diseased carcasses through clean F&M free areas. Many leaking fluids as they went. Locals were up in arms and tried to turn the lorries away.

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Burning carcasses on pyres posed a risk to human health larger than any disease, the pyres burned for days on end filling whole areas with Acrid smoke, dioxins and other contaminates, the smell clung to everything. It had been proven that F&M could be spread as the virus became airborne from the cooler parts of the fires.

Burying them created Huge Environmental Disasters.

The stench of rotting flesh was over whelming, and people living close to the land fill's, had to put up with it for months.

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People living in the areas that had large burial sites didn't want them.

Animals were buried that had to be dug up again as they were too near the water table, others had to be dug up and burned as they were over 20 months and had a BSE risk.

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Local water reserves near one site became polluted, drinking water that contained body fluids from a land fill, had caused stomach upsets in a small Village.

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There was Political turmoil.

The press had a field day publishing all the horror stories of botched culls, children crying as their pet sheep or cows are slaughtered.

Now the public who at the start didn't want to know,  
after all this is something that happens in the country,  
were now up in arms when they started reading about this and seeing it on the TV.  
Of course the Opposition Party Used it politically, saying the handling was wrong.

Local impact.

The countryside was closed down and this had a huge impact on tourism, public houses, caravan and camping parks, hotels, shops, restaurants to name but a few.

Many went out of business. Never to re-open again, farmers were compensated for their losses these people were not.

Farmers who had managed to avoid the disease went out of business as they had been unable to sell or move any stock for months.

One told me he would have been better off if he had the disease.

I use this opportunity to implore the Veterinary Profession, the scientists, intellectuals, and the Politicians of this world, to find a better way. We can not, and must not, allow the barbaric, cave man like acts that we witnessed in 2001 to reoccur.

We are the predominate Species on this Planet and should respect other species. I am not against "Animals for food" but this is 2004 ,lets get it right!

If it had been vaccinate to live from the start:- The Result would have been nothing, no crisis!!!!!! So why not!

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I humbly ask you which is better ?

**Thank you**











**Pictures you just do not want to see:**




**Diseases such as Foot and Mouth devastate farming communities**

## Foot and Mouth Disease and other Vesicular Diseases

### Dr John Carr

<b>Other names</b>	Foot and Mouth Disease - FMD Swine Vesicular Disease - SVD Vesicular stomatitis-VS Vesicular Exanthema of Swine and San Miguel Sea Lion Viruses		
<b>Causal agent</b>	Foot and Mouth Disease - Virus Picornovirus (Aphthovirus) Swine Vesicular Disease - Virus Picornovirus (Enterovirus) Vesicular stomatitis - Virus - Rhabdovirus (Vesiculovirus)		
<b>Age group</b>	All ages of pigs can be affected		
<b>Clinical signs</b>			
Foot and Mouth is the definitive disease, the other diseases present with similar signs which may be confused with foot and mouth			
	Incubation period 1 to 5 days but can be 21 days		
	Fever to 40.5°C		
	Skin around the snout, lips, tongue, inside the mouth, around the coronary band and the soft skin on the feet becomes whiter (blanched). Vesicles may develop on the sow's teats		
	Vesicles (blisters) develop		
	Vesicles rupture up to 24 hours after development and if no secondary infection occurs healing is rapid		
	The animals are lame. Lesions in the mouth may not occur obviously in the pig		
	With the feet, the hoof may become detached, revealing the painful raw tissues underneath. The hoof can re-grow, but is often deformed. This can take several weeks		
	The disease affects nearly all susceptible animals, but few animals will die specifically with the disease		
			
One day un-ruptured vesicle on the snout	Ruptured vesicle on the snout	Horn separation	Ruptured vesicles and some hoof separation
			
Blanched un-ruptured vesicle	Vesicles on feet		Pig lame with FMD

<b>Infectivity of Foot and Mouth</b>	
	Affects all cloven-hoofed animals - pigs, cattle, sheep and goats. VS also affects horses
	Rapidly spread through the air, animal contact and vectors, such as clothing, utensils, vehicles
	Can be spread through meat and meat-by products, especially fast frozen feeds
	Spread through semen
	High humidity, cloud cover and moderate temperatures favor airborne spread (over 20 km)
	Pigs produce aerosols a 3000 times more concentrated than cattle
	Carrier status occurs in cattle. FMD can be excreted in the milk for up to 7 weeks
<b>Post-mortem Lesions</b>	
	Vesicles, generally ruptured, in the mouth, nose and on the feet
<b>Treatment and control</b>	
<b>Treatment</b>	Notify your vet if clinical signs are suspected
	None. In endemic areas a vaccine is used
<b>Control</b>	Strict regulation of importation of animals and animal products infected with vesicular diseases
	Euthanasia and disposal of animals- burial, composting, rendering or burning
	
<b>Zoonotic implications</b>	
	Human infection does occur but is extremely rare, often without any clinical signs

## **Overview of Nutrition for the Potbellied Pig**

### **Obesity of the potbellied pig**

**Penny Yocum, M.S.**

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Proper nutrition for your potbellied pig lies in your hands so it is important to understand what nutrition is and why you feed the ingredients you do. Nutrition is the process of ingestion, digestion, absorption and metabolism of nutrients. Nutrients are chemical substances found in feedstuffs that provide nourishment to the body. Adequate amounts of nutrients are needed to provide maximum growth, reproduction and lactation to your pig.

Pigs have a similar digestive system as humans. They are omnivores meaning they have the ability to digest both vegetable and animal products. However, the majority of commercial potbellied pig feeds available do not utilize animal products in their formulations. Pigs are also classified as monogastrics; meaning they have a 1 chambered 'simple' stomach as opposed to a ruminant animal such as a cow that has a 4 chambered stomach. Pigs do have a voluminous cecum that enables them to perform a limited amount of microbial digestion of fiber.

There are 6 classes of nutrients that are important in nutrition: carbohydrates, lipids, proteins, vitamins, minerals and water. To briefly explain each nutrient, carbohydrates will be defined first. Carbohydrates are a major food source to obtain energy and can be classified in 2 forms. The first form is the structural carbohydrate also known as fiber. Structural carbohydrates contain cellulose, hemicellulose and lignin. These components are found in high concentrations in grasses and hays (forages). The second form of carbohydrates is a nonstructural carbohydrate. These are sugars such as glucose, fructose, sucrose and lactose. Structural carbohydrates are found in high concentrations in cereal grains such as corn, oats and wheat.

Lipids serve as another energy source that provide 2.25 times more energy than carbohydrates or proteins. Adding fat to a diet can be a safe way to increase energy to a pig and specific fats will give sheen to the hair coat. Fat sources are vegetable oils and oil seeds such as corn oil, soybean oil, canola oil, flax seed, and rice bran. Most commercial potbellied pig feeds are formulated with fat levels ranging from a minimum of 1-5% depending on the nutritional stage of the pig.

Proteins make up body structures such as hair, hooves, skin, muscle, blood cells and soft tissue. Proteins are also regulators of chemical reactions within the body by serving as enzymes, hormones and can even serve as an energy source if given beyond its requirement. Proteins are comprised of amino acids linked together in different orders. A specific protein can be classified as either essential or nonessential. There are 10 essential amino acids that the body can not synthesize quick enough to meet requirements and they

must be supplied by diet or from bacteria. Lysine is an essential limiting amino acid that is added in swine diets. Nonessential amino acids can be produced in body tissues. Protein quality and quantity is an important consideration when evaluating feed ingredients. Quality relates to the amino acid profile of an ingredient. For example, both soybean meal and fishmeal are protein sources. However, soybean meal has a more complete amino acid profile because it supplies a greater range of the essential amino acids. Protein quantity defines the total amount of protein in the ingredient, with no relationship to quality. Large quantities of 'poor quality protein' may not meet amino acid requirements. Both cereal grains and forages contain protein. In general, legume forages such as alfalfa have a higher protein content than grass forages such as orchardgrass. Protein intake for potbellied pigs varies based on parameters such as age and breeding status. However, in general, young, growing pigs require protein levels around 18-20% while protein levels of 10-14% are sufficient for adult potbellied pigs.

Vitamins are important in tissue development and metabolic activity within body. Vitamins are classified in 2 ways: water soluble versus fat-soluble. Water-soluble vitamins cannot be stored in body tissues for long periods of time. Examples of water-soluble vitamins are vitamins C and B. On the other hand, fat-soluble vitamins are stored in fat reserves of the body. Fat-soluble vitamins are vitamins A, D, E and K. Vitamins A and D are important in bone formation. Vitamin A can be obtained from forages while vitamin D is obtained from exposure to sunlight. Vitamin E has antioxidant properties and is also important in muscle structure. Vitamin E can be obtained from forages and seeds. Vitamin K plays a role in blood clotting and can be obtained from forages and fishmeal. B vitamins serve as coenzymes within the body and can be obtained from forages, yeasts and animal proteins. Vitamin C is important with collagen formation and can be obtained for forages and citrus fruits. Even though some vitamin deficiencies may go unnoticed, there are times when a vitamin deficiency plays a role in helping the veterinarian diagnose a medical problem. If a young pig is deficient in vitamin A it may appear uncoordinated, paralyzed, have weakness in the back or be blind. Intact boars can have sterility issues and intact females may have poor reproductive performance, conception rates, resorption of fetus and fetal deformities or fetal death. A vitamin D deficiency in young pigs will show signs as rickets, which is an enlargement of joints. Mature pigs-with a vitamin D deficiency can incur bone fractures. A vitamin E deficiency in young pigs may cause sudden death, edema, white muscle disease or liver necrosis. Sows will exhibit death of embryos while piglets nursing a vitamin E deficient sow may exhibit muscular incoordination. Pigs with a vitamin K deficiency may have a prolonged blood clotting time. Hoof cracking is a common sign of lack of a B vitamin called Biotin.

Minerals are inorganic chemical elements meaning they do not contain a carbon molecule. Forages are a natural source for minerals but their levels are indicative to the soil they were grown in. There are 2 classifications of minerals: macro and micro minerals. Macrominerals are needed in relatively large amounts within the body and are minerals such as calcium, phosphorus, sodium and chloride.

Microminerals also known as trace minerals are needed in small amounts within the body and are minerals such as copper, iodine, iron, manganese, selenium and zinc. Calcium, phosphorus, magnesium, copper and manganese function in bone and soft tissue

formation and maintenance. Phosphorus, sulfur and zinc play a role in protein synthesis. Iron and copper are important with oxygen transport while sodium, chloride and potassium aid in fluid balance. A common deficiency with calcium is hypocalcemia (low blood calcium levels) in lactating females. Phosphorus deficiency will be displayed as rickets in young animals. Sodium or sulfur deficiencies will cause a reduction in growth. A lack of iron in the body will cause anemia. Copper deficiencies will result in a dull hair coat. If a pig is seen with a thickening of the skin (parakeratosis), a zinc deficiency may be a result. An abnormal hair loss may be a result of lack of iodine while a selenium deficiency or toxicity may cause liver necrosis. Selenium levels at 20-30 times the required level may cause a reduction in feed intake, loss of hair, separation of hooves at the coronary band and as stated above, liver necrosis which may result in death. Excessive dietary calcium can bind zinc absorption to result in a zinc deficiency. Excessive common salt (sodium and chloride) can cause nervousness, weakness, seizure and death if not enough water is available for consumption. Never restrict water intake.

Water is one of the most, if not the most, important nutrient. Water regulates body temperature and aids in waste removal from the body. Water also assists in the digestion, absorption, transportation and utilization of nutrients. Water requirements and intake vary based on various parameters. The environmental temperature is one such parameter. As the environmental temperature increases, water intake will increase. A pig living in Florida during winter should have a greater water intake than a pig living in New Hampshire during winter if the water source is not heated. Water intake will be increased for a lactating sow. Pigs living indoors may have a lower water intake than pigs living outside. The type of feed a pig consumes will also cause a variation in water intake. Pigs consuming a commercial pelleted feed mix versus a textured feed will consume more water. Feeds with a high salt and/or mineral content will also cause an increase in water intake. Fresh, clean water should always be available free choice to your pig. Monitoring water intake daily will give you an idea of your pigs' normal water consumption. Should any changes in water consumption occur, consult with your veterinarian. Do not offer your pig 'cold' water to drink during extreme heat. During freezing conditions, offer tepid water if possible. If you do not have an outdoor heating source for the water, at least remove the ice that accumulates on the top. Most importantly, test new water sources for the quality as you would do for yourself. Pigs are expected to consume from 7-10% of their body weight per day in water. 2 cups of water is equal to 0.5#. However, most potbellied pigs do not exhibit this type of water consumption.

Now that you are equipped with knowledge of the nutrients and what nutrients the potbellied pig needs, one of the most important tools is how you use this knowledge. Potbellied pigs appear programmed to 'live to eat'. So, it is our role as their caretakers to provide them with a diet to meet their energy requirements without gaining an excessive amount of weight. Obesity is a major management problem with potbellied pig owners where the pig is taking in an excessive amount of dietary energy in relation to their lack of activity or production level. Obesity can lead to health problems such as lameness, arthritis, deafness, blindness, surgical complications and even constipation. Nutritionally, obese potbellied pigs need to be managed on a high fiber (15%) and low energy diet while increasing exercise. Stimulate exercise by allowing the pig daily walks, move the

food bowl farther away from the pig and spread the feedings into 3-4 servings per day. Remove additional meal treats. A slow weight loss program set over several months to a year is recommended. Monitor body condition of key points such as eyes, forehead, tailhead and excessively pendulous abdomen. A rapid weight loss is not recommended for potbellied pigs. A healthy, steady weight loss program of at least a one (1) year period is recommended. A simple way to determine weight loss is to photograph the potbellied pig initially before the diet begins. Then, take additional photographs every month to identify the weight loss areas. Once the desired weight loss is accomplished, a maintenance ration needs to be set. Remember, each potbellied pig is individual to their energy needs and a maintenance ration for one pig may not be the same as another.

Nutrition plays an important role in keeping a pig healthy. Provide your miniature pig with a well-formulated complete potbellied pig feed and ability to graze on forages. Keep the above mentioned facts in mind and you should have a happy, healthy and fit potbellied pig friend.

