Report Of The Committee On Salmonellosis

American Association Of Avian Pathologists

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SUBCOMMITTEE REPORTS

1. Definition of Voids and Research Needs. E.V. Morse*, G.H. Snoeyenbos, J.E. Williams and R.H. McCapes, Chairperson.

The goal of this subcommittee is to identify areas of research in salmonellosis which, if pursued, will contribute significantly to the ultimate control of this disease. This subcommittee has restricted its scope of consideration to those research areas pertaining to the production segment of the poultry industry. This report does not address itself to the areas of poultry processing, marketing and consumption or to the red meat industries.

Salmonellosis occurring in the production of broilers, egg type chickens and turkeys is of major concern because of the ability of these organisms to cause infection in poultry and humans. As a whole, salmonella infections in poultry can cause significant economic loss to the combined poultry industries, estimated by some to be approximately $77,000,000 per year. The public health significance of human salmonellosis is well described. There is an estimated 2,000,000 human cases per year with a total economic impact of $1.2 billion per year. In as much as salmonella contamination of poultry and red meat products is not uncommon, the need to control salmonellosis in the production area of livestock and poultry for public health reasons is evident. There is, therefore, strong interest and motivation for control of this disease from within the livestock and poultry industries and also from society as a whole.

The subcommittee has identified the following as needed areas of investigation in respect to salmonellosis in poultry production:

Feasibility Study - A long term epidemiological study is needed to determine the feasibility of producing salmonella free broilers under current commercial conditions utilizing technology available today. Such a study will identify specific obstacles to the goal of salmonella free production.

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Premise Decontamination - Development and identification of reliable procedures, materials and techniques that can be used in commercial poultry production units to totally destroy residual salmonella.

Feed Decontamination by Heat - Development of better defined guidelines and techniques for the use of heat (such as pelleting) to destroy salmonella in poultry feed stuffs and finished feed. This research should pinpoint exact temperature-time-moisture relationships necessary to achieve sterilization under commercial production. The subcommittee does not hold much hope for the use of chemicals as an effective means to achieve this.

Vaccines - Live (modified) vaccines should be developed and tested to determine their efficacy in preventing infection in exposed birds. There is not great expectations in this area, but it should be thoroughly explored.

Chemotherapy - The use of chemotherapeutic agents may be an effective means to reduce contamination in individual birds and in populations. Increased work is needed in this area.

Serologic Testing - Further work on the use of the micro anti-globulin test and micro techniques for serologic determination of the exposure status of poultry populations is needed.

Rapid Detection and Identification of Salmonella - There is an urgent need to develop laboratory techniques which will reduce the time necessary for detection and identification of salmonella without loss of accuracy and increase in necessary laboratory man hours. Such techniques are needed for the testing of diagnostic materials, litter, feed and other types of samples.

Competitive Exclusion - The development of methods for pre-treatment of poultry with fecal micro flora to exclude and/or compete with salmonella infection is a very promising field of research. Work to date has clearly shown a reduced excretion of salmonella in pre-treated exposed birds.

Bench Mark Studies - Broad, industry wide microbiological surveys are needed to establish the current salmonella contamination of poultry and poultry products at each level in the production cycle. This data will materially benefit the assessment of nationwide salmonella control efforts.

The above research areas are not listed in any ranking, rather are felt to be equally important at this point in time. The subcommittee wishes to emphasize the desperate need we have, as a nation, for support in these broad areas of research. The current level of research funding in the area of salmonella is clearly inadequate to develop , in a reasonable period, the information needed to achieve control of this infection in livestock and poultry populations. The scope of both the industry and public health implications of this disease complex require massive research to develop the techniques and processes necessary to effectively intervene in this disease cycle.

2. Opportunities and Rationale for National Salmonella Reduction. M.N. Frazier, R.F. Gentry, R.W. Keirs, M.C. Kumar, B.S. Pomeroy, D.M. Wenger. H. Brandt and S.C. Nivas, Co-chairpersons.

