



Food- and water-borne disease outbreak investigation questionnaire tool

Guidance

Suggested citation: European Centre for Disease Prevention and Control. Food- and water-borne disease outbreak investigation questionnaire tool – Guidance [Oct 2016], Stockholm, 2016.

© European Centre for Disease Prevention and Control, Stockholm, 2016

Contents

- Background 3
- Methodology for developing the repository 3
- Guidance..... 4
 - Use of the repository 4
 - Step 1: Exclusion criteria 4
 - Step 2: Build your questionnaire..... 4
 - Step 3a: An interviewer administers the questionnaire..... 6
 - Step 3b: Self-administrated questionnaires 6

Background

Food- and Water-borne Disease (FWD) outbreaks in the European Union (EU) and European Economic Area (EEA) Member States are important causes of morbidity and economic loss because of their frequent occurrence and their occasional severity. In 2010, the European Centre for Disease prevention and Control (ECDC) project "[Toolkit for investigation and response to Food and Waterborne Disease Outbreaks with an EU dimension](#)" conducted by the Statens Serum Institute (Copenhagen, Denmark) and the Norwegian Institute of Public Health (Oslo, Norway) led to a series of tools to support the investigation of a European FWD outbreak. Tool 5 of this toolkit was the first attempt to develop questionnaire templates from a pool of questions.

In February 2015, ECDC organised an expert meeting to map the different practices in terms of creation and administration of outbreak investigation questionnaires in the EU/EEA Member States and to identify possible avenues to support multi-country and national outbreak investigations. This meeting highlighted the need to update Tool 5 of the toolkit which was considered too generic. It was suggested to develop a repository of questions (extended pool of questions) and questionnaire templates to support the investigation of FWD outbreaks (meeting report available upon request). To address the need, a project called the "FWD outbreak investigation questionnaire tool" was initiated and conducted by the National Institute of Public Health and the Environment (RIVM, Bilthoven, The Netherlands). The updated tool aims at supporting the creation of questionnaires used for descriptive and analytical studies during FWD outbreak investigations at the local, regional, national or international levels.

Methodology for developing the repository

Tool 5 of the "Toolkit for investigation and response to Food and Waterborne Disease Outbreaks with an EU dimension" was used as a starting point to create the repository. The members of the [ECDC FWD-Network](#) were contacted by email and asked to share questionnaires that had been used in foodborne outbreak investigations. Forty-one questionnaires from 13 different EU/EEA Member States were collected.

As a complement, an ad-hoc internet search was conducted to find additional hypothesis generation questionnaires for FWD outbreaks. Questionnaires were found on the following websites: The United States Centers for Disease Control and Prevention (one questionnaire), the Oregon Health Authority and Minnesota Department of Health in the United States (respectively two and one questionnaires) and [The International Outbreak Museum](#) (eight questionnaires). In addition, two questionnaires were provided by the authors of the article "Lessons learnt from a birthday party: A *Bacillus cereus* outbreak, Bari, Italy, January 2012, Martinelli et al. *Annali dell'Istituto Superiore di Sanita*. 2013; 49(4):391-394", following direct contact.

Most collected questionnaires were not in English. These questionnaires were translated using translation engines and the knowledge of experts within RIVM and ECDC.

The FWD outbreak investigation questionnaire tool encompasses 1) a guidance document which presents the background information, the methodology and how to use the tool, and 2) a repository of questions to be used to create outbreak investigation questionnaires.

A preliminary version of the guidance and the repository was shared with the ECDC FWD-Network for comment. In addition, an expert meeting was organised on 9 September 2016 to critically review the guidance and the repository and identify possible next steps for the FWD outbreak investigation questionnaire tool project (meeting report available upon request).

The European Food Safety Authority (EFSA) [food classification and description system](#) (Foodex2) was used to ensure the comprehensiveness and wording of the food items listed in the repository. The alignment of the naming of the food items listed in the repository of questions with FoodEx2 allows the comparison of the food

consumption of the cases and the expected food consumption in the respective EU Member States, based on the [EFSA Comprehensive European Food Consumption Database](#).

The notifications issued through the [Rapid Alert System for Food and Feed](#) (RASFF) were used to check that all the food items found to be contaminated were listed in the repository of questions.

The repository is divided into 20 categories (e.g. travel-related questions, fish and shellfish, milk and dairy products). Most categories are divided into sub-categories to facilitate the identification of question types and food products. The food products listed are food products that are eaten or manipulated raw or undercooked, or with manufacturing or cooking processes prone to contamination. Country-specific food products or dishes were not included in the repository.

The repository, and thus the questions, is in the first place developed for the trawling/hypothesis-generating phase of an outbreak but could be easily modified for the use in analytical epidemiological studies.

Guidance

Use of the repository

This repository is intended to be used by epidemiologists and food safety experts investigating FWD outbreaks. For each outbreak investigation, the appropriate set of questions should be selected to create a tailored questionnaire. Questions that are not in the repository and that are needed for the purpose of the investigation should be added by the expert developing the questionnaire. Suggestions on questions to be added to the repository are welcome and should be sent by email to FWD@ecdc.europa.eu.