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## **Farrowing at a shelter**

### **Nancy Shepherd**

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This presentation will focus on what I feel are the most important aspects of managing a sow and her piglets to produce healthy, happy animals. For the sake of simplicity, I will refer to the pregnant pig as a “sow”. I will approach this talk from the perspective of a sow in a shelter situation. You will have some special challenges because: 1) You do not have a health history on the sow. 2) You do not have a breeding date, therefore you will be unable to calculate the farrowing date. 3) You will have the temperament of the sow to contend with. There will also be decisions to make based on your particular facility. I’m assuming that you have a good working relationship with a vet who has experience with this species and breed. You may need your vet for emergency assistance during a farrowing and more routinely for medical management issues, spays, and neuters.

Since male pigs have viable sperm as early as eight weeks of age, it is paramount that you NOT allow unneutered males access to unspayed females. Breeding through fencing happens. I recommend that male piglets be neutered at three weeks of age. Any boar of breeding age joining your rescue must be placed in a secured area where it is impossible for him to access intact females. He should be neutered as soon as possible.

#### **GLOSSARY**

**Gilt:** Female pig who has never had piglets.

**Sow:** Female pig who has had piglets.

**Gestation:** The time from conception to birthing. (Three months, three weeks, and three days, or a total of 114 days).

**Farrow:** The birthing process.

**Lactation:** Milk production.

**Colostrum:** First milk produced that passes on immunities to the piglets.

**Creep Area:** An area that the piglets can access and the sow cannot. This space serves as a “safe” sleeping and eating area (when pellets are introduced).

#### **SOW HEALTH**

The normal regimen for a sow is to administer a parvo/lepto vaccination three weeks pre-breeding. This aids in the prevention of reproductive diseases. Three weeks pre-farrowing provide an erysipelas/rhinitis vaccine and de-worm. The parvo/lepto vaccination will be unnecessary in cases where a pregnant sow joins your shelter, but the erysipelas/rhinitis vaccination should be given even if you don’t know the expected farrowing date. Your vet will help you work out a vaccination and de-worming program for pregnant sows. Ask your vet about the use of Lutalyse®, a prostaglandin, that could successfully abort the litter. Lutalyse® can be a valuable option for the shelter owner.

#### **FARROWING FACILITY**

The three main ingredients of a good farrowing area are:



1. Availability of reliable/safe electricity. Heat lamps and/or heat mats are necessary to provide adequate warmth for newborns who require a temperature of 90°. I place a heat lamp two feet above the “creep” area and another above the sow. Of course the ambient room temperature will determine how much supplemental heat will be required. 250 watt heat lamps are too hot. I prefer the 125 watt bulbs.
2. No drafts. Make certain the area is draft-free. Curtains or hovers can prevent drafts.
3. Adequate space for the sow as well as an area for babies that she cannot access (creep area). Guardrails across a corner define a safe piglet area, with a heat lamp installed above. These horizontal rails should begin at six inches above the floor and end at twelve inches, so the sow cannot step over. It is also important for the birthing assistant, in this case, the pigwife, to fit somewhat comfortably in the farrowing area. If possible, move the expectant mother into the farrowing least five days prior to the due date so she has time to adjust to her new digs.

### *FLOORING AND BEDDING*

It's been my experience that newborns' little, tiny feet slip and slide on a surface without a mat or bedding. A heavy rubber mat serves as a nice cushion for momma pig and prevents the babies from skinning their knees and developing leg problems. The rubber mat can be washed and disinfected as often as necessary. Disinfecting the total farrowing area prior to moving the sow in is important. A good sanitizing product can be purchased at a veterinary supply or farm and home store. Clorox diluted with ten parts water is also effective. It is very caustic, so be sure to dilute it properly. Before moving the sow in, make certain the cleaned area is completely dry.

Good bedding materials include wood chips, shredded paper or straw. 'Tis true that sows love big, bulky blankets for the nesting ritual. But, occasionally a baby will get tangled and may suffocate. I often give a nest-building gilt or sow an old throw rug or blanket; but, when the business of serious birthing is imminent, out go these luxurious frivolities and only sparse bedding is provided.

### **PRE-FARROWING**

It is most likely that you will not know the date the pregnant sow was bred, hence you will not know her due date. This is definitely not to your advantage, as a sow does not show much until she is about three weeks away from farrowing, dependant upon how many piglets she is carrying. A gilt or sow with only a few piglets may not show at all. A pendulous belly that looks to have dropped and an udder that has an indentation along the mid-line (much like a loaf of nicely baked bread) are physical signs of an upcoming farrowing. Other indicators closer to the actual farrowing time include: nest building that can last from a few hours to several days, individual glands in the udder becoming defined, the ability to express milk from the teats as much as twelve hours before parturition, an enlarged vulva, and lastly, vaginal ooze, the imminent indicator that commences farrowing is soon to begin. Also the sow will urinate and defecate frequently and chew on objects. Before farrowing thoroughly clean the sow's vulva and udder with an antibacterial soap to prevent future health problems for the babies.

I know what you are thinking. “How am I going to get this wild sow that I just rescued into the farrowing area. Is she crazy – wash her udder and vulva. She must be dreaming!” I know of two ways to get a pig from point A to point B if the shake can

filled with food is not going to work. You can kennel the pig or use a rolling cart. I have the directions for building such a cart if anyone is interested. I would not be without this useful tool. If you get a sow in your shelter who you feel pretty certain is pregnant, it would behoove you to work on taming her down. I feel that being with a sow during farrowing is beneficial. This way you can make sure each baby is breathing properly, gets on a teat, and doesn't get laid upon. Some pigwives like to let nature take her course and pretty much stay out of the process. But I'm all for being totally involved, unless the sow will simply not allow it. You want the sow to be relaxed and feel safe. You don't want her to be worrying about your every move.

### **THE FARROWING PROCESS**

When a sow has finished nest building, lays down, usually on her side, and you see the vaginal ooze, you can expect to see signs of labor. She will push and her sides will quiver and her legs will often stiffen and extend as she pushes. Then she will rest for a while. I have noticed that often just before a piglet is born, the sow's tail will do a bit o' flicking. Sometime you will have a little notice. You may see a nose or a foot, but it may disappear again. This is where patience pays off. You really can't do much to help until the head or a leg is out and then, if need be, you can gently help to pull the piglet the rest of the way out. The sow may become "woofie" at this point – jump up to see what has happened. You need to keep the piglet out of her way and safe. Have a small box handy with toweling or bedding in case you need to stash a piglet or two out of harms way while mom rearranges her nest in preparation for another birthing. Make sure to keep the piglets warm. A pig is born with a thin film all over its body and these funny, gelatinous like hoof protectors. Its eyes are opened and it can walk almost immediately. The length of its umbilical cord will astound you. After a piglet is born, dry it off with a towel and check to make certain that it has an anus and does not have a cleft palate. Place it by the udder, if the sow will allow, and encourage it to nurse. Some pigs grab a teat and go, while others act like they haven't got the foggiest. It's up to you to make certain that all piglets nurse so they receive the colostrum they need. I keep records on what time each piglet is born and the condition: alive, dead, deformed, mummy, cleft palate, no anus, etc. This gives me something to do during all the waiting. Usually about midway through the farrowing, the sow will expel an afterbirth. Simply put it in a bucket. You can expect three or more of these afterbirth blobs. There will be a fair amount of blood, so have plenty of towels handy for cleaning off the babies and wiping up. Put clean bedding behind the sow's rump when needed.

Sows are more likely to accept their piglets readily, while a first time mother is not so sure she likes those little things who are causing her pain. After a piglet is born, keep it at the udder area. Often piglets motivate back from whence they came -- the vulva – and mom doesn't like that. She also doesn't want them up by her face while she is concentrating on birthing. Once farrowing is completed, a gilt will most often settle into her job of mothering. Be watchful and do what the circumstances dictate to keep the piglets safe and make sure they get the needed colostrum. Piglets mark to one particular teat within the first hours of life. You will witness squabbling, biting and vocalizing over a certain teat. You may need to physically encourage one of the two pigs who are making such a to-do over the same teat to move over one. It is important that each pig has access to a teat. If you have more piglets than teats, you will need to supplement the

less aggressive ones, or separate the piglets into two distinct nursing groups and rotate them every two hours. If you need to provide supplemental milk, teach piglets to sip from a shallow pan or jar lid. Do not bottle feed. If a piglet is in need of additional milk, it will drink from a pan. Keep all piglets with mom if at all possible.

The farrowing process can last from under two hours to six or more. I like the fast and furious ones that go smoothly and quickly, but that is not always the case. You need to be patient, but at the same time watchful and ready to assist as needed. I have never had to call upon a vet to perform a cesarean section, but I often administer Oxytocin if the sow labors and labors and no pig presents. Judgment based on knowledge is everything during these tense times. I administer between 1/4 and 3/4 cc of Oxytocin subcutaneously in the rump close to the vulva if an hour has elapsed between birthings and it is suspected that there are more babies to come. Oxytocin is also useful if the sow is having trouble producing milk or hasn't expelled all the afterbirth. Consult your vet for specifics. Litter size varies from several piglets to as many as twelve, with an average somewhere between five and seven piglets per litter.

## **NEWBORN CARE**

When you are sure farrowing is complete and all the babies have had sufficient colostrum, take the babies away to a warm spot (where the mother cannot hear them) and give them a medical work up. If it is a large litter, take half the babies away leaving the others to keep mom busy. Repeat the below process with the second half.

1. Check to make sure the piglet has an anus and doesn't have a cleft pallet. In my opinion, if either of these conditions is present, the animal should be euthanized.
2. Nip needle teeth making certain not to cut the gums or tongue. Just getting those razor-sharp tips off is adequate. There are a total of eight needle teeth, two upper on each side and two lower on each side.
3. Cut the umbilical cord to within one inch of the belly and dip it in naval iodine.

**Supply each piglet with oral iron at 24 hours old, or as directed on the product label.**

## **SOW CARE**

If you feel certain that your sow has NOT expelled all of her afterbirth, Oxytocin is appropriate. If the sow exhibits a hard, reddened udder, apply a hot compress, followed by a nice udder rub with bag balm. If the piglets appear hungry all the time, the sow may have insufficient milk production to maintain them. This condition is called MMA – mastitis, metritis and agalactia. Antibiotics will be necessary and Oxytocin can be beneficial. Seek the advice of your vet.

## **WEANING**

The sow's condition, litter size, and the vigor of the piglets will help you determine the best time to wean. I wean at five weeks of age. Never wean piglings before they are readily eating dry food. This is a stressful time, and it's best to move the sow away from her piglets. By following this procedure, the weanlings are left in a familiar environment even though their milking machine has disappeared. Upon weaning, the sow's udder will become engorged and she will be uncomfortable for a few

days. Adding dried or fresh parsley to her reduced daily ration seems to help in the drying up process.

## FEEDING

The most important element in feeding potbellied pigs is to provide complete nutrition while not underfeeding or overfeeding. This can be tricky. I feed my animals two times a day except for nursing females who get to dine three times daily.

**Nursing piglets to 6 weeks:** Use a starter ration that is very palatable (often containing milk products or whey) with 20% protein. Free feed as soon as piglets are interested.

**6 weeks to 3 months:** Use an 18% grower ration. Gradually decrease from feeding free choice until each pig is receiving 1 to 1.5 cups per day. It's okay to use this ration up to five months of age. Finding this percentage of protein is difficult, however, and many use a 16% protein ration for this growth stage.

**3 months and older:** Use a 12%-14% maintenance feed at the rate of 2 cups per day.

**Gestation ration:** Use a 12-14% maintenance ration at the rate of 2 cups per day. Three weeks before farrowing switch to a 16% farrowing ration and increase the amount by about one-quarter cup per feeding. Since constipation can make farrowing more difficult, I like to add a laxative to the ration a week before the due date.

**Lactation ration:** Use a 16% lactation ration for two to three weeks post farrowing, before returning to the 14% maintenance diet. This 16% lactation ration may be hard to locate. I mix a swine supplement to my 14% maintenance ration to achieve the lactation requirements. Feed the sow 2 cups with an additional 1 cup for each piglet in the litter per day. This may seem like a lot of food, but it's nearly impossible to over feed a sow while she's lactating. In fact, she may need more. Increase in feed should occur slowly. Too much food too soon after farrowing can cause the sow to go off feed. Closely monitor the sow's condition in order to correctly adjust her feeding schedule.

Make sure you keep the farrowing area clean and at the correct temperature. Judiciously tend to the medical and nutritional needs of the sow and piglets. Don't forget to take the time to enjoy those wonderful pigfants—there's nothing more fun than watching and playing with baby pigs!

©Nancy Shepherd

**Bruce Lawhorn**  
**Dentistry in the pet pig**

## **Vaccination of Potbellied Pigs**

**Kristie Mozzachio (formerly Karli), DVM (Raleigh, NC)**  
**potpigvet@hotmail.com phone: 919-413-2956**

Vaccination Protocol: Vaccination protocols vary, and there is no widely accepted standard protocol for potbellied pigs. The vaccination schedule should be determined based on criteria including: diseases common to the geographic region, potential exposure of the pig, age of the individual, and reproductive status.

Available Vaccines: Numerous vaccines are available and are geared to commercial situations, often manufactured in combinations and in large, multi-dose vials intended to be discarded after opening. Doses range from 1cc to 5cc per pig, and the manufacturer typically recommends the full dose, regardless of the size and weight of the individual animal. However, 5cc can be a substantial volume in a miniature pig. As a result, the veterinarian may wish to choose a vendor based on a reasonable recommended label dose. For example, numerous vaccines protecting against Erysipelas are available. However, Intervet® manufactures a product to be administered IM or SQ in 1.0cc (piglets) to 2.0cc (adults) increments. (This particular vaccine, Rhinogen® BPE, is a combination vaccine protecting against Erysipelothrix, Bordetella, and Pasteurella organisms). The dose of a given vaccine can also be altered based on the weight of the pig, but the manufacturer does not guarantee efficacy if label instructions are not followed.

Recommendations: In North Carolina (my home state), minimum recommendations for pet pigs include vaccination against Erysipelas and possibly Leptospirosis. Rabies vaccine is not approved for pigs; however, it is likely protective for at-risk animals and is suggested in endemic areas or based on state regulations. Breeding animals should also receive vaccinations against Parvovirus and atrophic rhinitis (Bordetella and Pasteurella). In herd situations, such as a pig sanctuary, additional vaccinations may be warranted.

Post-vaccinal Reactions: Variable lethargy, anorexia, and fever are common following vaccination; severe reaction (i.e. anaphylaxis) is rare. A small, firm, subcutaneous swelling is also common at the site of administration and may last for several weeks.

