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**G2- Animal Health**
**04 – Veterinary Control programmes**

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**Draft Working document**

# EU REFERENCE LABORATORIES FOR AVIAN INFLUENZA AND NEWCASTLE DISEASE

## Work programmes 2015

Presented and agreed at the 20th Joint Annual Meeting of avian influenza and Newcastle disease laboratories held on 20-22 May 2014 in Lelystad, The Netherlands

# WORK PROGRAMME FOR THE EU REFERENCE LABORATORY (EURL) FOR AVIAN INFLUENZA, 2015

## I. LEGAL FUNCTIONS AND DUTIES

1. The functions and duties of EU Reference Laboratory (EURL) for avian influenza are specified in Annex VII of Council Directive 2005/94/EC (Official Journal of the European Union of 14.1.2006, No L 10 p.16).
2. Detailed rules for the granting of EU financial assistance to the EU Reference Laboratory for avian influenza are laid down in Commission Regulation (EC) No 1754/2006 (Official Journal of the European Union of 29.11.2006, No L 331 p.8).

## II. OBJECTIVES FOR THE PERIOD JANUARY – DECEMBER 2015

*1. VIRUS CHARACTERISATION AND MAINTENANCE OF REFERENCE MATERIALS*

Virus characterisation, maintenance of reference standards and curation of virus repository. Characterise viruses submitted to the EURL by Member States and by third countries listed in Commission Regulation (EC) No 798/2008 on import conditions for live poultry and poultry products. This will, at the request of the European Commission or the submitting National Reference Laboratory for avian influenza (NRL in the following) or at the discretion of the EURL, include:

*1.1 Virus specialist analysis and identification*

Background for this sub-activity:

Support is provided to Member States' NRLs ensuring full characterisation of influenza viruses isolated/detected. This will include a variety of laboratory analyses to determine the virus subtype, its pathogenicity and analysis to reveal relationships to other viruses that may be circulating in Europe or outside in order to inform on origin and spread together with virus evolution

*Task*

- Determining the intravenous pathogenicity index (IVPI);
- Antigenic typing of viruses, both haemagglutinin and neuraminidase subtypes;
- Determining the amino acid sequence at the haemagglutinin cleavage site of H5 and H7 subtype viruses;
- Limited phylogenetic analysis to assist in epidemiological investigations

*Deliverables for this sub-activity*

| | *Planned* | Achieved* |
|---|---|---|
| *Number of viruses submitted and characterised* | *150* | |
| | | |

**Note: this will depend on the level of submission of viruses to the EURL which cannot be predicted with any certainty and by definition will depend on many variables including level of infection/disease in the field.*

*1.2 Reagent curation and production*

Background for this sub-activity:

In order to ensure harmonised, robust and accurate virus identification specialist reagents in the form of viral antigens and mono-specific antisera are produced and held in the repository at the EURL. These are supplied to Member States for use in the poultry surveillance programmes. As in particular large quantities of antigen are supplied, the EURL has a homogeneous harmonised system with all Member States' programmes using the same reagents. In addition specialist reagents for the identification of all avian influenza subtypes are available. Reagents relevant to identification of H5/H7 virus subtypes are provided free of charge under this contract.

*Task*

Maintain and distribute virus repository and reagents necessary for virus characterisation. Prepare standard antigens for Member States for use in the annual surveillance programmes for avian influenza in poultry. Support NRLs and evaluation of reported problems in diagnosis.

*Deliverables for this sub-activity*

| | *Planned* | Achieved* |
|---|---|---|
| *Volume of antigen supplied* | *1700ml* | |
| *Volume of antiserum supplied* | *30ml* | |
| *Volume of antigen held in stock* | *200ml* | |
| *Volume of antiserum held in stock* | *200ml* | |

* Note: supply will link to demand from NRLs.

