

# A newsletter for pork producers



## PigBytes

Issue 29 May 2016

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### Case Study: Septicaemia due to *Klebsiella pneumoniae* infection of sucker pigs

Alison Collins Snr Research Scientist NSW DPI

In January and February 2016, three separate outbreaks of septicaemia due to the bacteria *Klebsiella pneumoniae* were reported in pre-weaned pigs; one in each of Vic, QLD and NSW.

Mortalities were as high as 50 to 100% of piglets in some litters, and occurred in indoor housed herds with good hygiene.

This disease has been reported in East Anglia in The UK over successive summers but only in outdoor herds. This is reported in a PigSite article [Klebsiella septicaemia](#).

The East Anglia case definition is "Sucker Pigs found dead with lesions consistent with septicaemia and pure/predominant growths of *Klebsiella* isolated from internal sites in multiple pigs".

This was consistent with the Victorian and QLD experience.

In the Australian cases, affected pigs were from 1 to 3 weeks old and had been in good body condition prior to sudden death.

Post mortem examinations were consistent with septicemia however some cases were reported to be non-specific with the presence of fibrin strands in the abdominal cavity as the only common finding.

The bacteria *Klebsiella pneumoniae* was isolated (in heavy and almost pure growth) from a wide range of tissues submitted to veterinary laboratories including liver, lung, kidney, heart, intestine and brain tissue.

Similar outbreaks had occurred in the QLD herd over summer in three of the last 5 years.

In the UK this disease syndrome occurred over successive summers, but only in outdoor herds.

*Klebsiella pneumoniae* more commonly causes sporadic disease in individual pigs, often in association with other diseases like mastitis or pneumonia. *Klebsiella pneumoniae* can also be found in the intestines of healthy pigs.

The reason for the septicaemia outbreaks has not been uncovered as yet, however the disease has been controlled on farm with either apramycin or neomycin, making antibiotic sensitivity testing of the *Klebsiella* isolated a necessity.

*Klebsiella* are innately resistant to ampicillin and other beta-lactam antibiotics. Epidemiology and bacterial typing investigations are ongoing to better understand the source of the outbreak, and to determine if there is a common link.

*Klebsiella pneumoniae* can cause infections in humans, which are most commonly acquired in hospital, especially to immune compromised patients.

However, there is no evidence to suggest that infected pigs are a source of infection in humans, and fortunately the antimicrobial resistance patterns have not shown wide resistance like the human isolates have.

Factors which may have contributed to the Victorian outbreak may have been:

- the high number of gilt litters farrowed down (50%);
- the weather was hot 42°C
- sows were cooling themselves by playing with the drinkers in the farrowing house causing significant wetting of the pens.
- Staff dried the pens by throwing down sawdust, which is an ideal environment for the survival and multiplication of *Klebsiella pneumoniae*.

Sawdust was replaced with a medicated bentonite (Staldren), but as sows and piglets were medicated at the same time as the Staldren was introduced we cannot comment on its efficacy; but it is certainly preferable to sawdust.

The outbreak in Victoria was pulled up very swiftly with hygiene modifications and treatment of sows and suckers with Neomycin.

In the early stages it also affected pigs moved into the weaning shed. Medication has been withdrawn from the suckers now with no reoccurrence of the disease and will be removed from the lactation ration.

Factors that may have impacted on the QLD outbreak include the additional infection of pigs with EMC virus and non-haemolytic *E.coli*, floods in the area in the first year that outbreaks of septicaemia were observed and recent problems with rodent eradication. Apramycin treatment of piglets was able to reduce scours.

If producers observe sudden deaths in pre-weaned pigs with septicaemia, they should contact their veterinarian for submission of tissues from freshly dead animals for bacterial culture and fixed tissues for histopathology. For further information, please contact your vet or the State Veterinary Diagnostic Laboratory.

NSW: Elizabeth Macarthur Agricultural Institute, NSW Dept Primary Industries, Woodbridge Rd Menangle, NSW 2468. Phone: (02) 4640 6333. Contact Dr Alison Collins

QLD: Biosecurity Sciences Laboratory, Lab Specimen Receipt (Loading Dock 12) Health and Food Science Precinct, 39 Kessels Road, Coopers Plains QLD 4108, Phone: (07) 3276 6062, or Dr Andrew Morris, Veterinary Consultant @ Chris Richards and Associates, Mob: 0437 011 818; andrew.morris@chrisrichards.com.au

Victoria: Dr Tony Fahy M.0409 335 707; [tonyfahy43@gmail.com](mailto:tonyfahy43@gmail.com) or Pig Heath and

Research Unit, Cnr Midland Hwy and Taylor St Epsom, Vic 3551. Phone: (03) 5430 4444.