### *Vaccination of Potbellied Pigs*

#### **What:**

- *Erysipelothrix rhusiopathiae*\*\*\*
- *Leptospira* serovars
- *Streptococcus suis*
- *Haemophilus parasuis*
- Tetanus
- Rabies

Respiratory pathogens:

- *Bordetella bronchiseptica*
- *Pasteurella multocida*
- *Mycoplasma hyopneumoniae*
- *Actinobacillus pleuropneumoniae*
- Swine influenza

Gastrointestinal pathogens:

- Rotavirus
- TGE (coronavirus; transmissible gastroenteritis virus)
- *Clostridium perfringens*
- *Escherichia coli*
- *Salmonella* spp.

Note: This is a partial list of available products, not necessarily vaccination recommendations.

**When:**

- First dose at approximately 8 weeks of age (weaning) followed by a booster dose 2-3 weeks later
- Repeat vaccination every 6 months to 1 year
- Schedule differs for breeding animals (i.e. yearly plus prior to farrowing)

**How:**

- Administer in the muscles of the neck
- Use a 1.0-1.5inch small gauge needle (25G or 22G)
- Have the owner hand-feed the pig
- Scratch vigorously in the neck area and insert needle
- Wait for the pig to resume eating (if he ever stopped in the first place) and attach the syringe
- Slowly inject vaccine while continuing to scratch the area
- SQ access is easiest in the folds near the axillary or inguinal areas

# CLINICAL EXAMINATION OF A PET PIG

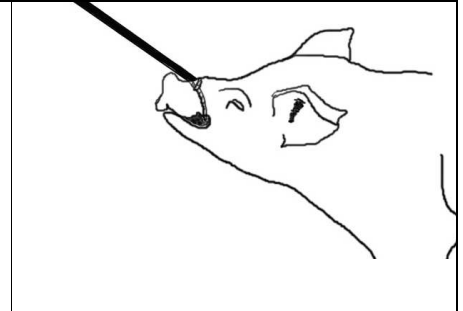
This is not easy. Most pigs are not used to being handled. They become very vocal when caught and will not settle easily. Ideally try to assess as much as possible before handling the animal.

## Handling

Young pigs may be picked up and will generally settle



Older pigs examine while loose, restrain with food or if necessary use a loop around the upper jaw



Observe any normal behavior such as defecation, urination or signs of oestrus

If you visit the pig at home and the pig lives with others, watch the behaviour of the group and other animals.

Even getting the pig into the surgery can be an adventure. Most adult pigs less than 40 kg (88 lbs) can be picked up.

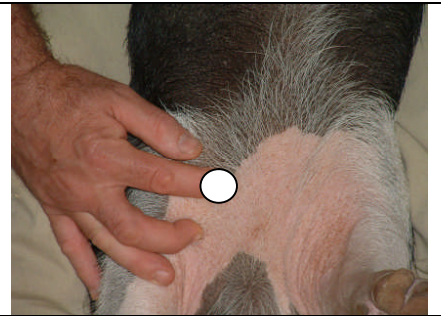


**Follow a set procedure to examine the animal** – there are few differences with other animals

		
<p>Make contact both vocally and physically. Assess the body condition. Check breathing rate</p>	<p>Pigs like to be scratched particularly behind the ear and along the back</p>	<p>Check the head of the pig for any discharges from the nose, eyes, mouth</p>
		
<p>When handling the head watch that the pig does not try and bite</p>	<p>Take the rectal temperature normal 39C (102.5F)</p>	<p>Examine the external genitalia. Note the mucosa color</p>
		
<p>Palpate the lumbar muscles of the pig</p>	<p>Some pigs may allow auscultation</p>	<p>Examine the mammary glands.</p>
		
<p>Examine the feet while standing</p>	<p>Grasp the pig's front legs and pick the pig up and place on its back side holding its back with your knees</p>	



Palpation of the limbs should start at the top and work down the limb to the feet



Other examinations are possible after the initial examination is complete

Collect any samples as required. Blood samples can be obtained in the sitting position via the proximal jugular

Auscultation in the conscious pig is generally unrewarding as the animal vocalizes and moves too much. The stethoscope can still be used to help diagnose broken bones etc.



If the pigs are transported to the surgery, ensure that they are transported safely and legally.

As part of the clinical examination ensure that you include the pigs housing and general environment

## **Potbellied Pig Disease Overview**

**Kristie Mozzachio (formerly Karli), DVM (Raleigh, NC)**  
**potpigvet@hotmail.com phone: 919-413-2956**

**Diarrheal Diseases:** Neonatal diarrhea can be caused by *E. coli*, transmissible gastroenteritis virus, and *Clostridium* spp., among others. Vaccines are available and may be recommended in a breeding facility with a history of diarrhea. These diseases tend to be of greater importance in the commercial industry as they cause stunted growth and economic loss. Most pet pig owners will seek a veterinarian if their pig develops diarrhea, and subsequent treatment can prevent mortality.

**Erysipelas:** This disease is caused by the soil-borne bacteria, *Erysipelothrix rhusiopathiae*, and is likely the most common infectious disease of potbellied pigs. Clinical signs typically consist of a very high fever (105-106 F), inappetance, and depression; the disease can be acutely fatal but can also progress to a chronic form presenting as valvular endocarditis or arthritis. The pathognomonic “diamond skin lesions” represent cutaneous infarction but are rare manifestations. This disease is also zoonotic.

**Leptospirosis:** As in other species, multiple serovars of *Leptospira interrogans* cause disease, and vaccines are serovar-specific, with no cross-protection. Vaccination recommendations are primarily based on public health concerns rather than prevalence among pet pigs.

### **Reproductive Diseases:**

**Porcine Parvovirus:** This viral disease causes reproductive problems such as abortion, and vaccination of breeding animals should be considered. Vaccination is not necessary for household pets. (Unlike parvovirus in dogs and cats, this does not cause diarrheal disease in swine.)

**Respiratory Diseases:** Respiratory disease is of major importance in the commercial swine industry; however, most agents are transferred from pig to pig. In a household pet, potential exposure to respiratory pathogens is limited, and vaccination may not be necessary. However, in a breeding facility or sanctuary, it may be wise to opt for vaccination. \*It is important to note that the virus strains causing the flu can be transmitted between pigs and humans.

**Atrophic Rhinitis:** This disease is caused by *Bordetella bronchiseptica* and *Pasteurella multocida*. Bacterial toxins alter conchae growth in young piglets, predisposing to subsequent infections due to limited functioning of the damaged turbinates. Breeding sows may be vaccinated to provide passive immunity early in life, and piglets may be vaccinated for the first year or two of life. Note: Immune response to the vaccine is reported to be fair to poor.

**Tetanus:** Tetanus is caused by the soil-borne bacteria, *Clostridium tetani*, and pigs are relatively resistant to infection compared to many other domestic species. Infection is most common following castration or umbilical infection.

*References*

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## KIAYLA – Case Report

**Nancy Shepherd**

DOB: 5/9/1996

### FARROWING HISTORY

LITTER	DOB	SIRE	Weaned/Died		Duration in Hrs.
#7	4/27/03	Albert	3	4	Ruptured Uterus
#6	3/10/02	Sammy	10		1.5
#5	9/14/01	Sammy	9	3	4
#4	12/8/00	Sweet Willie	3	2	1
#3	6/17/00	Reggie	2	3	?
#2	5/1/99	Sweet Willie	3		2.5
#1	5/9/98	Sweet Willie	7	2	4.5

#### **Farrowing 7 Details: April 27, 2003**

6:00 am nest built outside all day

6:00 pm milk

7:50 pm vaginal discharge

Pig #1 8:25 pm

Pig #2 9:05 pm

Pig #3 9:10 pm

10:15 pm 1/2 cc oxytocin – no result

10:30 pm 1/2 cc oxytocin – no result

10:55 pm 1 cc oxytocin – no result (read in Dr. George's Vet Manual dosage)

11:30 pm: Feeling intervention would be necessary, I started calling the University of Missouri Vet School for help. I left my number and followed all the prompts, but no one called back. I called again an hour later -- no response. Then I called Small Animal and asked them for help. They said I needed to speak to Large Animal, which of course, I knew. They did not offer to help me figure out what was wrong. Again I called large animal – no response. I called my country vet, Dr. Vroman, and he said, "You need to call large animal." He said he would help as last resort. I went to bed resigned to wait until morning.

#### **April 28th**

7:30 am: I called Dr. Szczepanski, Horton Animal Hospital, and she said to get my pig in immediately. Below is her report, indicating a ruptured uterus and details of the surgery that was performed.

### **OVARIOHYSTERECTOMY**

Kiayla, a 7 year old Potbellied Pig sow (106.5 pound/48 kg) was presented at 0800 for a dystocia of 13 hours in duration. The owner had made multiple attempts to have the sow seen the previous night. After delivering 3 live piglets, the sow continued to strain with no progress. The owner ultimately administered Oxytocin. Although the sow continued to strain, no piglets were delivered. The sow was presented for an ovariohysterectomy to remove the presumably dead piglets.

On presentation the sow was subdued but responsive. The sow was anesthetized with Telazol/Xylazine (240 mg/96 mg) intramuscularly. Anesthesia was maintained with Isoflurane in Oxygen delivered by mask. The sow was placed in right lateral recumbancy and prepped for a flank approach to the abdomen. After placement of quadrant drapes a 14 cm incision was placed in a dorsoventral orientation in the left flank. Upon entering the peritoneal cavity, copious amount of serosanguinous fluid drained from the abdomen. The left horn of the uterus was located and exteriorized. As the horn was followed to the body, a 5 cm perforation was discovered with the hooves of a fetus showing through the defect. The dead fetuses was removed from the uterus. No other fetuses were present in the uterus. Two fetuses were easily located in the abdomen and removed. An ovariohysterectomy was performed. Multiple 0 Vicryl® transfixing and mattress ligatures were placed on the ovarian pedicles, uterine arteries and body of the uterus. After removal of the uterus and ovaries from the abdomen, the last fetus was located ventral to the stomach and removed. Saline lavage of the abdomen facilitated the removal of meconium and 5 placentas. Two liters of warm saline solution were used to lavage the abdomen and 1 gram Cefazolin was instilled. Closure of the abdomen was performed with a continuous pattern of 0 Vicryl® in each muscle layer and the subcutaneous tissues. Skin staples were placed.

A 20 gauge indwelling catheter was placed in the right ear vein. Intravenous fluids were administered (LRS) and 1 gram of Cefazolin and 100 mg flunixin meglumine were given slowly. Recovery was slow but uneventful. The sow was discharged to the owner on the following medications:

Cefazolin, 1 gram IV t.i.d.;  
Flunixin meglumine, 100 mg IV q.d.;  
LRS, 300 ml with each dose of Cefazolin.

1400: The owner contacted the office and Kiayla had stood a few times. The owner had forced some apple juice, which the sow tolerated nicely. Body temperature was still decreased (96.5° F). Instructions were given to try to warm sow and continue good nursing care.

Susan M. Sczepanski, DVM, Horton Animal Hospital, Columbia, MO 65203

## POST OPERATIVE CARE

*April 28<sup>th</sup>*

Provided meds as directed by Dr. Sczepanski. Kiayla ate dinner and some apple juice and her temp. varied from 97.5 at 11 am to 99.5 at 8:30 pm. I was concerned that she would not be able to nurse her babies, but was impressed that she continued to nurse her three piglets.

*April 29<sup>th</sup>*

Provided meds as directed by Dr. Sczepanski. Pulled IV catheter am. Had not seen a bowel movement, so gave an enema with a good result. Temp. ranged from 98.5 at 7:00 am to 101.7 at 9:00 pm. This was a concern.

*April 30<sup>th</sup>*

Continued meds as directed. Temp. ranged from 100.3 in the morning to 102.6 at 8:30 pm.

*May 1<sup>st</sup>*

OFF FEED. Dr. S. prescribed giving one aspirin am and pm.

8:15 am: I knew she had excrement in colon, so gave another enema with positive result.

Tried adding applesauce and apple juice to food with no result.

11 am: Put honey in syringe with antibiotic and forced Kiayle to swallow.

5:30 pm: Started on laxative given with syringe, which she likes.

Continued to try various things to get her to eat and make sure she received her meds.

Started on Tagament. Temp. varied from 102.1 at 6:00 am to 101.3 at 10:20 pm.

*May 2<sup>nd</sup>*

Still not eating. Forced the tagement, antibiotic and laxative with syringe.

2 pm she ate 1 C of food. 6 pm she ate a little food. Could feel feces in colon. Temp. ranged from 101.3 7 am to 102.2 at 9 pm.

*May 3<sup>rd</sup>*

Had not eaten food provided night before.

6:35 am: Gave Tagament, honey and hair ball medicine.

8:15 am: Enema with resulting two big bowel movements. Begin to add mineral oil to food in place of hair ball medicine. Kiayla begins to eat again. Total of 2 1/2 cups of food eaten throughout the day. Temp. ranged from 101.1 at 6:10 am to 102.2 at 6 pm.

*May 4<sup>th</sup>*

Found poop in swimming pool – good! She ate total of 3 C of food throughout the day. Temp. ranged from 101.6 at 9:15 am to 101.4 at 9:30 pm. Babies are going fine.

*May 5<sup>th</sup>*

Continues to improve. Ate 3 C of food. Temp. ranged from 101.4 at 7:45 am to 102.2 at 8 pm.

*May 6<sup>th</sup>*

Ate 4 1/2 C food. Temp. ranged from 100.8 at 8:15 am to 100.9 at 9:45 pm.  
She is still being administered her antibiotics three times a day.

*May 7<sup>th</sup>*

Removed staples. Off antibiotics. Providing mineral oil in food. Ate 1 1/2 C of food.  
Temp. ranged from 99.5 at 8:30 am to 102.1 at 9:00 pm

*May 8<sup>th</sup>*

Ate 4 1.2 C of food. Temp. ranged from 97.2 at 7:30 am to 100.9 at 8:30 pm.

*May 9<sup>th</sup>*

Ate 4 1/2 C of food. No poop. Temp. ranged from 100.9 at 7:15 am to 101.1 at 10.10 pm.

*May 10<sup>th</sup>*

Finally seems to be back to normal. Just feeding regular food with no mineral oil. Temp. at 8:20 pm 101.2

End of diary.