*1.3 Genetic characterisation of viruses*

Background for this sub-activity

Detailed genetic analysis is conducted on a subset of viruses relevant to legislation in particular in relation to molecular epidemiology but also related to virus pathotype and those viruses which may have implications through carrying mutations that may have increased risk for public health. Through the BioPortal tool with the support of UCDavis and other utilities such as international databases the genetic data is shared with NRLs. In addition, within one month of characterisation of new viruses phylogenetic trees are updated on the FLU-LAB-NET website which is the interactive closed forum for all NRLs.

*Task*

Determine genetic characteristics of submitted viruses relevant to legislation, molecular epidemiology and veterinary public health. Ensure genetic data of avian influenza viruses is accessible to all NRLs.

*Deliverables for this sub-activity*

| | *Planned* | Achieved* |
|---|---|---|
| *Characterisation according to EU Directive 2005/94/EC* | *150* | |
| *Updates on genetic analyses via FLU-LAB-NET* | *4* | |

* Note: supply will link to demand from NRLs.

## 2. *EPIDEMIOLOGICAL SUPPORT TO MANDATORY PROGRAMMES OF AVIAN INFLUENZA SURVEILLANCE*

### *2.1 Data Analysis and Reporting*

Background for this sub-activity

The annual EU mandatory surveillance programme for avian influenza in both poultry and wild birds is conducted by all Member States. The EURL compiles and describes the data received via the Commission's online reporting system, conducts an epidemiological evaluation, carries out a critical scientific analysis and writes a report which is then presented by the EURL at the meeting of the Standing Committee on Plants, Animals, Food and Feed and at the annual NRL meetings. The reports are made available via the Commission's Animal Health Website.

*Task*

Analyse data of the annual avian influenza surveillance in poultry and wild birds implemented and carried out by Member States during 2013 in a descriptive manner and from an epidemiological point of view. Make comparisons with data obtained from surveys in previous years.

*Deliverables for this sub-activity*

| | *Planned* | Achieved |
|---|---|---|
| Compile an annual report of the EU mandatory programmes of avian influenza surveillance by 31st July 2016. | *1* | |

### *2.2 Surveillance review and guidelines*

Background for this subactivity

Further to the analysis conducted in 2.1 above, trends are reviewed and recommendations for refinements to the programme are made in keeping with consistent scientific objectives of the Commission. In particular this might include information on how surveillance for avian influenza can be more targeted, could be improved to provide a better cost benefit and may provide pertinent information on true prevalence of influenza viruses in populations being examined. From time to time enhanced analyses may be conducted on the data which will inform more detail on trends and linkage between data sets to better inform on the epidemiological picture. This includes providing specific recommendations to the Commission for a possible revision of the surveillance guidelines and commenting on fit to purpose guidelines of submitted programmes from Member States.

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*Task*

Draw conclusions and make recommendations for improvement of sampling and diagnostic methods, data gathering and reporting of results of surveillance in poultry and wild birds including assistance to the further development of the Commission's online reporting system. Conduct enhanced epidemiological analysis to inform and advise on the further refinement of the guidelines for avian influenza surveillance in poultry and wild birds as appropriate

*Deliverables for this sub-activity*

| | *Planned* | Achieved |
|---|---|---|
| *Advise on queries in relation to proposed programmes of surveillance from Member States for 2016* | *5* | |
| *Review surveillance guidelines* | *1* | |

## 3. *PROFICIENCY AND INTER-LABORATORY COMPARISON TESTING, FURTHER IMPROVEMENTS AND TRAINING*

### *3.1 Ring trial organisation*

Background for this sub-activity

In order to ensure harmonised standards and accuracy in diagnostic results in all NRLs it is necessary to issue an annual ring trial to assess inter-laboratory comparison and identify any anomalies in testing which may lead to incorrect laboratory results. This proficiency is directed towards all of the key methods used in the EU diagnostic manual to show that they are fit for purpose as conducted by all NRLs.