The following opportunities are highlighted to advance reduction of salmonella contamination nationally:

a) Implementation of the recommedations of the U.S. Advisory Committee on Salmonella.

b) State programs to monitor the environment of buildings housing breeder flocks. The Minnesota monitoring program is an example worth noting.

c) Make poultry and livestock salmonellosis a reportable disease.

d) Further experimental use of methyl bromide to decontaminate used litter.

e) Determine utility of sulfur and sodium acid bisulfate techniques for litter. Current reports have been contradictory.

f) Recognition of variant biochemical strains.

g) Implementation of building decontamination procedures outlined in our last year's committee report and also found on pages 13 and 14 of the Report of the U.S. Advisory Committee on Salmonella. Dr. R.F. Gentry has prepared a supplement to these guidelines, entitled "Poultry House Clean-Up and Sanitation" to provide additional, practical details on decontamination. It is attached to the full Salmonella Committee Report.

h) Use of paraformaldehyde in production breeder nests.

i) Pelletizing of all feeds in all phases of breeder/broiler intergrated operations with proper temperature-time-moisture controls.

j) In-house, industry monitoring for Salmonella, including ready to cook poultry and personal hygiene.

3. Reporting and Serotyping. B.O. Blackburn, H.G. Geyer* and E.T. Mallinson, Chairperson.

In October 1977 the NVSL Serotyping Laboratory in Ames implemented the Computer Card Serotyping Request System. This system, jointly developed with AAAP and AAVLD, now gathers clearer data on the economic impact of livestock and poultry salmonellosis than was possible previously. Two quarterly reports, summarizing serotyping and morbidity/mortality data, have already been prepared and mailed to all state diagnostic laboratories. Laboratories with full serotyping capability can also make arrangements to feed their data into the

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computerized NVSL retrieval/reporting system.

This subcommittee, in cooperation with AAVLD and NPIP, are exploring techniques to permit identification of breed and hatchery information on the computer card. If successful, this would increase utility of the card and eliminate duplicative paperwork for most avian pathologists.

Contributing laboratories are encouraged to exercise care in completing the computer card to preserve data validity. Pathologists should avoid assigning different accession numbers for Salmonella isolations from the same case. Do not record number sick or dead where the card requests percent sick or dead.

CHAIRPERSON'S REPORT

1. In addition to the activities reported above, Committee members contributed in various ways to the "Recommendations For Reduction And Control Of Salmonellosis - Report Of The U.S. Advisory Committee on Salmonella" published by USDA in January and to the National Salmonellosis Seminar in Washington, D.C. Letters have been sent to Congress by AAAP members urging $2 million additional funding to implement the recommendations of the U.S. Advisory Committee on Salmonella, supported by resolutions passed by AAAP, USAHA, the Minnesota VMA and the AVMA Council on Public Health and Regulatory Veterinary Medicine.

2. Recent Salmonella funding proposals in Congress and reports of USDA plans to advance serotyping service, benchmark surveys and feasibility research are all encouraging signs. We must continue to voice our concerns to assure that these proposals and plans continue forward. Recent inter agency meetings on Salmonella control between NCDC, FDA and FSQS are steps in the right direction but clearly need to include APHIS.

Implementation of numerous recommendations for: 1) incentive/recognition programs for feed and feed components and; 2) for a cadre of veterinary salmonella epidemiologists have, unfortunately, not yet been observed. Voluntary feed industry self-monitoring program is definitely indicated. The program could be modeled after the current program of the fish industry, operated by the U.S. Department of Commerce....A cadre of epidemiologists will provide a positive, economical approach to speed development of practical control recommendations for poultry and livestock production.

There is an urgent need to bring these various concerns to the Assistant Secretary levels of USDA AND DHEW as well as to Congress and the American Public Health Association. All must recognize that their powerful support must match the enormity of the problem. An update on this situation will be presented at the AAAP Annual Business Meeting.

3. The potential for salmonella control practices to reduce other disease problems merits thorough evaluation. It is not inconceivable that those flock security, housing decontamination and feed manufacturing and storage procedures needed to prevent Salmonella transmission could significantly intervene in the spread of several major poultry diseases. Additionally these hygienic practices might, in turn, lessen such other highly publicized national issues as drug resistance, residues and contamination of the environment.

Respectfully submitted,

E. T. Mallinson, Chairperson
Committee on Salmonellosis