Step 1: Exclusion criteria

For each investigation, define your exclusion criteria and, based on those criteria, identify which questions will help you to exclude interviewees (see examples in Table 1). Clearly mark those questions so that the interviewer can easily identify whether the case should be excluded and therefore the interview terminated. .

Table 1: Examples of questions that could be used as exclusion criteria

Exclusion of	Chapter	Question asked	For instance, exclude if the person interviewed answers...
Travellers abroad during investigation of non-travel related outbreaks	3	Did you visit another country in the seven days before you became ill?	Yes, I was abroad during that period
Cases without symptoms	2	When did you have the first symptoms?	I did not have any symptoms
Secondary cases	2	Has anyone in your household had similar symptoms before?	Yes, my husband started to have diarrhoea two days before me.

Step 2: Build your questionnaire

Select the questions and introductory text you need depending on the pathogen, the outbreak type and the way the questionnaire will be administrated.

Go through the repository and delete the questions you don't need or copy-paste the questions you want to use into a new document.

Important note: For multi-country outbreaks, do not change or remove the unique identifier of the questions and responses (the number in italics and between brackets after the question/response, e.g. 0014a). The identifiers allow easy comparative analysis of results from questionnaires administrated in different languages.

Annex 1 below suggests which groups of questions could be considered for inclusion in the questionnaire, based on the suspected or identified causative agent. Annex 1 was built using the Rapid Alert System for Food and Feed (RASFF) notifications, recent peer-reviewed articles but also feedback from experts involved in the development of the tool. Annex 1 is not exhaustive.

The introductory text aims to guide the interviewee along the questionnaire. The introduction is always given in two versions: one for interviews administrated by an interviewer over the phone or face-to-face and one for self-administrated interviews. When the questionnaire is administrated by an interviewer, he/she should read the selected text to introduce each block of questions. The introductory text is marked in bold and in a green box as presented below:

Interviewer: We will continue this interview with questions about your recent gastrointestinal illness.

Self-administrated: The next questions are about your recent gastrointestinal illness.

When a specific answer type or format is expected, a suggestion is provided in parenthesis and *italics* (e.g. (dd/mm/year)).

Adapt the questionnaire

If food items or questions are missing in this repository, you can add them to your own questionnaire and provide feedback to ECDC so that the online version of the repository can be updated.

For a wide range of questions, the answer options are "yes/no/unknown". An alternative is to use "yes/probably yes/probably no/no" which allow to avoid the "unknown" answers and which take into consideration the eating habits. If you would like to use this alternative, replace these answer options throughout the questionnaire.

Define your reference period and pre-fill the questionnaire

The reference period is the period over which information is gathered from the interviewee. It is generally expressed as a number of days or weeks and is based upon the incubation period of the (suspected) causative agent of the outbreak. You will find suggested reference periods in Annex 1. Throughout the questionnaire, replace the **[T]** with the reference period agreed for the investigation.

Before you start the interviews, fill-in the "questions to be pre-filled" part of chapter 1 with the information you already have about the outbreak and as relevant for the cases. You can then confirm the responses, where needed, during the interview.

Fill-in all fields marked with square brackets [] and highlighted in yellow. For instance, **[country]** indicates that you should enter the country name. To facilitate the reading of the questionnaire during the interviews, remove the highlighted text and square brackets.

Decide whether you want to include a food diary (Chapter 19) and finalise the questionnaire

Use the food diary in Chapter 19 for diseases with a short incubation period. It is best used for the three days before disease onset. Stretching to seven days is the limit, as disease onset is often already a few weeks ago when interviewing the cases.

Finally, add a date and/or version number to the questionnaire to be able to follow possible changes to the questionnaire in the course of the outbreak.

Step 3a: An interviewer administers the questionnaire

Interviewers should be familiar with the questionnaire before they begin the interviews and ideally be trained to conduct interviews. Questions or doubts about specific questions or sections of the questionnaires should be addressed before the start of the interview.

Approach procedure for interviewers

- Read the questionnaire and the introduction text. Ask for clarification to the coordinator of the outbreak investigation if something is unclear to you.
- Check whether you have all the information and material needed to call the case. Be aware that you need to reformulate the introduction and questions if you are not interviewing the case by for instance the spouse or a parent.
- Call the interviewee. Use the text suggested in the repository to introduce yourself and the reason for your call.
- Conduct the interview when consent is given.

Tips and tricks

- Avoid giving details about the outbreak (particularly about possible vehicles) until the interview is completed. "I don't want to influence your responses, so could we go through the list of questions first, and then I'll answer your questions?"
- Use a calendar to determine the period prior to disease onset over which you will ask questions (reference period). Mention both the start and end dates and also the days of the week (e.g. Thursday 7 July to Wednesday 13 July).
- Remember that the use of "am" and "pm" (e.g. 7am) can be ambiguous, prefer to say "7 in the morning".
- Suggest to the interviewee to take a calendar to identify the dates.
- Emphasise that you would like to also record what they have been tasting, even if they only ate a bite or two. For some people, that doesn't constitute "eating".
- If a parent or guardian is answering on behalf of a child regularly remind the interviewee that the answers are on behalf of the child.
- If the respondent answers yes to one of the listed food items, ensure that the more detailed questions about that food items are asked.
- Most questions have the answer option "unknown" or "Don't know/Don't remember" Especially with long reference periods and when interviewing relatives (instead of the case), this option is necessary. However, always first try to push for a yes or no answer.