Here is a picture of Kiayla with her three kids. The one with the white collar is named MAISE, short for AMAZING. She will become a replacement breeding sow. Kiayla is enjoying her retirement:





# Hindlimb paralysis associated with a lymphosarcoma resulting in a pathological fracture of thoracic vertebra five in a Vietnamese Pot-Bellied Pig

L. Nelson<sup>1</sup>; A. Bentz<sup>1</sup>; J. Carr<sup>2</sup>, and N. Parry<sup>1</sup>

1: University of Pennsylvania School of Veterinary Medicine 2: Iowa State University, College of Veterinary Medicine

A 10-year-old 75kg intact female Vietnamese Pot-Bellied Pig was referred after an acute onset of hindlimb paresis. The pig was unable to walk, had severe bilateral hindlimb paresis and appeared painful. The owners reported no previous health problems until the day of presentation. The owners suspected a traumatic injury related to a ramp they had installed in the pig's pen during the previous week.

On presentation the pig had a rectal temperature of 38.5°C, heart rate was 60 beats/minute and respiratory rate was 24 breaths/minute. She was in good body condition and her owners reported that her appetite had been normal until that day, when she refused all food. The pig was unable to stand and lay in right lateral recumbancy. She appeared painful, although palpation along the back and spine did not elicit any localized painful response. The pig was able to urinate and defecate normally.

Neurologic examination revealed no tone in the major muscle masses of either hind leg, however, the pig was able to perceive deep pain. Anal tone and tail tone were normal. Some hyperreflexia was present in both hind limbs and was more pronounced on the right side. The front limbs appeared to be functioning normally. No abnormalities were noted on a cranial nerve exam. The pig was quiet, alert and appeared to have normal mentation.

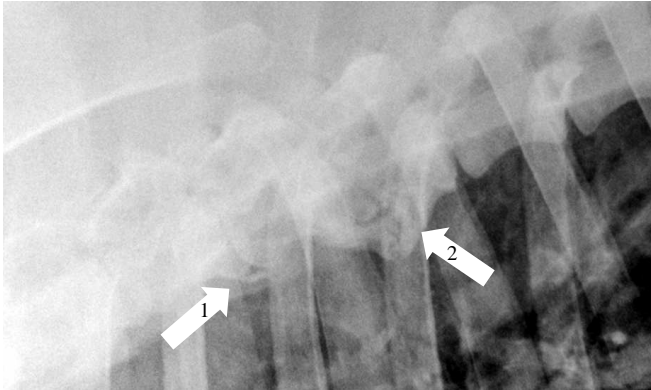


Ethal – unable to rise on her back legs

A venous blood sample was obtained from the subcutaneous abdominal vein and a CBC and serum biochemical analysis were performed. All values were within normal limits<sup>1</sup> except for the PCV, which was mildly decreased at 27% (normal range = 29-46%).

Thoracic and abdominal radiographs revealed spondylosis of T3-T4. A radioopaque mass ventral to T4 and T5 with areas of osteolysis was noted. There was a

radiolucent fracture line on the ventral aspect of T5. Two healed fractures of ribs were also noted. No other skeletal abnormalities were found.



Detail of T2- T7 region. Arrow - 1 spondylosis  
2 lymphosarcoma

Based on the pig's neurological exam and the radiographic appearance, a thoracic spinal cord lesion at the level of T3-T4 was suspected. The osteolytic reaction of T4-T5 seen on radiographs suggested an invasive paravertebral mass at this level that had resulted in a pathological fracture of T5 and impingement on the spinal cord.

The pig was euthanised and a post-mortem examination was performed. Gross examination of the vertebral canal revealed two, 12x3x3mm masses of soft, white-tan tissue on the right and left side of the ventral wall of the canal at the junction between the T4 and T5, with mild compression of the spinal cord in this region. The right side of T4 was extensively effaced and replaced by soft to slightly firm, yellow tan material. A moderate expanse of bone bridged the ventral aspects of T3 to T4.

Other post-mortem findings included bilateral renal cortical cysts, multiple healed rib fractures, uterine cystic endometrial hyperplasia, and a focal uterine leiomyoma.

Histological examination of the vertebral masses revealed an invasive lymphosarcoma.

#### **Final diagnosis**

An osteolytic lymphosarcoma mass adjacent to T4-T5 with secondary weakening of the vertebral body of T5 resulted in a pathological fracture of T5 possibly associated with a fall off the recently installed ramp

#### **Discussion**

Hindlimb paresis is a problem in both commercial<sup>2</sup> and older pet pigs<sup>3</sup>. Differential diagnoses for hindlimb paresis include abscessation, trauma, viral infections, ischemic disease (fibrocartilagenous embolism), and toxicosis.

In commercial pigs an abscess in the spinal column at T13 and L1 is commonly associated with an ascending bacterial infection following tail biting, coronary band lesions, or other body trauma. Neoplasia has also been implicated in disorders of the nervous system in the pig. Primary neoplasms in the nervous system of pigs are reportedly rare<sup>4</sup>. Metastatic lymphomas have been described in the central nervous system<sup>4</sup>. Multicentric lymphosarcoma are also recognised in young adult pigs<sup>2</sup>.

The other postmortem findings were considered incidental. Renal cysts are congenital and common in pigs. The multiple healed rib fractures imply some severe trauma in the pig's life – possibly abuse. The endometrial hyperplasia and uterine leiomyoma are frequently diagnosed in aged pigs<sup>4</sup>.

- 1.Carr, Garth Stockmanship Standards. (1998) ISBN 0-9539150-8-4
- 2.Diseases of Swine (1999) 8<sup>th</sup> Edition. ISBN 0-8138-2597-0
- 3.Carr personal communication.
- 4.Pathology of the pig, a diagnostic guide. (1997) ISBN 0-7-306-653

## **Clinical experiences with Pet Pigs**

### **Lou Anne Wolfe, DVM**

I can't really talk about medical problems in potbellied pigs without talking about my first pet pig, Marshall. When I was in veterinary school, if anybody talked about pet pigs it would be me---literally nobody was interested in pigs of any kind. The one professor who was stuck with pig medicine made it plain that he took care of it because nobody else would. There was no encouragement to go into swine medicine. When I joined the student chapter of the American Association of Swine Practitioners, I became president, vice president, secretary and treasurer at Oklahoma State. I was the only member.

While I was in veterinary school, Marshall developed a urinary blockage. The urine just dribbled out, despite his straining. I knew we were in trouble. I drove him to school, just sobbing. While we were waiting for one of the veterinarians, I sat down in the big hall of the food animal barn, and Marshall just laid down and put his chin on my leg. It was agony.

He was sedated, intubated and my professors went to work on him. Only, nobody could find his penis! I remember one veterinarian telling me we might have to do a perineal urethrostomy: Marshall peeing like a girl! But I would have gone along with anything to save him. Before it was over with, a minimum of four veterinarians and the small-animal endoscope became involved. When Dr. Morgan finally called out with glee, "There's his tally-wacker!" we all rejoiced.

The penis was painfully small, and seemed to be encased in tissue. What followed were catheterization and a contrast urethrogram. The catheter was kept in place about 24 hours, and when removed, he did not re-block. But my work was only beginning. He was forming struvite crystals. The urine pH was running about 8. Periodically I would check the pH and examine his urine for crystals. As you know, although pigs love food they are also discriminating in their taste, and I knew I needed to acidify his urine. I was adamant about sticking to a potbellied pig ration---incidentally, I've always fed my pigs Mazuri mini-pig diets. What worked for us as an acidifier was ammonium chloride. This is a salt, and I bought it from a chemical company. I gave him ¼ teaspoon daily until he died. It was kind of a trick to get him to eat it. I tasted it once and found out why! It has a very strong, salty taste. By trial and error, I eventually got it down him by mixing it in a small amount of prescription a/d dog food.

I continued to monitor his urine, but he never blocked again. From then on, I noticed his penis would extrude when he urinated. I thought Marshall was a little deformed when it was so hard to find his penis during the hospital episode. One of the vets that day said it was so small because he was neutered before he was 5 weeks old. Today, I'm not so sure, because my current piggy doesn't extrude his penis when he urinates, either.

Marshall was never a big water-drinker. I used to obsess about it. He lived 10 years, and the last year of his life, I swear, he drank NO WATER AT ALL. Marshall was a house

pig who ate outdoors, but stayed in the house when I was gone. I supplemented his feed with a quart container of fruit and vegetables twice daily. By the time he quit drinking water, he was quite crippled with arthritis, and all I can figure is, he got water from the vegetables. He would urinate. In summer, I always supplemented with watermelon so I knew he was getting good fluid from that.

I'll touch briefly on his arthritis. The pasterns on both forelegs twisted laterally, creating an unnatural pressure on the carpal joints and, secondarily, his elbows. I started out with Rimadyl at a dose of 1 mg per pound, which is the dog dose. Late in the disease, I was giving roughly 1 and ½ times the dog dose. I was going for quality of life. I never did blood work on him, so I don't know if Rimadyl affected his liver or not. I remember my professors talking a lot about trying naproxen sodium, but no one ever felt confident about the right dose. I was a new kid on the block, so I was hesitant to turn Marshall into a guinea pig.

I did get a good response with Adequan injections, although it was short-lived, and I finally concluded the result didn't justify my cost. I tried another product that was supposed to be a generic version, called acetyl-D-glucosamine. It was cheaper, but I couldn't see any response from it. Now there's a true generic Adequan called Chondroprotec, which might be good. I supplemented Marshall with glucosamine and chondroitin sulfate twice daily. Probably due to the anti-inflammatory medicine, he ground his teeth at night and I worried that he might get gastric ulcers. I gave him a ranitidine tablet twice daily.

Marshall's arthritis ultimately caused his demise. In December 2000, I searched my soul to find a vet friend who could help me euthanize him. I finally came up with Dr. Dan Murkey, who I'd met while working in a swine birthing center at the Tulsa state fair. We gave him an overdose of xylazine, and I said goodbye. I didn't stay for the end.

This is Faye Groff and Pigalilly, a huge house pig living secretly in mid-town Tulsa. Most of my clients are in the same boat! Anyway, Pigalilly was six years old and had never had her feet trimmed. By the time I met her, she was already crippled. There's a compounding pharmacy in Mountain View, Oklahoma which I've seen often at veterinary trade shows. They make a product called Swine Stride Plus. The ingredients are a closely guarded secret, but from what I've been able to gather, it contains nutraceuticals, probably glucosamine and chondroitin sulfate, along with an anti-inflammatory, in an alfalfa-flavored base. They formulated it for show hogs. We maintained Lilly on that product for almost 2 years, until it didn't help any more.

Injectable Rimadyl had just come out, so I gave her an injection and we started her on the chewable Rimadyl tablets. I took some samples of Deramaxx for Faye to try, also. It became obvious that nothing was going to help. Faye asked me to euthanize Lilly. Her son met me at her house one morning. Faye was at work, and I was relieved because it was my first time.

I administered a xylazine overdose of 5 mg per pound, in the muscle. I had a nearly full bottle of Beuthanasia-D solution, and a 14-gauge, equine IV catheter which had been given to me by a horse doctor for just such an occasion. When Lilly was asleep, I began probing for her heart with that catheter. It was very hard to find it. Finally, about a whole bottle later, I found the heart and I realized I had been aiming too high.

My big deal was to offer house call services to trim pigs' hooves and tusks. I invested in a portable isoflurane anesthesia machine. I read as much as I could find on pre-anesthetic medication. I interviewed my former anesthesia professor at OSU about pig anesthesia. He has authored several papers about it. Dr. Ko told me to use xylazine and Telazol, reconstituting Telazol powder with 5 mL of large-animal xylazine. That's what they do at OSU, then maintain the pigs on isoflurane. Most of the doctors at OSU merely mask the pigs, rather than intubate them.

For pre-anesthetic, Dr. Ko said to give ½ mg per pound in the muscle. First pig I tried it on was my own Meegan. She did go down, then I masked her and did her feet. When she began waking up, Meegan was disoriented with a slight tendency to charge. I let her outside and the Telazol-xylazine wore off fairly quickly.

My first client pig with this protocol was Peaches Blalack of Stillwater, Oklahoma. She had a very smooth recovery. I also used the Telazol/xylazine on Hampton Allen. Hampton is the meanest pig I work on. He is small and very pretty. He handled the injectable anesthetic fine.

Next, I tried it on Pigit McDaniel. This was my first bad experience with injectable anesthetic. She seemed to recover up to a certain stage, then lingered at that stage. Pigit continued to be disoriented for several hours, rampaging around Tracy and Steve's living room and running into things. In fact, they had dinner plans and had to cancel them because Pigit was still under the influence.

The next and final fiasco in my history with injectable anesthesia and a pig happened, thank God, with Meegan and not a client pig. I decided to give her a lighter dose which I thought would be just enough to be able to mask her on the iso. Unfortunately, she reached an excited stage and I could never get near her. She began charging around her pen and throwing herself into the fence and the gate. Her face became bruised and bleeding. I was by myself, helpless and sick at heart. I have not given a Telazol-xylazine injection since.

Actually, what it has boiled down to for me is that in the time and stress required to restrain a pig to give an injection, you can restrain that pig long enough to mask them down with inhalant anesthesia and avoid the risk of a rough recovery from the injectable drug. If you must use injectable anesthetic, be sure and give enough to adequately sedate the pig.

I have worked a little bit with an animal rescue in Oklahoma City. Here is Elmo, a pig they picked up in April whose feet had never been trimmed and averaged about 6 inches

long! I'm not making this up. His tusks had curled around to where they were about to penetrate his jowls. Ever since purchasing my super-duper hoof trimmers at last year's symposium, no hooves have intimidated me. However, this time the trimmers finally met their match and one of the plastic handles cracked off. Well, I had some large hoof nippers, so I started chipping away at the hoof. I could see that at the rate I was going, it probably would be several hours before I finished. Tracy McDaniel, a pig enthusiast who accompanies me on these excursions, kept asking me if I could try a grinding wheel on my dremel tool and cut through the hooves that way. Pig-headed me, I kept brushing aside the suggestion, telling her I'd broken two of those wheels trying to work on pigs. Then she said the words that would save that day: *Why don't you use your gigli wire to cut through those hooves?*

Yes, why indeed! I whipped out the gigli wire and had the hooves done in about 10 minutes.

