

Parma, 8 November 2011/FINAL/CS/PAB/PM

**EFSA Task Force of Zoonoses Data Collection**  
**1<sup>st</sup> specific meeting on antimicrobial resistance (AMR) monitoring and reporting**  
**in animals and food**  
**Held in Parma on 04-05 October 2011**

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## **PARTICIPANTS:**

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### **Members and other National, ECDC or Commission representatives:**

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### **Observers:**

Marc Aerts (expert).

### **EFSA:**

Pierre-Alexandre Belœil (Chair), Pia Mäkelä, Fabrizio Abbinante, Marios Georgiadis, Minerva Laranjo Gonzalez, Ernesto Liebana Criado, Elena Mazzolini, Camilla Smeraldi (Science), Marco Leoni (Information Technology), Miriam Grasselli and Simona Fusar Poli (Administration).

## **MINUTES:**

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### **1. Opening and welcome**

The meeting was opened by the Chair welcoming all the participants to the meeting in particular those attending Task Force (TF) meetings for the first time. The Chair explained this was the first TF meeting specifically dedicated to antimicrobial resistance (AMR) monitoring and reporting.

### **2. Declaration of interest**

In accordance with EFSA policy on declaration of interests, participants were asked if they had any interests to declare in relation to the agenda of the meeting. None of the participants declared any additional interests related to the subjects of the meeting.

### **3. Adoption of the agenda**

The agenda was adopted.

### **4. Current activities of EFSA on AMR monitoring and reporting**

The Chair presented an overview of the EFSA activities on AMR monitoring and reporting, such as, the preparation of EU Summary Report on a yearly basis, the harmonisation work done in elaborating technical specifications for monitoring and reporting AMR in *Salmonella*, *Campylobacter*, commensal *E. coli* and enterococci, the development of a protocol for a baseline survey on MRSA in pigs and subsequent analyses of the results. In all these activities EFSA always relied on the important contributions of MSs' experts in the field of AMR as well with the collaboration with the European Centre for Disease Control and Prevention (ECDC).

The participants raised a number of questions concerning the data from AMR in human isolates, where still mostly clinical breakpoints are used instead of epidemiological cut off values (ECOFFs). Also it was highlighted that data from the community level on commensal bacteria would be welcome in addition to the collection of data from clinical cases. In addition, molecular typing data would be useful to help performing source-attribution studies. These issues will be more closely addressed next year in collaboration with ECDC.

## **5. Update on the expert Working Group on the further harmonisation of AMR monitoring and reporting – proposals from the draft report**

Christopher Teale, as rapporteur and on behalf of the expert Working Group, presented the main conclusions reached so far on by the WG. The need for statistical testing of trends in AMR in animal and food isolates was highlighted and it was mentioned that this will already be implemented in the 2010 EU Summary Report. Assessing temporal trends in full-scale MIC distributions is also proposed for early detection of emerging resistance patterns. Time trends that take into account sample size will allow to be meaningfully linked to other trends such as those in human isolates or the trends in antimicrobial consumption.

Areas for further refinement have also been identified in the way data are collected, for instance for the reporting of *Salmonella* for which different serovars should be reported separately; reporting of animal species should be done according to the production type and the reporting procedures should be updated to include also those species that are subject to national control plans (e.g. *Salmonella* in turkeys).

As regards the use of EUCAST ECOFFs values it was proposed to include them in the EU legislation, although this would imply that legislation would need to be reviewed periodically.

The WG has concluded that reporting of AMR isolate-based data would allow for more detailed analyses of the data, compared to aggregated data, and the collection of isolate-based data should therefore be encouraged. A number of examples were provided to illustrate how availability of data at isolate-level would be beneficial for detecting new multi-resistance patterns and performing in-depth analysis of the known co-resistance ones, evaluating geographical progression over time, conducting retrospective analysis and assisting in the source attribution.

Some of the TF Members who participated in the pilot project for the reporting of data at isolate level from 2010 expressed their support to this proposal.

The presented proposals will be included in a draft scientific report that will be available for consultation with the MSs around the second half of November 2011. On the basis of this report it is planned to review the manual for reporting and the technical specifications for monitoring during 2012. EFSA is also expecting a mandate from the European Commission on updating the harmonised reporting and monitoring rules.

## **6. Activities of EFSA on the enhancement of AMR data transmission**

Fabrizio Abbinante presented the feedback from the pilot on AMR isolate data collection. A total of 12 volunteering countries participated in this project aimed at verifying that format and availability of national data were compatible with the pilot requirements, that the proposed solution of transmitting XML/Excel files in the Data Collection Framework (DCF) system was practical and feasible and to confirm the possibility to “re-aggregate” the data to generate the tables needed for the preparation of the Summary report.

