The Edinburgh edition of ESPHM attracted over 1,000 delegates.

Wide range of topics for record breaking ESPHM

A very successful European Symposium on Porcine Health Management (ESPHM) was held at the International Conference Centre in Edinburgh, Scotland, with a record breaking number of delegates and exhibitors. The focus was wide – from bacteria to viruses and from environment to nutrition.

By David Burch

The 2013 edition of the ESPHM celebrated the host's, the British Pig Veterinary Society, 50th anniversary, as well as bringing together members of the European Association (EAPHM) and European College of Porcine Health Management (ECPHM). Overall, it was a stimulating conference with *1,083 participants, from 38 countries,* eight keynote speakers, 40 additional oral presentations and over 200 poster presentations.
The conference was opened by veterinarian Mark White, chairman of the organising committee and introduced Stewart Houston, a pig farmer and former chairman of the UK's National Pig Association (NPA) and current chairman of British Pig Executive (BPEX). He is heavily committed to improving the health and welfare of pigs produced in England to be able to compete with other EU member states production. The UK industry has undergone a major contraction over the last 15 years due to a number of issues but is starting to recover more recently. It comprises approximately 4% of the EU industry. Welfare initiatives, such as the banning of gestation stalls and the banning of castration, have been able to keep UK pig prices at a premium to Europe's but this might change in the forthcoming years, as they catch up. Health improvements are core to improved productivity and further work, especially in freedom-farrowing situations (40% of the breeding herd is reared outdoors in arcs) is required to increase the numbers of pigs weaned/sow/year with a national target of 23. The damaging effects of porcine circovirus in the early 2000s have been largely overcome by vaccination but the industry still faces tough times largely due to fluctuating feed costs. As a result, improved production efficiency and health control are considered essential to remain competitive.

(Re-)emerging diseases

Professor Quim Segales from the University of Barcelona, Spain discussed the threat of emerging and re-emerging diseases. Many of the emerging diseases appear to be due to viruses, for example Porcine Reproductive and Respiratory Syndrome (PRRS) virus and PCV2. Only about 5% of viruses have been identified and some may emerge to cause infection and disease on their own (unifactorial) or may combine with others to precipitate multi-factorial disease complexes. Their transmissibility and maintenance in a population is favoured by a number of phenomenon including intensive rearing practices and globalised/international trade.
Eradication can leave a susceptible population, which can break down again. Re-emerging diseases may be

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due to development of mutants of existing viruses, which are not protected by current vaccines.

On the bacterial side, *Brachyspira hyodysenteriae* appears to be re-emerging in certain countries and are often resistant to current therapies. New haemolytic Brachyspira species like *B. hampsonii* are also being identified in Europe as well as in North America.

H1N1 outbreak

Dr Kristien Van Reeth from the University of Gent, Belgium, talked about the recent pandemic H1N1 influenza outbreak and looked into how it actually came about and why it should not have been termed 'swine flu'. Pigs have been given the role in the generation of pandemic influenza viruses for humans, almost as a dogma and have been termed the unique 'mixing vessels', taking avian viruses and presenting them to man. This dogma needs to changed, as avian H5N1 has been shown to pass directly from birds to man, usually by direct contact, resulting in a high mortality in man.

Fortunately, it does not spread efficiently between man, and pigs did not play a role in its transmission. Pigs could be infected but it was not transmitted by them to man. In fact, there is no evidence that pigs are more susceptible to avian viruses than humans and reassortment between avian and mammalian influenza viruses can also occur in several bird species.

However, the same influenza subtypes, H1N1, H3N2 and H1N2 can infect humans. Many of these viruses are of human or part human origin; although they may include avian, human and swine elements, as did the pandemic H1N1, which derived from North American and European reassortment of established influenza viruses. It is still unclear where this took place and it is the first to be successfully transmitted to man. Another reassortment subtype H3N2 has been transmitted recently to children from swine in fairs in North America but did not spread amongst the human population.

Swine influenza

Dr Giampietro Sandri from Verona, Italy, described the control of swine influenza in a pig-dense part of Italy, on behalf of a large production group. He sees two distinct types of disease, the epizootic form, which is an acute disease mainly in breeding farms that spreads through the farm and is largely finished in about two weeks, although secondary bacterial infections can complicate this.

