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*Abstracts
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use and improving health. This is also in line with a previous ResPig survey where a majority of the users stated that the structural health approach was helpful for reducing antibiotic use including saving money.

The nutritional cost of the immune response in pigs

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In growing animals, microbial challenges are associated with a decrease in feed intake and growth. Experimental data show that the slowing down of growth cannot be explained by the sole decrease in ingestion, suggesting that the immune response must be costly in nutrients. Immune defences include maintenance of resting sentinel leukocytes and mucous barriers. Upon immune activation, mucosal epithelia are often dramatically challenged, haematopoiesis of innate immune cells is increased, lymphocytes undergo clonal expansions, and leukocytes metabolism increases to produce various effector responses (immunoglobulin synthesis, oxidative burst, etc.). The cost of these effector responses is uneasy to estimate. However, considering the marginal mass of the immune system regarding the whole body mass, it is doubtful that the immune system would be a significant consumer of nutritional resources, even upon severe immune activation.

Many immune responses are accompanied by an acute phase response, which involves non immune tissue. It is characterised by the synthesis of acute phase proteins in the liver, fever, accelerated whole-body protein turnover, and high rates of hepatic gluconeogenesis. Clearly, the acute phase response is a process that is both nutrient liberating (skeletal muscle catabolism) and nutrient consuming (acute phase protein synthesis, fever). Experimental data show that inflammation alters the metabolism of amino acids in pigs. Some of them, such as histidine, valine, threonine, arginine or tryptophan, displayed more severe and long lasting alterations, maybe related either to their role as a substrate for gluconeogenesis or ketogenesis, either as specific precursors/substrates for immune processes. Glucose metabolism is also severely affected. Based on this knowledge, various nutritional strategies have been tested, to adequately feed the immunologically challenged pig, limit inflammation and minimise growth deterioration. This presentation focuses on two of them: moderate feed restriction displayed mixed results, while tryptophan supplementation is more promising.

Costs of poultry and pig diseases, with reference to anti-microbials

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Livestock production implies livestock diseases which cause reduced production efficiency and associated costs. These costs include losses (resulting from impaired production) and expenditures (for treatment and prevention). There are a number of factors that impact the costs of diseases, quite often farm specific. Consequently, this also holds for the economic impact of measures aimed at reducing the disease impact, such as the use of anti-microbials (AM). Reduction of AM use and increase in responsible AM use is an important objective of national and international authorities. Therefore, a better understanding of factors influencing the costs of livestock diseases as well as the economic value of AM is important for well-targeted policy measures. This presentation aims to provide some basic insights in these matters with regard to broiler and pig production.

Costs of important broiler and pig diseases. Using existing literature, Gocsik *et al.* (2014) estimated the costs of some important broiler diseases in different housing and management systems in The Netherlands. Large differences were observed between diseases: the increase in production costs due to intestinal diseases (coccidiosis, *E. coli* and necrotic enteritis) could exceed 10%, whereas for respiratory diseases this most likely would be around 1% (which still can be of importance, considering the very small margins). The pattern of disease risks was partially influenced by the housing system.