Overall the pilot was successful, with only minor and solvable issues encountered during transmission and some features that would need further development. Feedback from the persons from the countries that

participated in the pilot were very supportive of this project and they thanked EFSA for the support provided during this phase.

In light of the success with the pilot phase, the participants were informed that at the TF meeting dedicated to IT that was held on 21 September 2011 it was agreed to use the DCF system also for future XML/Excel submissions for both aggregated and sample based data. The data will then be automatically aggregated and migrated into the Zoonoses database.

As regards the call for proposal for grants under Article 36 to support Member States for XML submission in Zoonoses, it was informed that with the budget available for 2011, EFSA will be able to award a maximum of 11 grants. If budget is available for 2012 this call will be repeated and interested MSs are invited to participate.

In 2012, the opportunity to report isolate-based data will be again offered to MSs, either through Excel or XML file transmission, and MSs were strongly encouraged to move to isolate-based data transmission. The 2012 data collection schema is likely to be slightly amended in the light of the experience gained through the 2011 pilot exercise and the final conclusions of the WG report. It was recognised that isolate based data collection enables notably to more easily report detailed information on animal/food origins of isolates.

## **7. Break out session**

Camilla Smeraldi introduced the discussion group session. The participants were divided into two subgroups to discuss and address the following questions:

### ***Group 1. Real-life experiences of data collection, storage and transmission***

1. How does your current practice fit into the harmonisation work done so far by the Task Force?
2. Which are the further steps in your current practice for a better harmonisation of AMR monitoring and reporting?

### ***Group 2. How do you use the EU Summary Report?***

1. How do you use the EU Summary Report on antimicrobial resistance?
2. Which analyses/parts do you like more?
3. Are there any analyses/parts that you would like to amend or add?

The groups subsequently reconvened in plenary to hear presentations on the outcomes of the discussions.

Group 1 provided feedback from their discussion on harmonisation of AMR monitoring and reporting. The group felt that in particular the integration of food sampling into antimicrobial resistance monitoring should be enhanced and sampling of food would need further harmonisation. It was proposed to carry out baseline surveys at two food chain points: primary production/ abattoir and retail. The group proposed to combine surveys to other programmes and using the same samples for different testing as to minimise the costs.

It was however noted that no baseline surveys are currently being considered by the EC, and instead more specific monitoring and reporting schemes could be laid down in the EU legislation, e.g. by defining the relevant combinations of bacteria/animal populations - food categories/antimicrobials to be covered. The need of making a distinction between imported and domestically produced food was also raised by the group.

Additionally, the group highlighted the importance of having in place a more detailed data reporting (e.g. per production type of animal species such as laying hens, broilers, fattening pigs, dairy cattle, beef cattle and veal calves) instead of the more generic categories used so far.

Lastly, the group identified testing of AMR in *Salmonella* from animal feed as a neglected area in current outputs for which there would be need to identify important serotypes and target sampling to assist in their control. A suggestion was made to use samples collected within the *Salmonella* controls and to include all or a subset of these isolates from feed for antimicrobial resistance testing.

Group 2 reported back from their discussion that there are different stakeholders using the EU Summary Report at national level. On one side competent authorities and risk managers usually use the report to compare the situation at national level with that from other MSs or at EU level. This is however possible only to a limited extent given that the data presented are not fully comparable. To this end the introduction of EU indicators was deemed of importance as it would allow following trends across the years and different countries. As regards the parts and analysis contained in the report, maps were considered a nice and immediate way to present the data, albeit with the risk that the information displayed could lead to misleading messages because of the lack of the full comparability of the data. The same could be said of the tables and graphs presented.

The farm-to-fork analysis, again with its limitations, was also considered to be an important part of the report particularly as regards the consumers' perspectives and also because it has served to build a bridge with the people working on AMR in humans.

For what concerns the laboratories involved at national level it was felt that the EU Summary Report is used as a scientific source for finding data and information. It was proposed to include in the EU SR a list of laboratories submitting the data.