One of the saddest cases of my pig doctor career was that of Romeo Mulcare. His owner called me in desperation one day and said she couldn't get anyone to come out to look at him. I drove over there, and found a big, lumbering intact male potbelly with one testicle swollen to at least the size of a softball. The testicle was draining. At first, I thought perhaps we could just neuter him, but after discussing with a colleague I decided to refer him to OSU. Melinda, his owner, was a younger lady which I underestimated. When I mentioned OSU, she took out across the yard and hooked up their horse trailer, then she and I loaded a protesting Romeo into the back and they were on the way.

Romeo was 13 years old, massive and probably overweight by some standards. In the course of surgery to remove the testicles, he began crashing under anesthesia and Melinda chose to have him euthanized.

She requested a necropsy, and the results were enough to curl a pig's tail. The swollen testicle was measured to be 24 cm by 19 cm and was found to contain an interstitial cell tumor. The tunica albuginea was severely thickened, about 10 times the normal thickness. On cut surface, the testicle was foul smelling, necrotic and filled with a caseous mass. There was massive necrosis, calcification and inflammation in both testicles. He was diagnosed with an interstitial cell tumor and diffuse, severe necrotizing orchitis. Bacterial cultures were negative for *Brucella spp.* The second testicle was smaller in size, and was roughened and gritty on the cut surface.

Romeo's heart was smaller than normal and had lost its shape, and the right ventricular wall was thicker than the left. There were multifocal areas of myofibrillar bundle separation by edema. The intermyofibrillar space was infiltrated by neutrophils and lymphocytes. He had fibrinous adhesions between the right cranial lung lobes. His lungs were diffusely red, heavy and wet. The alveolar lumens were filled with eosinophilic amorphous exudates and fibrin. The necropsy report said cardiomyopathy caused the pulmonary edema and contributed to his anesthetic complications.

Romeo's story tears at my heart. He was an only-pig who lived in a large pasture. He had a pig-house, but there was no flap on the door to shelter him from the wind. There was no bedding in the house. I hate to think about how much he was suffering, or for how long.

I do this for the love of pigs. I love pigs so much, and I get calls on some really sad cases. Many times I don't even want to return calls because I dread the sadness. It always has troubled me that pigs are so intelligent, but in so many cases that intelligence goes to waste. Yet, most of my clients appreciate their pigs in the way I appreciate mine. And I have yet to visit a home of a house-pig that is not exceptionally clean and good smelling.

Thanks for the privilege of speaking today.



# REPRODUCTIVE SURGERY IN THE PET PIG

**Dr John Carr**

Pet pigs have established themselves as a popular but unusual pet. More intelligent than a dog and relatively easy to train. Pigs kept in a loving environment present with few behavioural problems. However, puberty and its subsequent reproductive requirements can present with unpleasant and potentially dangerous behavioural traits. Pigs come well armed with 4 knives (very sharp knives) in their mouths, a powerful neck and bite and even pet varieties can weigh 100 kg and out run most humans.

When negotiating with a pig, it is always good to remember Churchill's comments that "dogs look up to you, cats look down at you but pigs look you straight in the eye".

## The boar

All non breeding house boars should be castrated. The animal is generally fine until 2 years of age but after this he becomes 'male' and dominant and the tusks rapidly develop. Castration, while unpleasant, is the only answer. Chemical castration methods are being developed, whether these will be applicable for use in pet pigs has yet to be explored. The ideal time for castration is 10-14 days of age when the operation can be carried out without anaesthesia and relatively painless with minimal fuss. Over the years we have castrated many hundreds of pigs without any serious consequences. Castration of the mature pig demands surgery and a general anaesthetic. Castration over the age of 3 weeks has to be carried out by a veterinary surgeon and under this age only an owner who has received training from a vet should castrate their piglets. Only a vet should castrate a piglet with a scrotal hernia.

## Female

The sow/gilt can present with a variety of behavioral 'problems' that we associate with her reproductive cycles. The sow cycles every 21 days (18-24) and the signs of oestrus can be quite bazaar – off food, slight temperature, vulval discharge, rubbing, searching, mounting of objects including children and a change in aggression level and loss of house training are all seen regularly. These 'problems' can be readily resolved through spaying (ovarian hysterectomy) of the sow/gilt.

## Surgery

Spaying of the pig presents with few problems, but being an unusual surgical case, presents the vet with some anxiety and apprehension. The pig's heart is relatively small to the body size and the pig is prone to very noisy panic attacks when restrained. Some pigs are sensitive to halothane resulting in malignant hypothermia which is potentially fatal. However, this is more of a problem in commercial breeds – Pietrain, Large White, Landrace for example. If this is of concern a blood sample or other body tissue, for example, a hair sample can be taken and the pig tested for the presence of the specific gene.

The surgical procedure we adopt is as follows:

Pre-surgery

If the surgery is elective, it is necessary to get a movement licence before moving the pig to the surgery.

The pig is starved for 12 hours prior to surgery and water removed 6 hours before surgery. Note the pig is very prone to gastric ulceration which can start within 24 hours of not eating.

Pre-medication

Depending on the pig, pre-medication can start at home with the administration of Acepromazine Maleate oral tablets provided via a small apple or chocolate bar at a rate of 1-2 mg/kg. Alternatively, the pig can be pre-medicated with 0.1 mg/kg Acepromazine Maleate injection intramuscular. Intramuscular injection of ketamine (20mg/kg) and xylazine (2 mg/kg) has proven to be extremely good at knocking the pig down.

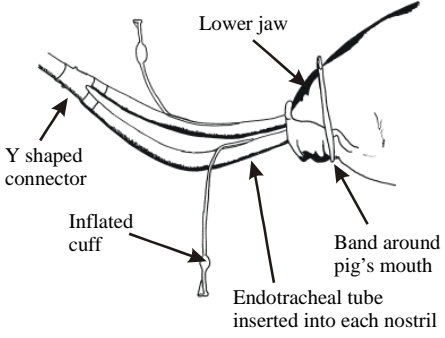
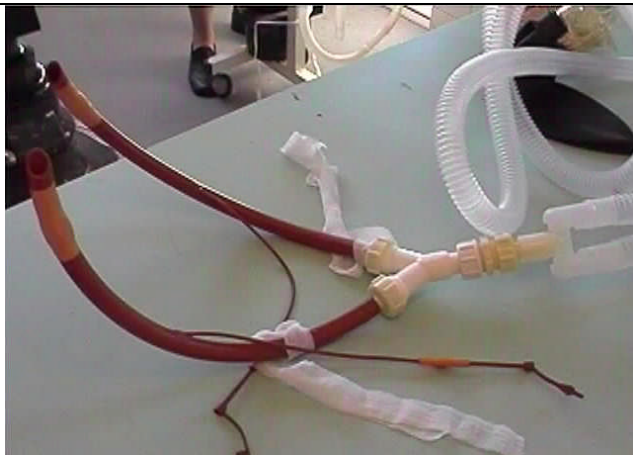
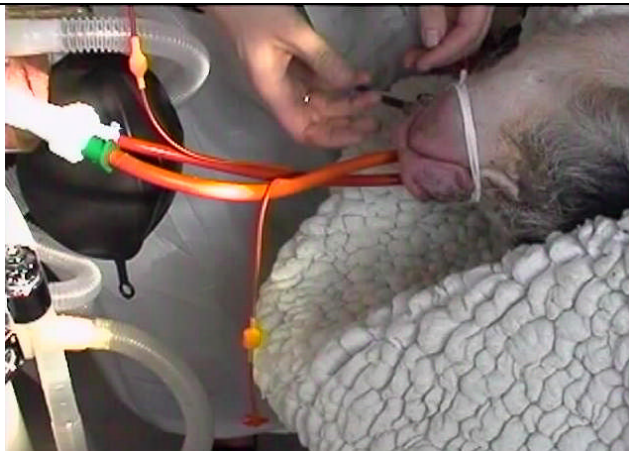
Note with many sedatives penile prolapse (paraphimosis) can occur and owners need to be warned that this can be permanent.

Anaesthesia

Anaesthesia is achieved using thiopentone sodium intravenous (approximately 10 mg/kg to effect) using an ear vein. The pig should be restrained at all times. While the pig may squeal, the easiest and less stressful technique for both pig and operator is the snout restraint.

The sedated pig's ear veins are raised by applying pressure at the base of the ear and using a surgical swab the ear veins are visualised. A needle is inserted – in the larger Vietnamese pigs an 18 gauge needle is used. Draw back is not performed as the ear vein normally collapses. Injecting a very small amount of anaesthetic will indicate if the needle is properly placed. Note, a large amount of barbiturate injected into the perivascular tissues can lead to a degree of necrosis and potentially permanent damage to the ear.

Once the pig is anaesthetised, anaesthesia is maintained using Isoflurothane on a circle. Intubation of the pig is more complex than in the dog as the larynx is anatomically difficult to visualise and locate. Masking poses a risk of achieving a good seal. The technique of intranasal intubation is utilised.

A 90 kg pig will take a 9 mm endotracheal tube	
A 60 kg pig will take a 7 mm endotracheal tube	
A 30 kg pig will take a 5 mm endotracheal tube	
	
The endotracheal tubes and Y piece attached to the circle	Pig anaesthetised

Once inserted with a twisting action past the nares, the cuff can be distended and the mouth closed with tape. The pig will then breathe normally through the nose. Anaesthesia can be easily maintained using this technique.

### Surgical technique

#### Castration

Open castration is performed using a single incision midline. The testes are moved towards the midline and removed. The midline incision is closed.

#### Spay

Midline incision is made. After 6 months of age the uterus is quite large and freely mobile. The removal of the ovaries and uterus is similar to that of the bitch. However, note there is a large uterine middle blood vessel which requires separate ligation. The broad ligament often haemorrhages profusely and separate ligation or cauterisation will be required. The cervical/uterine horn is thick and meaty and transfixation is required. There is less haemorrhage if the pig is spayed while not in season.

### Caesarean section

Sedatives and barbiturates must be used with caution in a caesarean section as they will cause sedation and anaesthesia in the piglets which could reduce their viability.

The surgical incision is made in the flank parallel to and well above the mammary glands. This area has less fat than elsewhere and avoids healing problems associated with a midline lesion which can be infected by piglet suckling actions and poor aeration of the wound by the large mammary glands. Once the piglets are born and re-vitalised they can be given water and a small amount of whiskey and kept warm until mother is capable of looking after them. Only once any milk/proteins are consumed does the stomach's ability to absorb colostrum start to reduce. Delaying the first suckle for 3-4 hours with adequate nursing has not influenced preweaning mortality.

### Post surgical

Pain relief using ketoprofen 3 mg/kg. Note phenylbutazone can not be used in farm animals and pet pigs fall into this category.

Post-operative antibiotic cover provided using amoxicillin 7-10 mg/kg. Tablets may be provided. These can be relatively easily administered using apples. Partially core an apple, place the tablets into the apple and replace the core. Feed to the pig who will normally eat with relish.

### Additional note

While under anaesthesia it may be a good time to cut any enlarged tusks and trim feet.

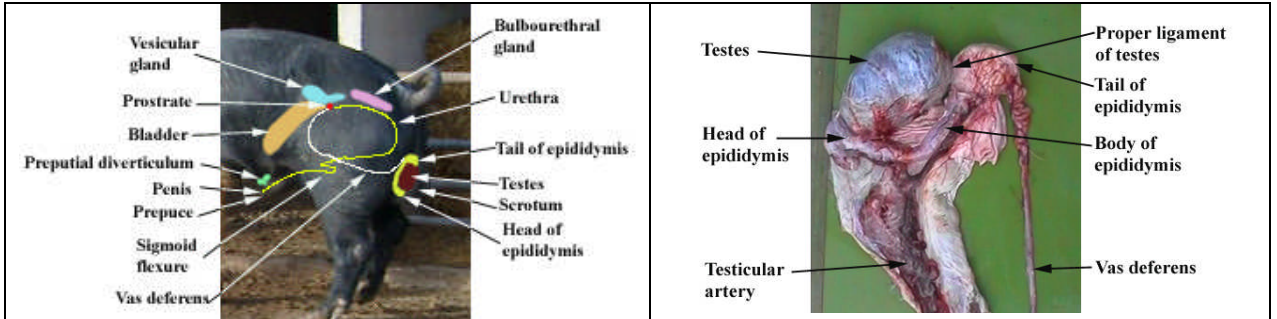
# SURGICAL PROCEDURES IN PIGS

## CASTRATION IN THE PIGLET

<p>Vesicular gland Prostrate Bladder Preputial diverticulum Penis Prepuce Sigmoid flexure Vas deferens</p>	<p>Bulbourethral gland Urethra Tail of epididymis Testes Scrotum Head of epididymis</p>	<p>General anatomy of the male reproductive tract. Note the tract of the vas deferens.</p> <p>In addition note that the pig's testes are 'upside' down with the tail of the epididymis at the top of the testes.</p>
<p>Testes Head of epididymis Testicular artery</p>	<p>Proper ligament of testes Tail of epididymis Body of epididymis Vas deferens</p>	<p>General anatomy of the male reproductive tract. Note the tract of the vas deferens.</p> <p>In addition note that the pig's testes are 'upside' down with the tail of the epididymis at the top of the testes.</p>
<p>No anaesthesia is required if the piglet is castrated before 3 weeks of age. Once castrated the piglet should be returned immediately to his mother.</p>		
<p>Place the piglet between your legs with the chest held by the legs. The piglet will stop struggling quickly.</p>	<p>Push the testical up and check for scrotal hernias. Do not continue with open castration if a hernia is suspected.</p>	<p>With a surgical blade incise over the midline of the scrotum</p>
<p>The testes will prolapse through the cut</p>	<p>Push the testes out of the cut. Grasp the testes between finger and thumb and with a pulling and twisting action remove from the pig</p>	<p>Ensure no remnants of the vaginal tunic remains on the outside of the pig. Remove the other testes and then return the piglet to his mother.</p>

# SURGICAL PROCEDURES IN PIGS

## CASTRATION IN THE ADULT PIG



General anatomy of the male reproductive tract. Note the tract of the vas deferens.

In addition note that the pig's testes are 'upside' down with the tail of the epididymis at the top of the testes.