*Task*

Prepare and distribute laboratory reagents for the inter-laboratory conventional and molecular based techniques used in diagnosis. Organise inter-laboratory comparison tests and analyse results submitted.

*Deliverables for this sub-activity*

| | *Planned* | Achieved |
|---|---|---|
| *Prepare and distribute proficiency panel* | *2* | |

### *3.2 Inter-laboratory comparison tests feedback and training*

Background for this sub-activity

Following the conduct of the exercise specialists at the EURL will critically analyse the results and provide a presentation of the findings to colleagues at the NRL annual meeting. In particular if through trend analysis/incorrect results are achieved by NRLs initially there will be a discussion between EURL colleagues and the relevant NRL to try and identify causative factors. If problems persist local training will be provided at the EURL to address any of the shortcomings. In this way we can ensure targets for fully correct results achieve the optimum ranking.

*Task*

Provide feedback both written and oral through the NRL annual meeting.

Provide technical direct individual support to NRLs as required where incorrect results are achieved and provide training workshops to address any significant shortcomings.

*Deliverables for this subactivity*

| | *Planned* | Achieved |
|---|---|---|
| *Analyse results of annual proficiency trial and provide feedback* | *2* | |

## *4. ADVICE AND EXPERTISE TO BOTH VETERINARY AND PUBLIC HEALTH SECTORS*

### *4.1 Support to EU Member States and the Commission*

Background for this sub-activity

The EURL staff possess a number of specialist skills and knowledge; these are made available to Member States or the Commission and will for example be utilised during times of outbreaks, questions over surveillance approaches or in particular detailed questions on technical methodology relating to diagnostics. This will include problem solving on diagnostics issues within NRLs. Information is disseminated through the NRL annual meeting whereby technical and scientific methods are discussed particularly in relation to reliability of diagnostic test results and appropriate developments. All this information is made available through presentations available on the Commission's Animal Health website. Specific technical issues that may be identified through the annual NRL meeting are addressed through further small sub-working groups with selected NRLs in order to be able to make recommendations for future procedures as applicable.

*Task*

Rapid and timely ad-hoc support to EU NRLs and the Commission during epidemics including mission deployment as required. Prepare the NRL annual meeting programme and working documents for the annual meeting of NRLs. Ensure availability of presented materials through the Commission's Animal Health website. Produce and execute an action plan on laboratory matters arising and collaborate with NRLs as appropriate to address (this will also include matters arising under 4.3)

*Deliverables for this sub-activity*

| | *Planned* | Achieved |
|---|---|---|
| *Maintain capability to support EU emergency missions (CVET)* | *1* | |
| *Develop science programme for annual meeting of EU NRLs* | *1* | |
| *Coordinate working group on serological methods relevant to surveillance in poultry* | *1* | |

*4.2 Zoonotic threat*

Background for this sub-activity

Due to increased awareness of the risk of the spread of influenza viruses from avian species directly into humans the EURL/NRL network uses its network of international contacts and collaborative projects to horizon scan and be aware of threats to the EU that may emerge. In particular, it is important to put these threats in the context of the threat to Europe and the viruses themselves that may be circulating in European poultry populations. Where critical information is identified that may have a significant impact for public health EURL staff will ensure the information is disseminated in a timely manner to the relevant sectors.

*Task*

Maintain a close awareness of the zoonotic impact of infection arriving in animal species to include the formal risk of reassortment between viruses. Formally liaise with public health laboratories to ratify the information and provide viruses and data as appropriate.