## North Coast TAFE takes stockperson training online

Jayce Morgan

North Coast TAFE now offers both the Pork Industry Stockperson Skillset and the Certificate III Pork Production online through a new and innovative approach to delivery of these courses.

The barriers to gaining the necessary competencies prescribed by animal welfare legislation have always been distance and access to training combined with the requirements for the demonstration of many handling and husbandry skills in the units that make up the courses.

Advances in online learning technology have changed the way the courses are delivered and how evidence of skills competency is collected.

The new online platform is interactive and connects staff and students allowing the sharing of information and open discussion. Providing video and photographic evidence is as simple as connecting to a smartphone app. Evidence is not only uploaded directly to the student's classroom, they are able to select the assignment it applies to.

Assessments are assigned within the same classroom environment and on completion are simply uploaded directly to the teacher for marking. Presentations, topics of interest, related video and questions can be added by teacher or student for sharing with all participants.

Distance learning is sometimes isolating and often the learner feels it's more of a self-help option to study that lacks the desired interactions and one-on-one guidance. Motivation can also be a problem but this new classroom environment is able to meet the needs of all styles of learner and levels of assistance and enquiry needed.

The two courses are presented so that they cater to all pork production systems including free range.



To find out more or to enrol contact [North Coast TAFE](#) customer service phone 1300 628 233

## Antibiotic resistance and how we view animal health

Jayce Morgan

*Thanks to Dr. Pat Mitchell APL for help with this article.*

Antibiotics have come to be recognised as an essential tool in the treatment of disease in both animals and humans. Antibiotic use remains essential for preservation of animal welfare in disease situations for both food production and companion animals.

However there is growing concern about antibiotic resistance which is a complex problem requiring collaborative action from both human and animal health experts.

Antimicrobial resistance is not straightforward and the processes and development of resistance involves interactions between the many different antibiotics, the bacteria, the bacterial resistance genes and various mechanisms of resistance.

The use of every antimicrobial agent (including antibiotics, disinfectants and even trace element metals) influences the development and spread of resistant bacteria, so sensible use of all these agents across all human and veterinary sectors is required.

Quite often animal production is held responsible for the creation and spread of resistant bacteria.

However, as the technology associated with investigating antimicrobial resistance becomes more sophisticated, it has been shown that human medicine and veterinary treatment of companion animals have also played significant roles in the build-up of antimicrobial resistance.

Investigations into alternative strategies to antibiotic use within agriculture are ongoing.

There have been lots of articles in different media about the problem and this newsletter article was prompted when it was reported that various [food industry investor groups](#) are calling for major US and British restaurant groups to “stop using antibiotics in their meat supply chains”.

A [2015 Ted talk](#) (“What do we do when antibiotics don’t work anymore?”) reported that there were 700,000 deaths worldwide due to antibiotic resistant infections.

A recent episode of [Catalyst](#) on the ABC suggested that a piggery is ‘just like a hospital’ with many opportunities for spread of organisms between animals but did concede that Australian farmers to their credit are adopting alternatives to antibiotics like vaccines, modifying feed, and improving infection control.

We should protect the health of our animals by using an integrated approach, through:

1. Robust biosecurity & disease preparedness;
2. Integrated Management & Animal Husbandry, and
3. Minimal use of antibiotics.

Australian pig Industry reliance on critically important drugs for human medicine is very low.

Even so, antibiotics should only be used in the pig to treat & control disease; we need to keep them for when we really need them and when all other interventions haven’t worked.

The aim of our industry is to minimise antibiotic use through vaccines & management.

Industry research into this specific area is commissioned by both APL and the High Integrity Australian Pork CRC (HIAP CRC).

Industry has invested resources in a great number of projects covering areas such as:

- Risk analyses;
- Reducing antibiotic usage;
- Measuring antibiotic usage;
- Novel management strategies/vaccines/compounds, and
- Surveillance

Some of the projects include:

- Development of an antibiotic usage tool to provide info on the quantity of antibiotics used on-farm
- Undertaking antimicrobial resistance surveillance program
- Collaboration with other livestock industries to develop an antibiotic stewardship program,

The challenge for industry is to develop and implement not only better management strategies, which prevent disease entry, but also strategies that integrate the outcomes of research that will allow us to better care for the health of the herd.