## **8. Report on the development of statistical methods for the evaluation of AMR data in bacterial isolates from animals and food – Temporal trend analyses on AMR data**

Marc Aerts from the Interuniversity Institute for Biostatistics and Statistical Bioinformatics of the Hasselt University (Belgium) presented the conclusions from an external scientific report on the development of appropriate statistical methodologies enabling the evaluation of temporal trends in AMR data reported by European Union MSs prepared by his institute in the context of a contract awarded. Methodologies were shortly presented and exemplified for trends in occurrences of antimicrobial resistance (i.e. using dichotomised resistance data such as 'non-resistant' vs. 'resistant' isolates), in full-scale MIC distributions and for the combined analysis of antimicrobial resistance and bacterial prevalence. For the study of temporal trends using the full-scale MIC distributions it was recommended to use the censored data models, although further refinements of models are needed. Finally, a combined analysis of antimicrobial resistance and bacterial prevalence was also demonstrated.

Of overall importance, however, is the use of harmonised thresholds to interpret the results and the harmonised ranges of concentrations to establish MIC distributions.

## **9. 2010 EU Summary Report on AMR: plan of analysis and structure of the report**

Elena Mazzolini provided an overview of the plan of analysis and the structure of the 2010 EU Summary Report on Antimicrobial Resistance in the EU. The report is currently under preparation and is expected to be published in February 2012.

No major changes are expected in the structure of the report from the previous year.

- Similarly to the 2009 EU Summary Report, for this reporting year the report will also contain data from human isolates, as collected by the ECDC via their surveillance system (TESSy). Priority will be given to the analysis of quantitative data as these alone represent the vast majority of the data reported. Criteria for the inclusion of the data in the report will also remain the same, with a minimum threshold of 10 tested isolates per combination of bacterium/source/antimicrobial. For the first time statistical significance of temporal trends will be tested using Cochran-Armitage test and logistic regression.
- The MRSA chapter will cover data from several MSs collected from animals and food.
- The farm-to-fork chapter will be included covering data from humans, food and animals.

Some TF members were concerned of use of maps in the report when the data is not comparable, and EFSA promised to have a closer look on this aspect in the forthcoming report.

It was also pointed out that it would be important to analyse separately the AMR data from different animal subpopulations, such as laying hens, broilers, calves and dairy cows, because different animal categories may have significantly different levels of resistance.

### **10. Update on the ongoing analyses of 2010 AMR isolate-based data**

Marc Aerts from the Interuniversity Institute for Biostatistics and Statistical Bioinformatics of the Hasselt University (Belgium) presented the preliminary results of the analysis of 2010 AMR isolate-based data performed by his institute in the context of a contract awarded following a tender procedure. The objectives of this initial analysis was to address phenotypic resistance patterns of isolates, identify multi-resistance and co-resistance patterns, analyse relationship between resistance traits and describe spreading of and similarities in resistant isolates. The dataset used for this exercise was a subset of the isolate-based data reported for 2010. The challenges faced were represented by the important variability and diversity in both animal and food categories and the large number of different multi-resistant patterns in different bacterial. Also in this case data had been analysed both as dichotomised and quantitative MIC values. Different methods have been used to deal with the diversity. Exemplary tabulations of frequencies of antibiograms and multi-/co-resistant patterns were first shown. Results from the application of Principal Component Analysis (PCA), a method used to reduce the dimensions given by the full set of data, were shown as well as the results obtained from cluster analysis applied to the two type of data.

The Chair thanked the expert for this presentation on what is considered to be pioneering work in the field of AMR data at EU level. The results of these full analyses will be published as a scientific report at the end of the project using anonymised data.

### **11. Scientific Opinion of the EFSA Panel on Biological hazard (BIOHAZ) on the public health risks of bacterial strains producing extended-spectrum $\beta$ -lactamases (ESBLs) and/or AmpC $\beta$ -lactamases in food and food-producing animals**

Ernesto Liebana Criado from EFSA's BIOHAZ unit updated the TF members on a recently issued Scientific Opinion of the BIOHAZ Panel on the public health risks of bacterial strains producing extended-spectrum  $\beta$ -lactamases (ESBLs) and/or AmpC  $\beta$ -lactamases in food and food-producing animals.

The participants welcomed this opinion.

As regards the recommendations contained in this opinion, it was noted that the proposals for harmonised monitoring of resistance caused by ESBLs and/or AmpC producing bacteria would introduce significant changes in the future monitoring practices. EFSA will consider these proposals from the opinion together with an expert group. EFSA anticipated that this opinion, alongside with those recently issued on the topic of AMR, will be taken into account in work based on the forthcoming mandate from the European Commission to EFSA that will serve as basis for the review of the current legislation on the monitoring of AMR.

## **12. Any other business**

No other business was raised.

## **13. Closing remarks and date of next meeting**

The Chair thanked all the participants for their contributions to this fruitful meeting. It was announced the intention to organise this specific TF meeting on AMR on a yearly basis. For 2012 the date of the meeting has yet to be decided.