**Preparation:**

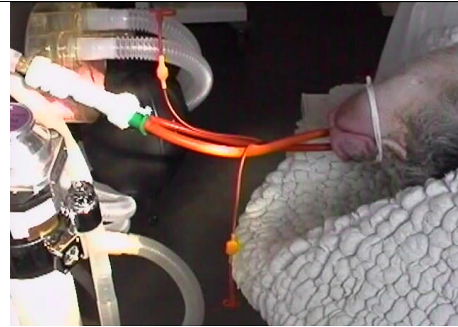
Remove pig from feed and water for 8 hours. Clean pig. Pigs over 3 weeks of age should be anaesthetized for castration

**Sedation and anaesthesia**

Intramuscular injection of Telazol<sup>®</sup> - xylazine-ketamine mixture ("TKX"). Reconstitute powdered Telazol<sup>®</sup> with 250mg xylazine (2.5ml) and 250mg ketamine (2.5ml). Dose at 1ml/25-35kg. Alternative could be intramuscular injection of xylazine 0.5-2.2 mg/kg IM and Telazol<sup>®</sup> 3-6 mg/kg IM.



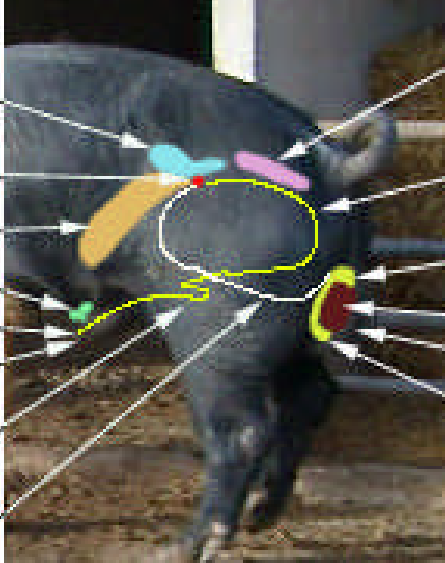
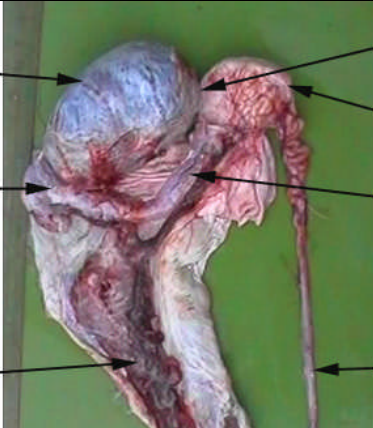

Prepare intravenous sodium thiopentone to effect







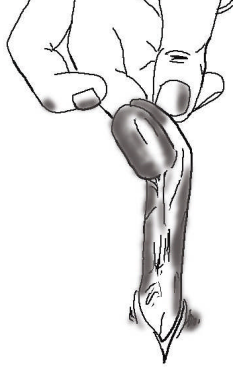



If gaseous anaesthesia is required, use intranasal intubation to administer the isoflurothane. Note pigs may be Halothane sensitive resulting in PSS

	
<p>Check the pig over as part of the normal anaesthesia requirements</p>	<p>Clip the area of the scrotum and inner groin</p>
	
<p>Make an incision midline just in front of the scotum. Push the top testes through the incision</p>	<p>Twist the testistical cord. Clamp and ligate the vaginal tunic. Pull to separate the tunic above the ligation. Push the other testes through the midline incision and remove.</p>
	
<p>Sitch the two vaginal tunics closed. Close the subcutaneous tissues and finally the skin</p>	

## SURGICAL PROCEDURES IN PIGS SCROTAL HERNIA REPAIR IN THE PIG

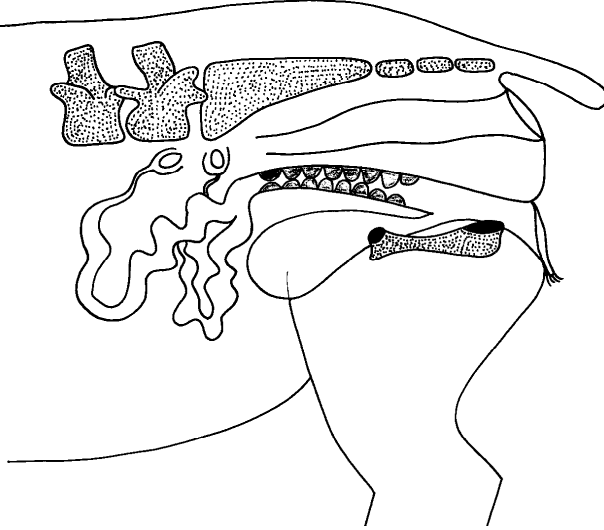
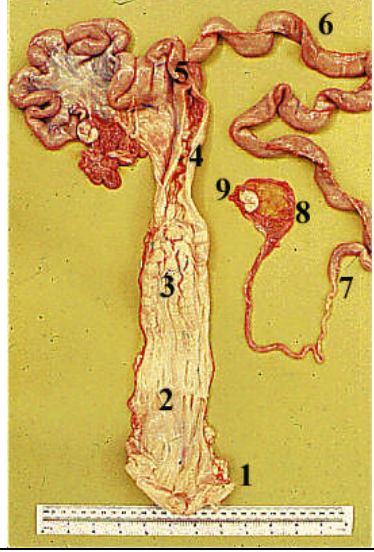


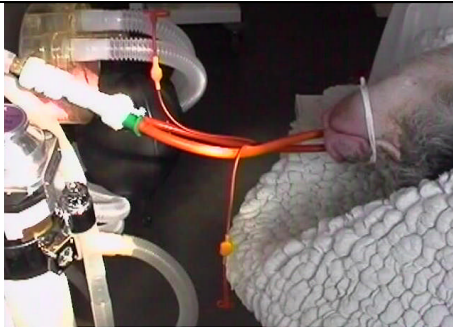
<p>Vesicular gland</p> <p>Prostrate</p> <p>Bladder</p> <p>Preputial diverticulum</p> <p>Penis</p> <p>Prepuce</p> <p>Sigmoid flexure</p> <p>Vas deferens</p>		<p>Bulbourethral gland</p> <p>Urethra</p> <p>Tail of epididymis</p> <p>Testes</p> <p>Scrotum</p> <p>Head of epididymis</p>
<p>Testes</p> <p>Head of epididymis</p> <p>Testicular artery</p>		<p>Proper ligament of testes</p> <p>Tail of epididymis</p> <p>Body of epididymis</p> <p>Vas deferens</p> <p>General anatomy of the male reproductive tract. Note the tract of the vas deferens.</p> <p>In addition note that the pig's testes is 'upside' down with the tail of the epididymis at the top of the testes.</p>
 <p style="text-align: center;">im injection in an adult</p>	<p><b>Preparation:</b> Remove pig from feed and water for 8 hours. Clean pig. Pigs over 3 weeks of age should be anaesthetized for castration</p> <p><b>Sedation and anaesthesia</b> Intramuscular injection of Telazol® - xylazine-ketamine mixture ("TKX"). Reconstitute powdered Telazol® with 250mg xylazine (2.5ml) and 250mg ketamine (2.5ml). Dose at 1ml/25-35kg Alternative could be intramuscular injection of xylazine 0.5-2.2 mg/kg IM and Telazol® 3-6 mg/kg IM.</p>	



		
<p>Identify the pig with the scrotal hernia. A means of holding the pig makes repair easier</p>	<p>Push the scrotal hernia up into the groin</p>	<p>Incise the skin over the hernia. Do not puncture the vaginal tunic</p>
		
<p>Grasp the testes and free it by blunt dissection.</p>	<p>Twist the testes and vaginal tunic, pushing any intestinal contents back into the abdomen</p>	<p>Cut the cord above the vicryl stitch or vaginal tunic knot.</p>
		<p>Place a mattress stitch into the skin to close the wound.</p> <p>Allow the piglet weaner to recover in a warm box.</p>
<p>Tie off the base of the twist using 0 vicryl placing a stay stitch into the base of the twisted vaginal tunic. It may be possible to knot the twisted vaginal tunic.</p>		

# SURGICAL PROCEDURES IN PIGS

## OVARIOHYSTERECTOMY IN THE SOW OR GILT

	
<p>General anatomy of the female reproductive tract.          1 Vulva. 2 Urethral opening. 3 Vagina. 4 Cervix. 5 Uterine body. 6 Uterine horn. 7 Oviduct. 8 Infundibulum. 9 Ovary.</p>	
	<p><b>Preparation:</b>          Remove pig from feed and water for 8 hours. Clean pig.          Pigs over 3 weeks of age should be anaesthetized for castration</p> <p><b>Sedation and anaesthesia</b>          Intramuscular injection of Telazol<sup>®</sup> - xylazine-ketamine mixture ("TKX"). Reconstitute powdered Telazol<sup>®</sup> with 250mg xylazine (2.5ml) and 250mg ketamine (2.5ml). Dose at 1ml/25-35kg          Alternative could be intramuscular injection of xylazine 0.5-2.2 mg/kg IM and Telazol<sup>®</sup> 3-6 mg/kg IM.</p>
	
<p>Inject intravenous sodium thiopental to effect</p>	<p>If gaseous anaesthesia is required, use intranasal intubation to administer the isoflurane. Note pigs may be halothane sensitive resulting in PSS</p>



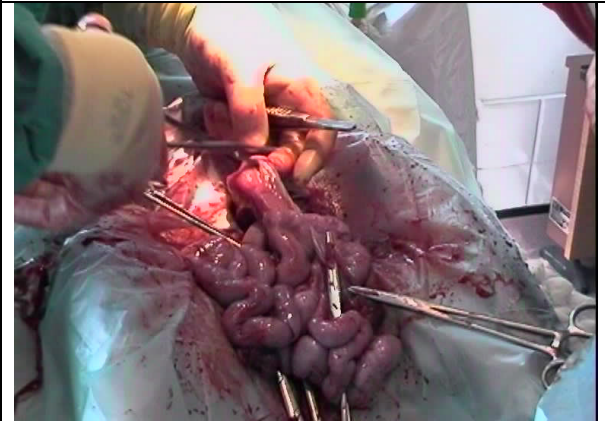
Check the pig regularly through the surgery



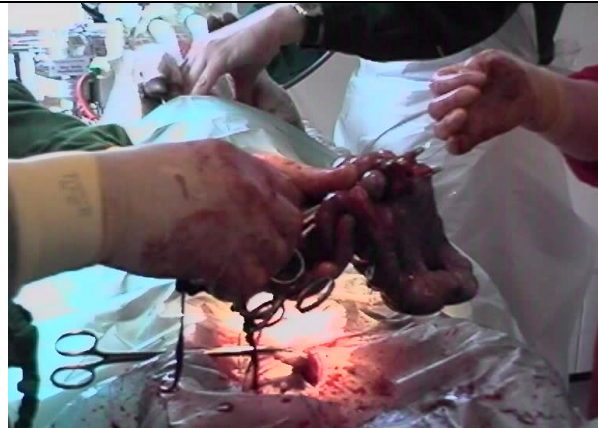
Make a midline incision through the linea alba just behind the umbilicus. The incision should be about 6 cm long



The uterus is normally very easy to find. Retract the horn forward to the ovary. Ligate the ovarian artery and incise



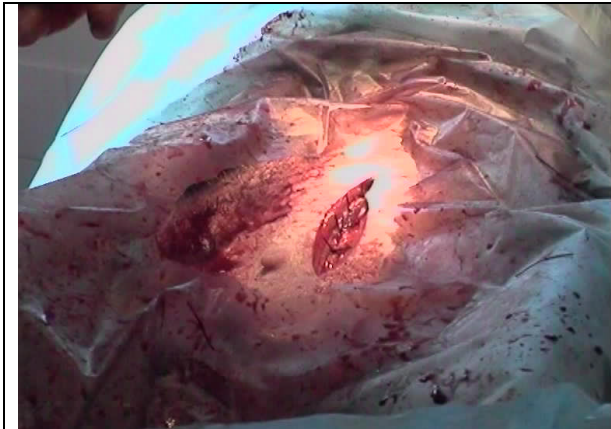
Ligate and incise through the broad ligament vessels. These can be very large. The uterine body will need to be ligated in sections



Cut through the body of the uterine horn



The uterus and ovaries removed



Close the abdominal incision, suture the linea alba with Vicryl. The muscles and subcutaneous layers are closed by catgut



Close the skin incision.  
(Subcutaneous closure recommended as this removes the need to remove sutures later)



The skin incision after subcutaneous sutures



Post-operative care to ensure comfortable recovery

**Working with Shelters**  
**Lana Hollenback**  
**Pigs As Pets Association, Inc.**

- 1.) Who we are??
  - A.) Rescues and Sanctuary owners
  - B.) Volunteers
  - C.) Professionals
  
- 2.) Types of shelters
  - A.) Local Shelters
    - Animal Control
    - Humane Society
  
  - B.) No Kill Shelters\*
    - Privately owned or Non profits (501 )3)
  
- 3.) Developing a Relationship that works
  - A.) Get to know them
  - B.) Offer your services
  - C.) Don't come off as a know it all
  - D.) Be professional
    - Only we can set the standard
  
- 4.) Tools
  - A.) Training
  - B.) Informational Books and Brochures
  - C.) Volunteering
  
- 5.) Follow ups
  - A.) Stay in touch\*\*
  - B.) Make sure they get the credit
  - C.) Work with local media such as: radio, TV stations and local newspaper

\* No such thing as a NO KILL SHELTER. Reason is that when they are full, then they will be forced to turn animals away causing their euthanasia.

\*\* Work your hardest for the shelter to place pigs they get in. Check back often and let them know you care.

Training Resources Available through PAPA

- |    |                                                            |         |
|----|------------------------------------------------------------|---------|
| 1. | Shelter Guide to the Pet Pig                               | \$10.00 |
| 2. | Slide presentation on CD for training                      | 10.00   |
|    | \$5.00 discount if purchasing both for your local shelter. |         |
|    | Overheads available upon request                           | 5.00    |

## **Pig Behavior**

### **Dr. Dana Danks, MS, DVM**

Pig behavior is a fascinating field of study. Understanding and knowing the behavior of feral pigs can help us understand the behavior of pet pigs. Stimuli in the environment cause reactions and responses in all animals. Each species has variations in how it receives these stimuli and how it responds to them. Visual, auditory and olfactory receptors and signals are important for communication. Many species of animals have social systems used to maintain peace when they live in groups. The hierarchy in pigs is determined by aggression in the beginning and maintained by aggression. Pigs do not have extensive grooming habits but certain items in the environment are important for temperature control and healthy skin.

The visual, olfactory, and auditory senses are important for survival and communication with members of the group. Visual and auditory abilities do not seem to be as well developed in pigs as in carnivores such as cats and dogs but their olfactory sense is very strong and seems to be a primary method of communication.