So what should the average pork producer do if they are seeking to minimise their use of antibiotics?

- Discuss your situation and goals with your vet and get their input – outside eyes can see things you become accustomed to. Talk about your current herd health status and how it might be improved or maintained without compromising pig welfare if you remove or reduce antibiotic use.

- Get an accurate diagnosis of your herd's health issues. Before you reach for some product you already have in the back of your fridge to treat a sick pig – make sure you are treating the illness with the right product.
- Environment is a major factor in disease susceptibility - draughts, poor air quality, poor hygiene, inadequate cleaning, lack of shelter or a dry bed. Consider the age of your sheds, materials used – can these be renovated or do you really need to consider an upgrade. Do you need to reassess your cleaning routines or your paddock rotations?
- Nutrition – is it adequate in terms of nutrients for the different age groups? Do you use good quality ingredients with a reliable supply and regular delivery of a balanced ration to the pig – no out-of-feed events?
- Mycotoxins can depress the immune response and cause symptoms suggesting disease such as diarrhoea, vomiting or abortions – use mycotoxin inhibitors in your feed mix and feed good quality feed to your pigs.
- Emerging products – organic acids, enzymes, organic mineral complexes, herb oils – with claims to improve gut health or overall pig health. Do your research, talk to your nutritionist, talk to other farmers who use these products, talk to your vet – is your problem nutritional or is it some other aspect of management?
- Practice the principles of biosecurity – provide boots and overalls for visitors, quarantine introduced animals, purchase replacements from high health status herds or breed your own and use AI. Complete a herd health plan with your vet's input. Develop a vaccination schedule for your pigs. Practice disease prevention.
- Remember your own personal hygiene – your health matters and you can also be a vector of spread of disease.
- Utilise all-in all-out management between groups in sheds and even in paddocks outdoors. Microbes survive in organic matter – manure and feed waste – proper cleaning removes the organic matter in sheds. Paddock renovation between groups of pigs allows nutrient removal with break crops and the sun, wind and soil ecosystem to restore the soil during this time of no pigs.

Most diseases come into the herd via pigs or people. Different farms will have their own customised approach due to variations in climate, aspect, pig genetics, nutrition, management and housing. Develop your herd health plan and review it regularly. Keep records so you can monitor your progress.

### Suggested further reading:

Derosiers R 2013 'Why we should reduce antibiotic usage and ways to do it' London Swine Conference Canada available on [The PigSite](#)

Gleeson BL and Collins AM 2015 'Under what conditions is it possible to produce pigs without using antimicrobials?' *Animal Production Science* 55: 1424-1431. (ASAP proceedings)

Australian Government 2015 '[Responding to the threat of antimicrobial resistance' Australia's First National Antimicrobial Resistance Strategy 2015-2019](#)

## Prepare for winter

*Jayne Morgan*

Despite the recent warm weather winter is just around the corner. There are several things you should be checking to make sure conditions are right for your pigs.

Suckers, weaners and early stage growers are most susceptible in the cold weather so shed or shelter maintenance should be high on the priority list.

Check that there are no draughts from the prevailing winter winds. For large sheds this means checking blinds for holes and effective operation; and shed doors and any moving panels for effective closure.

Check heat lamps, heat pads and piglet covers. Do the rounds with an infrared thermometer and check temperatures at piglet level.

Outdoor farms should be assessing their straw supplies for bedding as well as all shelters for maintenance and repair. Pigs do like mud but when the weather is cold they need a dry bed.

Talk to your feed supplier as there may be some adjustment to diets possibly needed. More energy for growing pigs and lactating sows so they cope with the cold or a bit more fibre for the sows to generate more body heat.

Latest video weather forecast from the [Bureau of Meteorology](#) is for 50% chance of more rain with a *La Niña* watch – so be prepared.

## A handbook for organic pig farmers

Jayce Morgan

This book is written by a group of pig experts from Europe and the UK. There are 5 sections:

- Fertility problems
- Diarrhoea
- Respiratory problems
- Injuries
- Other health and welfare

The handbook is based on simple checklists and possible countermeasures for farmers operating an organic piggery.

The handbook recommends veterinary consultation for proper diagnosis and treatment of disease problems. Also some of the diseases mentioned for example PRRS (Porcine reproductive and respiratory syndrome) are exotic to Australia.

Organic farming standards in Europe are different to Australian standards (mainly in housing) so be aware of the differences if you are a certified organic producer.