*Deliverables for this sub-activity*

| | *Planned* | Achieved |
|---|---|---|
| *Horizon scan and maintain awareness of threats to the EU relevant to avian influenza informing policy makers* | *1* | |

*4.3 New diagnostic methodology*

Background for this sub-activity

Ensure current recommended methods in the diagnostic manual are fit for purpose by on-going validation using newly received viruses. In addition, in the modern technological age new diagnostic tools are becoming available at a very fast rate. The EURL scans the literature and maintains a proactive knowledge of new methodology and where appropriate will evaluate its utility for improving diagnostics in the field of avian influenza diagnosis. If necessary technology that appears strongly fit for purpose and that offers significant benefits compared to existing methodology will be thoroughly validated at the EURL. If appropriate, recommendations will then be made for updating the EU AI diagnostic manual. In addition the EURL maintains a dialogue with colleagues in NRLs who may be involved in similar activity, developing and validating tests themselves and consider their suitability for provisions to the EU diagnostic manual on an annual basis. As new methodology becomes available it may be appropriate to have specific targeted workshops that are run by staff of the EURL such that competency can be achieved and tested through proficiency trials.

*Task*

Maintain close awareness of developments in diagnostic methodology proposing required updates of the EU AI diagnostic manual. Report and advise as relevant at the annual meeting of NRLs. Where appropriate develop collaborative programmes of investigation with NRLs to address laboratory issues as relevant to this work programme. Provide training in the light of developments for new diagnostic methodology as required.

*Deliverables for this sub-activity*

| | *Planned* | Achieved* |
|---|---|---|
| *Formally review any required updates to the EU AI diagnostic manual* | *1* | |
| *Test all new viruses received using standard diagnostic tools as appropriate* | *150* | |
| *Organise and run a training workshop on diagnostic tools for AI* | *1* | |

**Note: this will depend on the level of submission of viruses to the EURL which cannot be predicted with any certainty and by definition will depend on many variables including level of infection/disease in the field.*

## *5. COMMUNICATION, DISSEMINATION OF INFORMATION AND KNOWLEDGE*

*5.1* Prepare and publish articles and reports associated with the above work.

Background for this sub-activity

Dissemination and communication of information and knowledge gained through EURL activity will be done in a variety of fora either through meetings, conference, EU fora and engagement with stakeholders including industry and government representatives. The EURL also makes full use of the internet and will grow interactive communications through the newly developed forum (Flu-Lab-Net). Dissemination of scientific data and information particularly as it appertains to this work programme will be done through communication of science and knowledge gained at EURL in internationally peer reviewed scientific journals.

*Task*

Moderation of the FLULABNET network. Submit to the Commission a financial and technical report on the operation of the laboratory no later than 31 March 2016 (Article 10 of Regulation (EC) No 1754/2006). In case the time-limit is not respected, the financial assistance shall be reduced by 25% on 1 April, 50% on 1 May, 75% on 1 June and 100% on 1 July.

*Deliverables for this sub-activity*

| | *Planned* | Achieved |
|---|---|---|
| *Moderation of FLU-LAB-NET* | *1* | |
| *Publish outputs in peer review journals of scientific studies on AI* | *8* | |
| *Staff of the EURL will attend international meetings/conference to present data as it relates to this work programme* | *5* | |

It is understood that the above mentioned objectives are not exclusive to other work of more immediate priority which may arise during the given period.

# WORK PROGRAMME FOR THE EU REFERENCE LABORATORY FOR NEWCASTLE DISEASE, 2015

## I. LEGAL FUNCTIONS AND DUTIES

1. The functions and duties of the EU Reference Laboratory for Newcastle disease (EURL) are specified in Annex V of Council Directive 92/66/EEC (Official Journal of the European Communities No L 260 of 5.9.1992).

2. Detailed rules for the granting of EU financial assistance to the EURL for Newcastle disease are laid down in Commission Regulation (EC) No 1754/2006 (Official Journal of the European Union of 29.11.2006, No L 331 p.8.).

## II. OBJECTIVES FOR THE PERIOD JANUARY – DECEMBER 2015

### 1. *VIRUS CHARACTERISATION AND MAINTENANCE OF REFERENCE MATERIALS*

*1.1 Virus specialist analysis and identification*

Background for this sub activity

Support is provided to NRLs ensuring full characterisation of Avian paramyxoviruses viruses isolated/detected. This will include a variety of laboratory analyses to determine the virus subtype, its pathogenicity and analysis to reveal relationships to other viruses that may be circulating in Europe or outside in order to inform origin and spread together with virus evolution.

