

Newsletter

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Don't hesitate to get in touch!

Why were 11 different translations needed of EFFORT sampling procedures? See page 3



A WORD FROM THE COORDINATOR

Welcome to the third EFFORT newsletter, providing you with up-to-date information about our project.

EFFORT has now been running for more than two years. We have now finished our sampling campaign in 9 countries among various animal species, and we started the implementation of interventions and follow-up of impact on antimicrobial usage, economical and technical parameters and resistance on pig and poultry farms in 5 countries. In parallel to these fieldwork campaigns, samples will be analyzed in the laboratory.

In this newsletter you can read an interview with Liese van Gompel, one of the key players of the EFFORT sampling campaign. She will tell you about her experiences in the field and provide us with valuable tips and tricks. Furthermore we take a look at the analysis of samples in the laboratory. How do we analyse them, which results will be expected and what have we learned so far?

We hope that you will find this useful and we encourage you to get in touch with any questions or comments you may have about EFFORT! Your comments and suggestions are always welcome. Please email them to effort-office@eurtd.com, join our LinkedIn group or follow us on Twitter.

Thanks for your interest in the EFFORT project!

Prof. Dr. Jaap Wagenaar
EFFORT Project Coordinator



EFFORT AT IAFP'S EUROPEAN SYMPOSIUM ON FOOD SAFETY 2016

Did you see EFFORT at the International Association for Food Protection (IAFP)'s European Symposium? Several members of the EFFORT consortium spoke at IAFP's European Symposium on Food Safety organised in Athens, Greece, 11-13 May. A session dedicated to "Antimicrobial Resistance in the Food Chain" was held on Thursday 12th May 13.30-15.00.

The purpose of this session was to give an overview of the problem of antimicrobial resistance in the food chain. The session featured speakers from the WHO and from scientists that are involved in EFFORT; one from the food industry (from VION), and an academic scientist (from UCM).

All abstracts and presentations are now available online. Click [here](#) to find out more.

In the Field with EFFORT

The EFFORT editorial team caught up with Liese van Gompel DVM of Utrecht University, the Netherlands, where she took us through a day in the life of EFFORT.

What kind of samples are you taking?

The full consortium has collected around 12,000 samples from farms (pigs, poultry, veal, turkey, fish), slaughterhouses (pigs, poultry), supermarkets, butchers, fish mongers (meat from pigs, poultry, veal, turkey and fish), and even from companion animals and wild boars. Also, non-live components within the farm environment (i.e. dust) were sampled.

Around 3,500 samples were collected in the Netherlands alone. Additionally, farmers, slaughterhouses and their workers and dog and cat owners were invited to fill out questionnaires on farm, personal/animal and slaughterhouse characteristics.

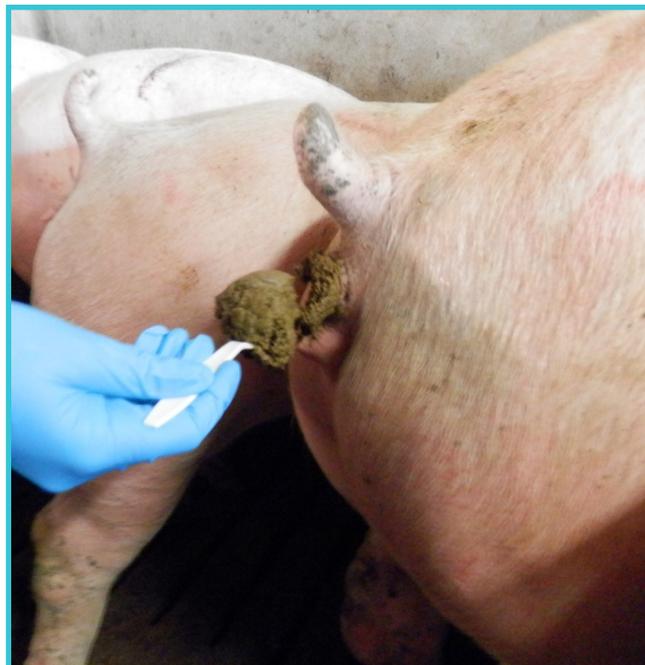
At IRAS (Institute for Risk Assessment Sciences) I was involved in all sampling except for the sampling within companion animals. Currently my colleagues at IRAS are implementing a large active air sampling campaign at Dutch pig and poultry farms.