[http://coreorganic2.org/Upload/CoreOrganic2/Document/ProPIG\\_handbook\\_en.pdf](http://coreorganic2.org/Upload/CoreOrganic2/Document/ProPIG_handbook_en.pdf)

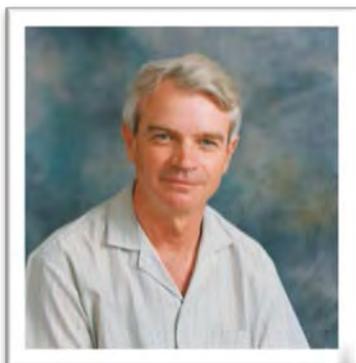
## Valé Dr Cam McPhee - 9 June 1938 to 28 March 2016

*Dr Michael Macbeth, colleague and friend*

An extract from the eulogy given at Cam's service on his life as a scientist

Cam started his agricultural studies in 1955 and graduated with a M (Agr) Sci (Qld) in 1962. Cam chose to commence a PhD in Edinburgh and was supervised by Alan Robertson, a leading world geneticist.

Figure 1: Dr Cameron Peter McPhee



To give you a quick overview of Cam's career he was known and respected internationally for his work in quantitative genetics where he researched different animal species. Some of these species included: Drosophila, mice, ostriches, poultry, beef cattle, dairy cattle, redclaw crayfish, barramundi, tilapia, tiger prawns, pigs and was even approached to investigate genetic selection in salt water crocodiles.

Cam was a founding member of the Australian Association for Animal Breeding and Genetics and took on the arduous task of journal editor on more than one occasion. Cam produced 118 publications in recognised scientific and industry literature many of which were published in high impact journals in the field.

When he started his PhD he was told that he was to become a plant geneticist but when he returned in 1967 he was requested to work as an animal geneticist. Somewhere along the way Cam was pointed to pigs. His first task was to reduce the thick layer of fat on the carcass; a task not easily achieved as there was no way of measuring fat on live pigs.

Cam's solution was to set up a progeny test, where the offspring of boars were grown and then slaughtered at an abattoir with their backfat measured. The problem was that this test was not very efficient as only three boars per year passed the test.

Cam was quick to uptake new technology however and used the new echo-sound backfat tester which could measure backfat on live pigs. This changed things completely and led to Cam starting the centralized boar test station at Rocklea in the early 1970's. In this new test, pig producers sent young pigs to the station to be evaluated for backfat, growth rate and feed efficiency. Comparing the performance from different herds in this way further enhanced the rate of genetic improvement.

Cam was successful in gaining support for a new test station at Wacol which performance tested up to 500 pigs annually. In following Cam's footsteps test stations in New South Wales and South Australia were also opened.

In the late 1970's, the echo-sound backfat tester became affordable to pig breeders and Cam devised on-farm selection programs to assist producers improve their own stock. It was during this period Cam worked closely with the Department's pig extension officers. He produced many easily understandable farm notes to assist producers. These farm notes were well written and are an unofficial documentation of Cam's understanding of the real production world.

In 1985 Cam supported the use of artificial insemination (AI) together with Bruce Mackintosh who set up the first pig AI station in Australia at Wacol. This technology allowed a rapid method for genes from the highest performing boars to be disseminated throughout Australia. It sped up the rate at which genetic gains were achieved from selection at the test stations.

Cam was always keen to learn new ideas and on a couple of occasions spent some time in Edinburgh updating his skills. Cam brought back some new statistical software which again changed the industry. He gained the cooperation of a few pig producers and set up a trial that would revolutionise the way genetic selection evaluations were performed in Australia.

This new statistical method combined with AI allowed progeny to be compared across different herds. This was one factor that led to the closure of the Wacol boar performance testing station which basically became redundant. While I was busy developing this project, which eventually led to the National Pig Improvement Program, Cam focused his attention as leader of the project entitled: "Breeding and Feeding Pigs in Australia and Vietnam".

This project ran between 1996 and 2001 and was a joint project between QDPI and the Australian Centre for International Agricultural Research. Under his leadership, the project succeeded in developing a productive genetic line of pigs specifically adapted to tropical environments in Queensland and Vietnam. Most of this research was performed at the Biloela research station where Cam replicated the results of his mouse experiments with pigs. His findings revealed many new insights into the best way of improving the efficiency of lean pork production.

This project was a great success, contributing very quickly to the genetic improvement of Vietnam's pig population. An independent assessment of the economic benefit of this 5 year project was estimated to be worth half a billion dollars.