The enzootic form is more commonly seen in the nurseries, the acute phase may be similar but the final outcome depends on the dynamics of the population's immunity and pig flow as well as the presence of other respiratory viruses.

Importantly, it must be remembered that if the three major subtypes are circulating then fresh outbreaks may be caused by a fresh subtype; hence vaccination against all three subtypes is essential. Many farms are within a kilometre of each other and airborne transmission is relatively easy. Antipyretics, such as paracetamol and aspirin are helpful in the acute phases of the disease and antibiotics may be used in more bacterially complicated situations. Surveillance and monitoring of SIV infections is also important to better understand the spread of the infection.

Immunological innovations

Dr Dan Tucker from Cambridge University, England, reviewed immunological innovations for the future of pig health management. The dynamics of infectious disease describes the changes in prevalence and biology of specific pathogens within and between populations over time. This information is important in better targeting existing management or vaccine-based controls. *Streptococcus suis* was an example, where high throughput gene sequencing would improve our understanding of its infection dynamics and may simplify and strengthen eradication programmes without depopulation.

A swine population may have several strains and molecular tests could identify those that are potentially pathogenic and may identify antigens suitable for producing vaccines. PRRS virus is another example where molecular changes are taking place primarily through mutations. A sequence based approach to determine the whole genome may improve our understanding of PRRS infection and determine whether multiple strains are present or not, something that current PCR technology cannot do.

Environmental controls

Hugh Crabtree, director of Farmex, based in the UK, spoke about future environmental controls for pig production. The basic physics involved in pig production has not changed – a heat balance and contaminant removal. The future is going to be driven by information and communication technology, which can be monitored on a real time basis. With fewer people employed this information and automatic data analysis will be relayed to operators with mobile devices that can make the necessary adjustments.

New buildings often incorporate the new technologies but the problem comes in many countries that pig farms are getting older with limited will for capital reinvestment. Monitoring has been shown to modify behaviour in production management and energy waste, once identified, is quickly rectified. Measuring water use by growing pigs is considered crucial as it relates to growth, feed intake, metabolism and the presence of disease. Process monitoring is the radical change that is taking place across Europe and is set to deliver significant efficiency gains to those who invest in it.

Microbiota, metabolism immunity

Professor Mick Bailey from Bristol University, UK, presented a fascinating

paper on microbiota, metabolism and immunity. Increasing evidence suggests that the complex process by which the intestinal tract is colonised with bacteria after birth has profound effects on the development of the immune system and metabolism. Early-life exposure to pathogens may offer increased protection in later life.

This work is at an early stage in pigs. The suckling period may have a major impact on the future development of the immune and metabolic systems, which are key determinants of later pig performance, governing resistance to infectious diseases and feed conversion to body mass. The gut flora of outdoor reared piglets and indoor reared ones are very different. At weaning there is a substantial change in the gut flora. Antibiotics will alter the gut flora and similarly pro and prebiotics administered at birth or weaning may also make changes that can alter immunity and metabolism and may have a long term beneficial effect.

Feed intake

Paul Toplis, director of Primary Diets, Ripon, UK, examined the role of feed intake in young pigs and its importance for the 'post-antibiotic era'. Antibiotic use reduction is more achievable and sustainable with highly digestible diets but usually at a high cost, hence the widespread use of prophylactic antibiotics at weaning time to keep feed ingredient costs down. Having taken into account a number of factors regarding small intestinal integrity, like villus height, crypt depth, intestinal permeability, inflammation and brush-border enzyme activity, the author proposed that feed intake, followed by feed ingredient choice and lastly nutrient level were important for gut health and subsequent growth performance.

Feed industry research has identified that antibiotics can be replaced by superdosing with phytases (<1250FTU/kg) and this has also enabled the potential reduction of pharmaceutical levels of zinc oxide, as phytates bound the zinc. This may have important ramifications in countries that currently do not use zinc oxide in post-weaning diets because of environmental concerns. **PP**

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