Visual reception is primarily monocular but they do have a binocular field of 40 degrees. The visual abilities of pigs are not their strongest attribute. They do not chase moving food items frequently. Their body type does not lend itself to visual social signals. The ears don't move a lot and they often cover the eyes which are small. Hair cannot be used very well for communication signals either. They do seem to use their tail in greeting, courting, and competition when it is elevated and curled. The tail can also be used to tell if a pig is feeling good and is healthy (curled) or distressed (straight). One body movement that may be used to indicate social status is a head turned, considered to indicate submission and deter the aggressor.

Auditory communication is more extensive. Hearing ability is not well studied but they must turn their head to localize a sound. They do have several vocal signals that they use for communication. Calls include grunts, a bark, and a squeal. There are three grunts defined. The common grunt is used for contact seeking. The staccato grunt is used to indicate stress or in mating. There is also a long grunt. Barking is used to warn other pigs as part of a startle response. Squeals and screams indicate stress, fear, and possibly submission.

Olfactory senses and communication seem to be the most important in pigs. Newborn piglets use smell to locate the teats. Older pigs use smell when rooting for food. Odor is also used to identify individuals. New or newly returned pigs are nosed along the ventral body surface. Piglets seem to recognize each other by scent within the first week after birth. This also is the time they will leave the farrowing nest. Blindfolded pigs can form and maintain a social hierarchy. Pigs that cannot smell each other cannot form a stable group suggesting the importance of odors in group identification. Preputial secretions and salivary secretions are important in mating and metacarpal glands are used for rank marking.

Free-ranging pigs live in groups of two to six sows and their offspring. Boars will join the group only during breeding season. The rest of the year, boars will be solitary or in groups in late winter. The sow herds will have overlapping home ranges. These ranges are not actively defended. The group will have a central communal nest that is

defended with an area for elimination some distance from the nest. Foraging for food is done anywhere in the home range. A farrowing nest is build away from the group nest and actively defended for the first week after birth. The piglets are usually in the communal nest by nine days of age.

The group will be organized into a linear hierarchy with the dominant sows being older and larger. The hierarchy is formed within the first few days after birth as the teat order. Piglets get very little help from the sow after they are born. They are precocial and will get themselves to the nipples as soon as possible. Piglets will fight very aggressively with each other for a teat. By the sixth day, a teat is suckled by the same piglet 90% of the time. Generally the larger piglets get the more productive nipples and continue to grow faster than the other piglets. Rank is associated with size in pigs so the larger, more aggressive piglets become higher ranking or dominant. The hierarchy is maintained by avoidance by subordinates, possibly some submissive behavior (head turn), and aggression. Threats are delivered with grunts or feints with the snout by a dominant pig. Aggressive behavior includes head thrusts against the body or head of another pig and may include biting. The subordinate pig will back up and be chased by the dominant pig. Levering by putting the snout under the body of the opponent and lifting them is another form of aggressive behavior. These behaviors may be seen in pet pigs delivered to their owners. If it can be done safely, the owner should push the pig back and chase it from the room as the dominant animal. This is easier to do early in the relationship if owners recognize the behavior of their pig as a social challenge.

Grooming in pigs is not as extensive as many mammals due their sparse hair coat. Pigs may use their hind feet to scratch their face or rub their face and body on objects. Since they do not have the hair coat to provide insulation from environmental temperature extremes, they must use other methods for temperature control. Physiologically, they have a thick layer of fat to help insulate them. Behaviorally, they will huddle for warmth. They may also change their activity patterns to be more active during cooler times in hot weather and warmer times in cooler weather. Keeping cool can be a challenge as well. This is the main function of the mud wallow. Mud will keep pigs even cooler than water will so providing a swimming pool for a pet pig in the yard may not be sufficient. The pig may still try to make a wallow by spilling the water out of the pool. Wallowing may also help with general skin condition and external parasite control.

Pigs are omnivores and will eat a wide variety of food items. On pasture, they will spend a great deal of their time foraging, grazing, browsing, and rooting for food. In confinement and as pets, very little time is spent foraging because the food is provided. This may lead to destructive behaviors due to lack of rooting time and obesity may become a problem as it is with dogs and cats. Pigs that are self-fed will alternate between eating and drinking resulting in spillage between the bowls. This is normal behavior and providing food and water in an area that is easy to clean will reduce the stress on the owner. It has also been shown that pigs on restricted feed may drink more leading to increased urination. This should be considered in determining a cause for elimination problems.

Besides rooting for food, pigs have a strong exploratory drive. They will bite, chew and root with their snout just to investigate and explore. They may spend up to 7 hours a day rooting, either as exploration or for food. If not provided an enriched

environment (toys, straw, soil), pigs will explore anything available, possibly destroying household items and/or the yard.

Pigs generally, given the opportunity, will urinate and defecate away from sleeping areas and food areas. Pet pigs can be housetrained but supervision is important in this process. If a pig cannot be let out every 4 hours, it can be litter trained. Attention should be paid to the litter box. It should be stable and large enough with one side cut down to make it easier to climb into. Wood shavings should be used for litter since the pig may ingest some during exploratory behavior.

Some reproductive behaviors can be relevant to keeping a pet pig. Male piglets can develop a strong, unpleasant odor as early as 10 weeks of age and can be aggressive to owners and try to mount other pets and people. Early castration will prevent some of these problems. Female piglets generally go into their first heat cycle between five and eight months of age. Estrus will occur about every three weeks. During estrus, pigs have increased activity, increased urination and may mount other estrus female pigs. Some pigs are quiet and more affectionate to owners. Others may be aggressive and noisy. Ovariohysterectomy is recommended before 5 months of age to prevent these problems.

Knowing the normal behaviors of wild or feral pigs can help us understand the behaviors of pet pigs. It is important to recognize the natural requirements or needs of species that we keep as pets. This information can be used to prevent behavior problems helping the human species and the porcine species to co-exist peacefully.

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# WHY TRAIN YOUR PIG

Lana Hollenback

## WHAT IS THAT PIG THINKING?

To understand the pig you have to look at how they are born and live within their family structure. Pigs live in herds with a very structured hierarchy. They have one main leader or queen who is over all the rest. Then they rank down from there. Each pig is happy and complete with their rank but will also wait to move up the ladder within that structure.

## WHAT IS IMPRINTING????

When babies are born, a phenomenon takes place called **Imprinting**. This takes place within the first few hours of birth. It simply means that what the baby sees first will imprint up on his mind and remain. Its mamma is that first thing it sees and therefore will follow and learn from mamma. It is also why it is very important that piglets remain with mamma's and other siblings for at least six to eight weeks. We know this is not always possible because many things can happen to mamma or siblings so that they have to be removed. But when the option is to leave them, it is the best.

## PIGS INSTINCT

A pig's instinct is for survival. Pigs are prey animals and are very different than animals that are predator. Most predators can out run a pig and so the pig must use all his instincts to survive. This plays out even living in your home structure. He needs a safe place. A place to call his own. A place where even you won't bother him and where he can sleep without fear of being dinner for some predator out there. It is why outside pigs love lots of bedding to bury down in or house pigs like to be covered with blankets.

## PIGS BODY STRUCTURE

1. The structure of their bodies doesn't allow for a lot of different movements like other animals such as dog or cats.
2. Their neck is short and stocky and is limited to how far it turns from side to side or up and down. For instance a sow with new born piglets is unable to see all the piglets at once, especially if they are clustered up under her. She has to depend upon sound from the piglet to tell her their position and to adjust her own body accordingly.
3. New born piglets see well enough at birth to stay out of mamma's way and see well enough to spot their teat unless there is outside interference or disease.
4. Their eyes are set back on the top side of their faces making it easy to see even while eating or rooting because of a wide range of peripheral vision. Although they do have problems focusing on objects that are up close.
5. They have very poor depth perception. Their legs are short compared to most animals and therefore climbing is limited, even making stair climbing

difficult. Because of the poor depth perception it makes it hard to them to judge the height of the stairs.

6. All of these factor into how the pig thinks and responds to the environment around him/her. It also gives us insight to what it is like to live with a pig and how we can take this knowledge and use it to keep the pig happy and at the same time, have a good, well adjusted pet pig living within our family structure.

## **WHAT PIGS NEED**

Pigs need to feel safe. Pigs feel safe when they are in an established herd and have found their place within the hierarchy structure. The strongest one will be the leader and insure that all the pigs do their job according to rank. The head pig will lead the herd to shelter, food, and water. Others within that herd feel safe knowing that is the order of how they live. Same as within a family structure of the home. Older pigs within the structure will also help to rear babies born within the herd. New pigs wandering into this structure will have to earn their place within the ranks. Once that is established then they reside in harmony for the most part.

## **INTEGRATING THE PET PIG INTO THE HOUSEHOLD**

Taking what we have learned about the pig and it's own instinct for survival, we can learn to integrate that pig into the household so that it is a healthy and happy pig. Many times I've heard people say "let the pig be a pig" but if you don't understand what that means, it leaves you floundering around trying to train the pig and the pig is training you.

## **COMMUNICATION**

First thing is communication with the pig. We have to communicate with the pig but also allow the pig to communicate to us. **Communication is a two way street.** Not only does the pig have to learn what we are saying by our words and body language, we have to learn what they are saying. Body language will play a large roll in how we communicate with each other. Pigs depend upon body language more so than any other animal. If we say one thing but our body says something different, it will only confuse the issue for the pig. It is why many people have problems with their pigs. For example: If a pig swipes at us and we say "NO" but jump back, then that pig knows he won that round. It is as if he doesn't hear the command "NO" because he is to busy ready our body language when we jumped or moved back. It is important to learn not to move when giving this type of command. Otherwise we only confuse the issue and wonder why the pig doesn't learn.

### **Effective Communication vs Ineffective Communication**

Effective communication is when our voice commands is the same as our body commands. Pigs are smart and learn quickly. If we tell a pig NO, then we have to mean NO. As a mother, I can tell you that is the same as raising a child. Sending a mixed

messages only causes confusion and disobedience. Keeping open communication is also important. Understanding what motivates a pig is the key to that communication.

### **What Motivates a Pig**

1. Survival! Survival means he needs food, water and shelter. Not always in that order. He will be motivated by food mostly, so you'll have to read his body language to know when that motivation is good or bad.
2. NEVER reward bad behavior. He also needs the companionship of another pig(s) to keep him on the right tract. We understand that this is not always possible because of living conditions and zoning, but whenever possible it is the correct way to go. Does this mean the pig will be bad without another pig? No, but you will have to learn to communicate better to the pig so that he is constantly aware of who he is and who you are. Once that is confirmed, you will have a healthy, well adjusted pig.

### **Developing that communication**

From the first day that you acquire a pig or piglet, communication will start. Doesn't always mean it will be good communication. This is why we instruct people to do their homework first so that they realize they are getting a pig and not a dog or other animal. Understanding how the pig thinks and learning his body language will enable you to develop good communication. If you fail to understand these things and many of us have and still do, we get a very spoiled pig who starts training us. After they get us trained then the head swinging, fast stepping, charging and biting come next. Then we wonder why the pig doesn't like us or why is it behaving this way. In reality, we have created a monster.

## **TRAINING**

### **Punishment**

Pigs will respond to correction in a positive manner but to punishment, it becomes negative. They are smart and realize there is a difference. Punishment can bring side effects that are not conducive to proper education of the pig.

#### **Punishment can cause:**

Apathy - to frightened to do anything

Aggression - can be caused by punishment

Scaring - not friendly / becomes a fear biter

1. Many times you will find that the pig that starts biting is the one that is bottom in the hierarchy of it's herd.
2. Pigs do what will bring them a reward or something they like their way. They won't do it if it doesn't get them what they want.

3. Re-enforcement makes it more likely the behavior will reoccur and it doesn't matter if it is good behavior or bad behavior. So you have to be care full to correct bad behavior while rewarding good behavior. You must know the difference.

One form of correction is **extinction**.

**Definition: Extinction** - to let behavior just run out and die

This happens because the animal does something but doesn't get what he wants. If he charges and you don't move. Now this can be scary and some times you need the use of a good sorting board. If he can't scare you or run you off, he will eventually give up.

### **Handling aggression**

Aggression is a word we don't like to use with pigs since they are prey animals and not predators but we all know that given the right circumstances a pig can act aggressively. When dealing with a pig that is acting aggressively, first thing is to determine whether or not it is a medical condition in the pig.

1. Very often we find there is an underlying medical condition, such as: mange, urinary tract infection (UTI) or diet problem causing a change in the behavior. Once the medical issue is addressed the behavior improves dramatically.
2. Inappropriate diet can result in inappropriate behavior, which when left unchecked can develop into a bad habit that is difficult to break.

Some common problems that cause aggression is:

**Neuter/Spay - Neutering and spaying will result in better behaved pigs**

**Dippity Pig**

**Mange**

**UTI**

Good training and extinction work hand in hand.

1. Since pigs are prey animals, he won't usually pick a fight he can't win.
2. He uses intimidation to get what he wants. Once the pig understands the game, he will learn self control. Until then, they want to be "top hog" and this is where you must stand up to them. Please understand that I'm talking about a young pig that has grown up in your home and not one that has been abused or neglected. Works the same but more precaution is necessary to insure no one, not even the pigs gets hurt.
3. Pigs are happy when they know who they are and where they stand within their herd. That herd can be you and/or your family and circle of friends.

Lots of TLC (tender loving care) will usually bring a pig around to trusting you. Sometimes with adult rescued pigs or even those we have raised, we are faced with other

issues that need addressed in order for the pig to be well adjusted. Some of these issues are:

***Charging and biting other family members or friends.***

***Not allowing strangers into their circle or territory.***

***Knocking small children down and/or biting them***

These issues arise and need one on one guidance due to the circumstances and personality of each pig. If you have tried all the information above and still having these problems, please contact us or another like organization for one on one help.

## Training and entertaining your pet pig Brenda Frost

Brenda will present several tricks that her normal pet pigs are capable of doing and some of the tricks that were required to encourage the pigs to 'perform'.