Step 3b: Self-administrated questionnaires

The case is approached by surface mail or email with the questionnaire. This means that the questionnaire and covering letter/email should be clear and comprehensive. Consider to have a telephone number that cases can call you at in case of questions. The cover letter provides an introduction to the outbreak investigation and to the questionnaire. It can also give tips for answering the questionnaire (see examples above).

Annex 1. Suggested reference periods and groups of questions to consider while building a hypothesis generation questionnaire, as per the suspected/confirmed pathogen

	Salm	Campy	Shig	STEC	LM	BC	SA	NoV	HAV	HEV	Crypto	Giardia
Reference period	7 d	7 d	7 d	7 d	4 w	1 d	1 d	3 d	6 w	6 w	12 d	14 d
General and demographical questions	X	X	X	X	X	X	X	X	X	X	X	X
Disease-related questions	X	X	X	X	X	X	X	X	X	X	X	X
Travel-related questions	X	X	X	X	X	X	X	X	X	X	X	X
Food habits, allergies and diet	X	X	X	X	X	X	X	X	X	X	X	X
Shopping, restaurants and other places to eat out	X	X	X	X	X	X	X	X	X	X	X	X
Vegetables and vegetable products	X	X	X	X	X	X	X	X	X		X	X
Fruits and fruit products	X	X	X	X	X	X		X	X		X	X
Nuts and seeds	X											
"Superfoods"	X								X			
Meat and meat products	X	X	X	X	X	X	X			X	X	
Fish and shellfish	X		X		X	X	X	X	X	X		
Milk and diary products	X	X	X	X	X	X	X		X		X	
Eggs and egg products	X	X			X	X	X					
Other food products	X				X	X	X		X		X	
Food products for young children	X	X	X	X	X	X	X	X	X	X	X	X
Water and water-based beverages	X	X	X	X		X		X	X	X	X	X
Contact with animals	X	X		X			X			X	X	
Food diary	X	X	X	X		X	X	X				X
Closure questions	X	X	X	X	X	X	X	X	X	X	X	X
References	[1], RASFF	[2], RASFF	[3], RASFF	[4], RASFF	[5], RASFF	[6], RASFF	[7], RASFF	[8], RASFF	[8], RASFF	[8]	[9, 10]	[10]

Salm = *Salmonella*; Campy = *Campylobacter*; Shig = *Shigella*; STEC = shigatoxin producing *Escherichia coli*; LM = *Listeria monocytogenes*; BC = *Bacillus cereus*; SA = *Staphylococcus aureus*; NoV = norovirus; HAV = hepatitis A virus; HEV = hepatitis E virus; Crypto = *Cryptosporidium*; Giardia = *Giardia lamblia*.

- (1) **Silva C, Calva E, Maloy S.** One Health and Food-Borne Disease: Salmonella Transmission between Humans, Animals, and Plants. 2014; **2**: OH-0020-2013.
- (2) **Klein G, ed.** *Campylobacter*. Features, detection, and prevention of foodborne disease. 1st ed. Amsterdam: Academic Press/Elsevier inc., 2017: 160.
- (3) **Berger S.** *Shigellosis: Global Status*. 2016 edition ed. Los Angeles, California, USA: Gideon Informatics, 2016.
- (4) **Rivas M, et al.** Risk Factors for Shiga Toxin-Producing *Escherichia coli*-Associated Human Diseases. *Microbiology spectrum* 2014; **2**.
- (5) **Lomonaco S, Nucera D, Filipello V.** The evolution and epidemiology of *Listeria monocytogenes* in Europe and the United States. *Infection, genetics and evolution : journal of molecular epidemiology and evolutionary genetics in infectious diseases* 2015; **35**: 172-183.
- (6) **Tewari A, Abdullah S.** *Bacillus cereus* food poisoning: international and Indian perspective. 2015; **52**: 2500-2511.
- (7) **Kadariya J, Smith TC, Thapaliya D.** *Staphylococcus aureus* and staphylococcal food-borne disease: an ongoing challenge in public health. 2014; **2014**: 827965.
- (8) **Todd ECD, Greig JD.** Viruses of foodborne origin: A review. 2015; **7**: 25-45.
- (9) **Robertson LJ, Chalmers RM.** Foodborne cryptosporidiosis: is there really more in Nordic countries? 2013; **29**: 3-9.

(10) **Dixon BR.** Parasitic illnesses associated with the consumption of fresh produce - an emerging issue in developed countries *Current Opinion in Food Science* 2016; **8**: 104-109.**Ann**