Task

- Determining the intracerebral pathogenicity index (ICPI);
- Determining basic amino acids composition adjacent to the cleavage site of the F0 protein in the virus and phylogenetic analysis;
- Antigenic grouping of viruses;
- Limited phylogenetic analysis to assist in epidemiological investigations.

*Deliverables for this sub-activity*

| | *Planned* | Achieved* |
|---|---|---|
| *Number of viruses submitted and characterised* | *80* | |

**Not: this will depend on the level of submission of viruses to the EURL which cannot be predicted with any certainty and by definition will depend on many variables including level of infection/disease in the field.*

*1.2 Reagent curation and production*

Background for this sub-activity

In order to ensure harmonised, robust and accurate virus identification specialist reagents in the form of viral antigens and mono-specific antisera are produced and held in the repository at the EURL. Specialist reagents for the identification of all avian paramyxovirus subtypes are available.

*Task*

Maintain and distribute virus repository and reagents necessary for virus characterisation. Support NRLs and evaluation of reported problems in diagnosis.

*Deliverables for this sub-activity*

| | *Planned* | Achieved* |
|---|---|---|
| *Volume of antigen supplied* | *100ml* | |
| *Volume of antiserum supplied* | *50ml* | |
| *Volume of antigen held in stock* | *200ml* | |
| *Volume of antiserum held in stock* | *100ml* | |

* Note: supply will link to demand from NRLs

## *2. PROFICIENCY AND INTER-LABORATORY COMPARISON TESTING, FURTHER IMPROVEMENTS AND TRAINING*

### *2.1 Ring trial organisation*

Background for this sub-activity

In order to ensure harmonised standards and accuracy in diagnostic results in all NRLs it is necessary to issue an annual ring trial to assess inter-laboratory comparison and identify any anomalies in testing which may lead to incorrect laboratory results. This proficiency is directed towards all of the key methods to show that they are fit for purpose as conducted by all NRLs.

*Task*

Assist Member States on the use of PCR techniques. Prepare and distribute laboratory reagents for the inter-laboratory conventional and molecular based techniques used in diagnosis. Organise inter-laboratory comparison tests and analyse results submitted.

*Deliverables for this sub-activity*

| | *Planned* | Achieved |
|---|---|---|
| *Prepare and distribute proficiency panel* | *2* | |

### *2.2 Inter-laboratory comparison tests feedback and training*

Background for this sub-activity

Following the conduct of the exercise specialists at the EURL will critically analyse the results and provide a presentation of the findings to colleagues at the NRL annual meeting. In particular if through trend analysis/incorrect results are achieved by NRLs initially there will be a discussion between EURL colleagues and the relevant NRL to try and identify causative factors. If problems persist local training will be provided at the EURL to address any of the shortcomings. In this way targets for fully correct results achieve the optimum ranking can be ensured.

*Task*

Provide feedback both written and oral through the NRL annual meeting.

Provide technical support to NRLs as required where incorrect results to achieve and provide training workshops to address any significant shortcomings.

*Deliverables for this sub-activity*

| | *Planned* | Achieved |
|---|---|---|
| *Analyse results of annual proficiency trials and provide feedback* | *1* | |

## *3. ADVICE AND EXPERTISE TO BOTH VETERINARY AND PUBLIC HEALTH SECTORS*

### *3.1 Support to EU Member States and the Commission*

Background for this sub-activity

The EURL staff possess a number of specialist skills and knowledge, this is made available to Member States or the Commission and will for example be utilised during times of outbreaks, questions over surveillance approaches or in particular detailed questions on technical methodology relating to diagnostics. This will include problem solving on diagnostics issues within NRLs. Information is disseminated through the NRL annual meeting whereby technical and scientific methods are discussed particularly in relation to reliability of diagnostic test results and appropriate developments. All this information is made available through presentations available on the Commission's Animal Health website. Specific technical issues that may be identified through the annual NRL meeting are addressed through further small sub-working groups with selected NRLs in order to be able to make recommendations for future procedures as applicable.