What are the research questions and goals behind sampling?

By sequencing pooled animal fecal samples, fecal samples from farmers / slaughterhouse workers and dust samples, we will be able to define the resistome (a collection of all the antibiotic resistance genes and their precursors) within these populations and the environment.

Based on these 'metagenomics' data, the most prevalent resistance genes can be identified and quantified by means of quantitative PCR (qPCR). Combining these techniques with data from the questionnaires will allow us to quantify associations between farm / slaughterhouse determinants within different populations.

Moreover, this data can be used for further exposure modelling and attribution studies (including the study of health economics), which can ultimately be translated into policy.



Major obstacles and lessons learned throughout the process

The whole process of selecting and visiting farms has been quite a challenge. Over the last couple of years there was a lot of publicity and controversy within the Netherlands regarding antimicrobial use in farm practices and this led to a 50% reduction in antibiotic use in certain sectors since 2009.

We could feel that constant stigmatisation in the press also made the farmers reluctant to participate in a study potentially even more 'incriminating' for them. Ultimately we had to stress that their collaboration within EFFORT was key in providing an independent view of the subject. As EFFORT also includes an intervention arm, we were also able to show that EFFORT is not only trying to portray the current situation, but is also providing tools for antibiotic reduction in the future.

By including samples from farmers, in the end we will be able to analyse their own risk for acquiring resistant bacteria and to improve both their own and their families' health. In retrospect I am still very relieved that the Netherlands is a relatively small country in comparison to the partner countries. In comparison, our colleagues in the larger EFFORT countries were less lucky and had to make real 'road trips'.





Getting lost in translation...

When collecting samples at the slaughterhouse there were other hurdles. Slaughterhouse workers are part of a very internationally diverse population and consequently (in the Netherlands) they speak more than 12 different languages. How do you explain an already complicated study to someone and convince the same person to collect a fecal sample, if you are not able to speak their language? Well, it took a large research team, multiple translators (we translated our information packages in 11 languages), lots of persuasiveness, patience, visibility at the work place, and very long hours to reach our final goal. Much credit also goes to our team of lab analysts who had to process 700 samples (350 of which were human samples) in a time span of only a few days. The next challenge looms soon, as we are approaching our second slaughterhouse sampling round...

Liese van Gompel DVM (Utrecht University) was interviewed by Dr Jorge Pinto Ferreira (SAFOSO) for EFFORT's third newsletter.

What's in Store: Laboratory Analyses

Samples collected during the EFFORT project will be subjected to different analyses. DNA has been extracted from the pooled fecal samples and collected at pig and poultry farms in all participating countries. These are used for metagenomics analysis after HiSeq sequencing. Once returned from the sequencing provider, the sequence data is run through Intomics' (EFFORT consortium partner) pipeline. The sequence data enable the analysis and comparison of e.g. the bacterial community compositions in the samples, and the prevalence of antibiotic resistance genes. These data allow us to get an overview of the general resistance patterns in the various participating countries by compiling the data. Furthermore, the metagenomic data will be used for comparison between the countries and could potentially reveal regional differences, e.g. in the types of resistance genes detected or in the prevalence of the genes.

Many of the collected samples have already been sequenced, and the remainder will follow. The largest number of samples collected will be used for qPCR analysis, targeting a selection of specific resistance genes. The samples for qPCR analysis include individual fecal samples collected at the farms, fecal samples from companion animals, dust samples, samples from slaughterhouse workers and meat samples collected from supermarkets and butchers. This will provide a very extensive dataset, with data from different steps in the production line; from farm to shop. These comprehensive datasets will allow analysis of variation / development in the prevalence of resistance genes in the production line, and could thereby help determine where the greatest exposure to resistance genes occurs.

This contribution was provided by Dr Berith Knudsen, DTU.