In addition, Cam made significant contributions to his research in the halothane gene and in the evaluation of imports of pigs from overseas that were briefly allowed to enter Australia prior to disease concerns stopping all future introductions.

In 2002 he took a break from pigs to help people less fortunate than himself. He joined his wife, Fasney in Mongolia for 9 months with Australian Volunteers International. His project was to re-introduce small-scale poultry into villages, desolated by several years of unusually severe winters. He enjoyed the challenge of sourcing local animals, then transporting them by plane and

Russian truck to households in really isolated villages. He wrote and published a chicken-keeping manual in both Mongolian and English with cartoon illustrations, and even included some simple egg recipes.

Cam officially retired on the 16th July 2004 after which he still managed to publish an additional ten publications. His last paper was published in the Queensland Naturalist in 2012 demonstrating the value of domesticating the Queensland redclaw crayfish.

I have known Cam for nearly 40 years and have known him to be a quiet person and always professional in his conduct at work. He was calm, patient, approachable and a clear thinker. He had the special ability to present sophisticated ideas in a clear and intelligible way to a range of audiences.

One of Cam's most amazing achievements however, was how he achieved so much by being a gentleman at all times.

Few other phrases can evoke in so few words the high regard in which Cam is held by his work colleagues

Dr Cameron Peter McPhee,

"You are a gentleman and a scholar"

## Coming Events:

### Dishing the Dirt on Profitable Pigs

*Dr Nic Schembri (Greater Sydney LLS)*

RAISING profitable pigs in Sydney will be the key theme of a free workshop run by Department of Primary Industries and Greater Sydney Local Land Services next month with support from Australian Pork Limited.

Attendees will get the chance to hear from industry leaders and biosecurity experts as well as other pig producers on their own experiences, triumphs and challenges.

Greater Sydney Local Land Services biosecurity officer Dr Nic Schembri said topics covered would include pig health, disease prevention, nutrition basics, tricks of the trade for "meating" the market and important information on managing biosecurity risks that can come from poorly managed livestock.

"Before buying a pig you must consider things like council requirements as well as where and how the pigs will be kept. These decisions impact on the pig's health and nutrition, potential marketing

opportunities and your ability to meet the strict market specifications,” she said.

Melanda Park Free Range Pork owners Matt Simmons and wife Sue will be two of the local producers to share their story on the day.

“Today’s market-ready pig is a very different kind of animal, you can’t simply put it in the paddock and expect it to be instantly healthy and profitable,” Mr Simmons said.

“As a capital city and major port, the Sydney basin is vulnerable to significant biosecurity risks and as livestock producers we are highly susceptible to an exotic disease outbreak. It’s important we take every precaution possible to prevent that from becoming a reality.”

Mr Simmons urged other potential and existing pig producers to attend the workshop.

“This is an opportunity to learn the tricks of what can be a challenging trade, engage with and learn from other producers and get firsthand advice on best practice pig management from the experts,” he said.

The Raising Pigs Workshop will be held from 12.30 – 3.30pm on Saturday, 21 May at Penrith RSL with registration and complimentary lunch from 12pm. The event is being presented with the support of Australian Pork Limited.

For more information contact Dr Schembri on 02 0438 073 749 or [nic.schembri@lils.nsw.gov.au](mailto:nic.schembri@lils.nsw.gov.au) or to book visit: <https://gslls.wufoo.eu/forms/raising-pigs-workshop-21516>.

#### ENDS

**Media contact: Nikki McGrath (02) 4724 2138  
M: 0448 953 755**

## NSW Department of Primary Industries (NSW DPI) Pig Industry Group

Jayce Morgan  
Development Officer Pigs.....02 6763 1257

Dr Amanda Lee  
Senior Veterinary Officer (Pigs and Poultry)  
.....02 4640 6308

Alex Russell  
Manager  
Intensive Livestock Industries .....02 68811212

## Victorian Department of Economic Development Jobs Transport and Resources (DEDJTR) – Pig Industry Group

Dr Youssef Abs El-Osta  
General Manager-Pig Services Centre:  
.....03 5430 4595

Patrick Daniel  
Pig Health Monitoring Service  
(PHMS) .....03 54304570

## Queensland Department of Agriculture and Fisheries (DAF)

Sara Willis  
Principal Extension Officer.....07 4688 1214

*PigBytes* is a newsletter from the pig industry team at NSW DPI, Victorian ECODEV and Queensland DAF.

Editor: Jayce Morgan  
[jayce.morgan@dpi.nsw.gov.au](mailto:jayce.morgan@dpi.nsw.gov.au)

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