*Task*

Rapid and timely ad-hoc support to NRLs and the Commission during epidemics including mission deployment as required. Prepare the NRL annual meeting programme and working documents for the annual meeting of NRLs. Make available presented materials to the Commission for publication on the Commission's Animal Health website. Produce and execute an action plan on laboratory matters arising and collaborate with NRLs as appropriate to address (this will also include matters arising under 3.2)

*Deliverables for this sub-activity*

| | *Planned* | Achieved |
|---|---|---|
| *Maintain capability to support EU emergency missions (CVET)* | *1* | |
| *Develop science programme for annual meeting of EU NRL's* | *1* | |
| *Coordinate working group on the utility of real time PCR for detection of APMV1* | *1* | |

*3.2 New diagnostic methodology*

Background for this sub-activity

Ensure current recommended methods are fit for purpose by on-going validation using newly received viruses. In addition, in the modern technological age new diagnostic tools are becoming available at a very fast rate. The EURL scans the literature and maintains a proactive knowledge of new methodology and where appropriate will evaluate its utility for improving diagnostics in the field of Newcastle disease diagnosis. If necessary technology that appears strongly fit for purpose and that offers significant benefits compared to existing methodology will be thoroughly validated at the EURL. If appropriate, recommendations will then be made for updating diagnostic approaches. In addition we maintain a dialogue with colleagues in EU NRLs who may be involved in similar activity, developing and validating tests themselves and consider their suitability for use as diagnostic tools. As new methodology becomes available it may be appropriate to have specific targeted workshops that are run by staff of the EURL such that competency can be achieved and tested through proficiency trials.

*Task*

Maintain close awareness of developments in diagnostic methodology. Report and advise as relevant at the annual meeting of NRLs. Where appropriate develop collaborative programmes of investigation with NRLs to address laboratory issues as relevant to this work programme. Provide training in the light of developments for new diagnostic methodology as required.

*Deliverables for this sub-activity*

| | *Planned* | Achieved* |
|---|---|---|
| *Formally review ND diagnostic methods* | *1* | |
| *Tests all new viruses received using standard diagnostic tools as appropriate* | *80* | |
| *Organise and run a training workshop on diagnostic tools for ND* | *1* | |

**Note: this will depend on the level of submission of viruses to the EURL which cannot be predicted with any certainty and by definition will depend on many variables including level of infection/disease in the field.*

## *4 COMMUNICATION, DISSEMINATION OF INFORMATION AND KNOWLEDGE*

4.1 Prepare and publish articles and reports associated with the above work.

Background for this sub-activity

Dissemination and communication of information and knowledge gained through EURL activity will be done in a variety of fora either through meetings, conferences, EU fora and engagement with stakeholders including industry and government representatives. The EURL also makes full use of the web and will grow interactive communications through the newly developed forum (Flu-Lab-Net). Dissemination of scientific data and information particularly as it appertains to this work programme will be done through

communication of our science and knowledge in internationally peer reviewed scientific journals

*Task*
Submit to the Commission a financial and technical report on the operation of the laboratory no later than 31 March 2016 (Article 10 of Regulation (EC) No 1754/2006). In case the time-limit is not respected, the financial assistance shall be reduced by 25% on 1 April, 50% on 1 May, 75% on 1 June and 100% on 1 July.

. *Deliverables for this sub-activity*

| | *Planned* | Achieved |
|---|---|---|
| *Publish outputs in peer review journals of scientific studies on ND* | *3* | |
| *Staff of the EURL will attend international meetings/conference to present data as it relates to this work programme* | *1* | |

It is understood that the above mentioned objectives are not exclusive to other work of more immediate priority which may arise during the given period.