Some of the 'tricks' her pigs perform:

	
<p>Sitting up</p>	<p>Dressing up</p>
	
<p>Playing the horn</p>	<p>Entertaining with 'friends'</p>
	
<p>Painting</p>	<p>Visiting with seniors</p>

## **Care of the Pot Bellied Pig's Hoof**

### **Dr Arlen Wilbers**

Over the last 15 years, many veterinarians have been faced with the owner of a pot bellied pig who desired routine care for their pet. This has led to many frustrations on the part of veterinarians and owners alike. Veterinarians --using their small or large animal experiences and very limited porcine literature references to formulate care and maintenance procedures or flat out refusal to see pot bellied pigs. Owners --in turn frustrated with inept handling, inadequate knowledge, and poor outcomes for their beloved pet. My hope, in this article, is to outline and document some of my observations in order to assist those interested in one particular aspect of pot bellied pig practice --hoof trimming and care.

There are many factors affecting hoof wear. Growth of the hoof is fairly constant in most pigs unless severely emaciated. Wear is the primary consideration affecting the need for veterinary/owner intervention. One important influence on wear is living surface. In commercial pig operations, cement has traditionally been used as a flooring surface. Cement has a very abrasive surface and wears heavily on the feet of active pigs. This coupled with the short life expectancy of commercial pigs has made foot trimming almost unnecessary. However, many of the cement surfaces our pet pigs are living on (i.e. basements, porches, garage floors) have been highly smoothed with a power trowel and thus have a much lower abrasiveness. But I have found that pet pigs who frequently walk on those relatively smooth cement surfaces require less routine hoof trimming. Gray screenings have also become useful to act as a wearing surface and reduce mud in outdoor environments. These can be obtained at most stone quarries as a byproduct of driveway stone at a reasonable price and do a fair job of keeping feet worn in active pigs. One word of caution, feeding pigs directly on sand or screening surfaces should be avoided due to the risk of ingestion which in some species has led to gastrointestinal problems. But I have not yet seen this in pigs.

Mud and moisture are also factors which affect care and wear. Pigs with wet muddy feet I are more prone to infections from minor injuries of the foot and do not wear the hoof as much as I pigs on other abrasive surfaces. However, trimming of a soft wet or muddy foot is very easily accomplished and personally, I prefer this to the next category.

"Carpet pigs" is my way of describing house pigs with rock hard hooves due to lack of moisture, little to no access to abrasive surfaces and limited outdoor activity time. These pigs usually have the worst hooves from being overgrown and thus exacerbating their arthritic, conformational, and genetic problems. Corrective measures can be done to make houses more pig hoof friendly. Avoid or cover slippery surfaces, such as linoleum, wet wood decking, or tile. Also avoid small throw rugs on these surfaces. The use of larger rubber backed throw rugs on tile, linoleum, or hardwood floors is helpful to avoid twisting falls that could result in lower back injuries. Steps are the bane of indoor pigs with many pigs suffering arthritic problems and fall injuries, especially from going down steps where 90+% of their weight is put on the front legs during the descent. Ramps help some with this problem, but are not practical on long flights of stairs. Ramps can be

covered with a friction surface such as roll roofing material or self adhesive friction strips made for stairs or decking. These self adhesive strips could be used on decks, wood steps, as well as indoor slippery surfaces like concrete, linoleum, tile, and hardwood floors. But the aesthetic value will have to be considered in most homes. Basically, reducing slippery or injury-causing areas and increasing abrasive surfaces and exercise time will help "carpet pigs" with their hoof wear needs.

Activity factors are also very important and need to be elaborated on more fully. Obesity is by far the most common problem in pot bellied pigs and arthritis is becoming the second as our pigs age. Obviously, the two can be related with the excessive compressive and rotational forces being applied to the joints of an obese pig causing cartilage damage and eventual arthritis. Obesity starts at an early age and needs to be recognized by breeders as well. "Cute" obese babies are not healthy and can and often do lead to inactive arthritic adults. Activity increases the number of hoof- to-surface contacts and thereby increases hoof wear proportionally. Vigorous activity increases the force-to-surface compressive forces and thus maximizes each contact wear event. So spending time walking or jogging with your pig is excellent for both of you. I know of a 12 year old pig that walks/jogs with his owner. He has the best feet, legs and body condition of any pig I've seen and receives numerous comments from my staff every visit.

Of course, other factors affect activity, such as age. Older pigs seldom run around, shaking their bodies as they jump and run, like they used to. Neutering of males certainly decreases activity and spaying probably does, at least for several days each cycle. But both these procedures are highly recommended for the health and compatibility of your pig. Time spent outdoors where a pig can explore and forage for food greatly increases activity, but many of us have full schedules with only limited observation time or limited back yards with no place for our pig to roam. Good fencing or dog training collars with underground fencing can enhance a pig's recreational time considerably and may work for some households.

In the care and trimming of pot bellied pig hooves, I've come across numerous hoof problems. These include genetic, injury, conformational, and nutritional categories. However, many of these problems cross category lines. Genetics would include mulefoot pigs where one or more feet have unseparated main hooves with no interdigital space; the wall appears continuous with just a small indentation where the digits would normally separate. These pigs tend to have overgrown hooves due to poor wear and dropped pasterns. Another genetic/conformational problem is severe valgus deformity in pigs where both front hooves are weight bearing on the medial surface of each digit causing uneven wear. Excessively splayed hooves occur where the interdigital ligament is weak from birth or caused by injury from trauma or obesity. Varis deformity occurs causing the wall of lateral digits on the hind foot, in particular, to curl under medially, causing the pig to walk on the lateral wall of its foot. Hoof cracks with interdigital growths and excessive pad protuberances also occur. The etiology of these is unknown to me, but it seems to be in families and starts at a young age. Nutritional deficiencies or toxicities have been suggested as a possible cause, as well as trauma to the coronary band and environmental



conditions causing cracks. Most of these pigs are fully weight bearing and only occasionally have soreness at the location of the crack or interdigital growth.

Injuries to the hoof are quite common with Iatrogenic or owner over trimming, being one of the most frequent. Chemical cautery, using silver nitrate sticks, will quickly stop the bleeding and most pigs will show little to no lameness. Some pigs will over wear their own feet on abrasive surfaces with too much activity or poor foot conformation causing exposure of the white line and/or sensitive pad tissues. Removal of the offending surface or decreased activity by confinement in a padded environment should allow regrowth and thus healing to occur. Dew claws occasionally will be torn loose and bleed profusely. This usually occurs while trying to get a pig in or out of doorways or a vehicle. Again silver nitrate cautery or bloodstop powder may be applied with a wrap, if necessary. The claw will eventually grow back but it will be somewhat misshapen. Cracking of the pads or cracks between the pad and the hoof on the underside may occur due to trauma or moist conditions, with a foot rot-like appearance. Trimming, cleansing, antibiotic application and environmental modification usually rectify the problem. Interdigital wounds especially in muddy environments where sharp objects are forced between the toes by the weight of the pig pushing down into the mud are not unusual. Normal environmental and wound care with or without antibiotics, depending on severity, will usually remedy the situation. I have not been giving tetanus vaccinations in this situation, although some veterinarians might do so. As of yet, I have not seen tetanus in a pet pig.

Pastern abrasions are common when pigs arrive at a veterinary hospital, due to dragging or forcing a reluctant pig who squats while being pushed or pulled forward. These will quickly heal with routine care. Shoulder luxations with corresponding shortening of the affected leg occur in young pigs who jump off couches and beds or fall down steps. The hoof is then swung outward and forward in an arc with little or no weight being applied. This eventually, over months, results in tendon contracture with toes contacting the ground in a near ventral position with severe toe wear. Hoof wall separation or a laminitis type condition is common, particularly on the lateral front hoof. Etiology is possibly over ingestion of rich foods, causing laminitis affecting the digits bearing most weight more severely. However, when taking radiographs of these hooves most, if not all, show severe arthritic changes to the distal phalangeal joint. Which occurs first, the separation or the arthritis? I do not know. But, in my experience, all of these pigs have this separation for life thereafter.

Conformational makeup of the pig also contributes to or helps cause some of these problems. Long legged pigs tend to have steeper pastern angles, wearing the toes more naturally than short legged pigs with lower pasterns. Obese pigs commonly have dropped pasterns with dew claws contacting the ground and poor ground contact of the toe portion of the main claws. This leads to pastern wear, tendon laxity, quick hoof growth due to decreased wear and obvious arthritis potential due to increased abnormal joint forces. Even after weight reduction occurs, pastern angles change little and tendon laxity persists. Yet, some pigs that are obese with longer legs have good steep pasterns but this is not the norm.

I'm sure nutritionists would say that nutrition plays a major role in hoof care, but my expertise in the area is limited. Obviously, a well balanced formulated diet specific for pot bellied pigs is optimum. However, it has been my experience that some owners think their pig requires nutritional supplements, extra vitamins and ad lib vegetables and fruit despite obvious obesity. Then may complain of arthritis and foot problems in their pet. Please, first things first.

The next area of foot care is the actual preparation for and procedure of the hoof trimming. First, having the right equipment necessary to handle, restrain and trim the pig is required. My favorite tool is a hoof rot shear found in the Nasco catalog for \$29. This is my primary hoof shaping and wall removal device, but does require physical strength. Various hand pruners have also been used. In situations where large amounts of hoof needs to be removed or where the hooves are very hard, a hoof nippers is an excellent tool. Some veterinarians and owners use a Dremel with a burr and can do an excellent job, especially under anesthesia due to the increased restraint time required. Metal files with coarse teeth allow removal of rough edges, but pigs quickly smooth out any burrs with normal wear anyway. I, personally, use a back brace, ear protection, gloves and should wear goggles to insure personal safety whenever I use an awake technique for routine trims. As stated earlier, silver nitrate sticks or blood stop powder are useful if over trimming occurs.

Techniques for restraint have been a thorn in the side of many veterinarians. Owners have an aversion to squealing and tell stories of pigs having heart attacks and dying when turned on their backs. First of all, doesn't your young child scream when getting a vaccination or cry at the dentist and you can reason with them. Squealing is the normal response to restraint or being caught or captured. After all, isn't that what a lion does before it eats you? As for being on its back, I personally have trimmed several thousand pigs on their back while they were wide awake and have had no pigs die of a heart attack. You need to always warn the owner that the pig will squeal loudly, but also assure them it will be fine.

The actual technique I use to restrain pigs are one person and two person awake

I techniques or general anesthesia.

In the one person awake technique, I prepare a soft spot such as a blanket or straw to lay the pig and place my tools beside it ahead of time. Wearing my gloves, back brace and ear protection, I maneuver so that the pig is facing away from me. Do not use food as a pig with food in its mouth may aspirate when rolled onto its back. A low pig board can be very helpful to position and maneuver the pig. I bend down and catch the pig in the web of skin behind its elbows and lift the front legs off the ground. The pig will naturally go into reverse, so I back up quickly and continue lifting until only the pig's tail is touching the ground. If, by chance, the pig runs forward, this makes the process quicker because we walk his rear legs under his front end and is now on his tail anyway. Now I place the pig on the soft area and lower the pig backwards between my knees while keeping a hold on both front legs. All four legs are now pointed skyward. Remember, pigs can bite so bow your legs outward as you lower him. Now I tuck my toes inward against the pig's

flanks and allow him to stop struggling (not stop screaming) then proceed with trimming, back feet first. When ready to do the front, catch both front legs with your hands and step over the pig and switch sides with your feet. Now you will be facing the front of the pig and it is even louder, but trim the front feet anyway. This technique allows you to restrain the pig with your feet and legs while allowing you complete use of both hands to do your work.

In the two person technique, the catching of the pig is accomplished in the same way with the same equipment. However, the second person becomes the holder. The second person sits, with eye and ear protection, their back against a wall or fence with legs bent and feet flat on the ground or soft surface. The catcher lowers the pig so that the pig's rump touches at the holder's ankles and the pig is lowered backwards by the catcher so that the holder cradles the pig between his knees and holds onto both fore arms of the pig. Be careful of sharp tusks and swinging of the head against the holder as this is quite possible if the pig is positioned too high or too low on the holder. The catcher then proceeds to become the trimmer.

Releasing the pig by both the one and two person technique is done by the holder lifting a leg and rolling the pig fall off his back. When doing many pigs in one day, I find the two person technique less fatiguing.

Slings are another method of restraint for trimming, but I have not had much experience with these and would not feel comfortable commenting on them.

General anesthesia has been used many times for routine trimming but I feel it is overused and puts the pig at undue risk and costs owners considerably mentally and financially. However, many times when doing other necessary procedures, trimming can be done as well while the pig is under anesthesia. My preferred method of administering anesthesia is a two person technique with restraint of the pig in a vertical position sitting on the rump. The anesthesiologist, using Isoflourlne 5%, places the mask over the snout and mouth and wraps a towel tightly at the junction of mask and snout. Squealing will likely occur, but soon regular breathing starts and induction usually occurs in 2-3 minutes. A brief excitatory phase occurs in 50% of pigs (15-20 seconds) then relaxation occurs. If intubation is required for another procedure such as a dental cleaning, ten minutes of induction is usually needed to get complete relaxation of jaw and pharynx. While you wait for deeper anesthesia this is an excellent time to trim the hooves thoroughly.

Principles of trimming are fairly simple. Trim the pig's feet to a natural shape. What is a natural shape, you may ask? The blood lines on the hooves and dew claws give us this answer and are easily visible on white footed pigs. On black footed pigs this becomes a matter of practice, experience and taking some other visual cues. Dew claws need to be trimmed at an angle consistent with the dew claw pad by following its contour out onto the nail. This angle can I be trimmed safely and then round the tip slightly to avoid sharp points. The hooves or main claws are also trimmed flat to the angle of the foot pads. Dubbing off of long toes and not flattening the soles is not acceptable and in reality does

little good for the ambulation of the pig. Once the main excessive growth of the hoof is removed with a nipper, shaving of the sole can be done with the shear. You will notice a slightly softer texture as you approach the sensitive layers and at the hoof wall you will actually start to see a faint white line, especially on a black hoof. Be careful; trimming further will result in bleeding. Now shave off any rough edges and proceed to the next claw until all are trimmed. Pigs with excessively long hooves will continue to goose step for a few days after a trim as if their hooves were still in the way until they find out that it is no longer necessary. Pigs with pad and interdigital growths can be trimmed back to normal shape. Dorsal wall cracks should be shaved smooth to remove excessive irregular hoof horn growth.

Obviously, the more hooves you trim, the quicker this task can be done, much to the delight of owner and pig. I have found trimming to be a rewarding and satisfying experience by all parties involved and people do notice if we do it well. And seeing our pets walk comfortably makes all the squealing worthwhile.

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