


**Consumer information on prevention of biological hazards: conditions and criteria of effectiveness for various information measures**


Third Paris Risk Group Workshop  
June 18-19 2015

Parallel session 1B : Food: safety and consumers



**Context**








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**Question asked**




1.) Which methodology should be applied to define the measures aimed at each of the parties involved (food business operators, health professionals, consumers), in a way that prioritises them and is proportional to the risk, and how should these measures be combined to achieve optimal efficiency of the health control scheme in terms of benefits to public health, while remaining proportionate to any constraints for the sector concerned?

2) Can the Agency draw up a list of hazard-food combinations of priority to public health for which mandatory specific labelling (reference to the hazard or advice and precautions on use for vulnerable populations) would be likely to significantly improve consumer protection, after having examined the other options regarding information targeted at the populations concerned?



**Reformulation**





1. Identification of hazard-food combinations (or hazard-food-vulnerable population combinations) for which better consumer information may have an impact on risk reduction (compared to upstream control measures)

- 1.1. Prioritisation of the hazard-food combinations according to the impact of preventive measures that can be applied by the consumer
- 1.2. Quantitative assessment of the health impact of the consumer applying preventive measures on representative hazard-food combinations

2. Identification of conditions and criteria of effectiveness for the various information measures that could be applied for the combinations identified

- 2.1. Inventory of conceivable information measures on the food risks
- 2.2. Conditions and criteria of effectiveness for the measures

3. Identification of conditions and criteria of effectiveness for the various information measures: case study on a hazard-food combination.

**A multidisciplinary working group**

**13 experts**


**Sociology of risks**

Food microbiology (modélisation)

Sociology of food

Food microbiology (risk assessment)

Quantitative risk assessment



Socio-economic analysis


Epidemiology

Social psychology – risk communication

Communication sciences (labelling)

Food technology



Parasitology - infectiology



**A first report published in May 2014**

Prioritisation of the hazard-food combinations according to the impact of preventive measures that can be applied by the consumer

Inventory of conceivable information measures on the microbiological food risks

### Identifying and prioritising hazard-food combinations

**General approach :**

- The ranking process was based on 3 criteria :
  - Incidence of foodborne diseases
  - Severity of the disease associated with the hazard (DALY)
  - Effectiveness of the preventive measures that can be applied by the consumer, assuming ideal application by the consumer
- A semi-quantitative approach :
  - For each criteria, scores were awarded based on the data collected and expert opinion

### Ranking of hazards according to their public health impact

-Incidence of foodborne diseases  
-Severity of the disease associated with the hazard

Classification of hazards according to their health impact

**Table 1: Classification of hazards according to their health impact**

Hazards	Incidence score	Severity score	Public health impact result (Incidence + severity score)
<i>Escherichia coli</i> STEC (SHU)	2	4	6
<i>Listeria monocytogenes</i>	2	4	6
<i>Toxoplasma gondii</i> (congenital form)	2	4	6
<i>Campylobacter</i> spp.	4	2	6
<i>Salmonella</i> (non-typhoidal)	4	2	6
Acute gastroenteritis virus (mainly norovirus)	5	1	6
<i>Cryptosporidium parvum</i>	1	4	5
Hepatitis A virus	2	3	5
Hepatitis E virus (autochthonous infections)	2	3	5
<i>Yersinia enterocolitica</i>	3	2	5
<i>Bacillus cereus</i>	4	1	5

### Ranking of the hazard-food combinations according to the impact of measures applied by the consumer

- Seven preventive and control measures that can be applied by consumers :
  - Preventing cross-contamination
  - Washing and decontaminating fruits and vegetables
  - Rapid cooling
  - Deep freezing
  - Cooking
  - Respecting the cold chain and the use-by date
  - Avoiding consumption of the food by population groups vulnerable to the hazard (e.g. infants, young children, pregnant women, immunocompromised individuals or those suffering from chronic diseases)

For each hazard, the main food sources were identified and related to the preventive measures

**Table 2: Ranking of the main hazard-food combinations according to the impact of preventive measures that can be applied by the consumer**

Hazard	Food	Preventive measures associated with the combination	Overall impact of the preventive measures (including avoiding consumption by vulnerable populations*) on the risk (0: zero, 1: partial, 2: total)
STEC	Cooked minced beef	Cooking	2
STEC	Raw milk	Cooking, avoiding consumption	2
T. gondii	Meat	Cooking, deep freezing	2
Campylobacter	Poultry meat	Cooking, preventing cross-contamination	2
Salmonella	Eggs	Cooking	2

### Impact on consumption behaviour of information aiming to reduce microbiological risks

- Systematic literature review (n=42) :
  - little research focused on the measured effects on behaviour
- Questionnaire sent to health agencies:
  - Various communication strategies : general information on food safety, information targeted at specific populations, and information on specific foods or types of risk (distributed via the websites) ; information campaigns in schools
  - Most agencies did not undertake any assessment of the information campaigns.

### Methodology for developing a communication strategy for the prevention of foodborne microbiological risks

Figure 1: Summary of the iterative steps for developing a communication strategy for the prevention of microbiological risks in food

### Second report

A close integration of social sciences and life sciences

Social sciences ↔ Life sciences

**Objectives :**

- Identification of conditions and criteria of effectiveness for the various information measures that could be applied for the combinations identified
- Quantitative assessment of the health impact of the consumer applying preventive measures on representative hazard-food combinations

## Second report

### Identified combinations, and associated preventive measures :

- E.Coli STEC/minced meat : cooking
- L. monocytogenes/RTE food : appropriate storage/avoiding consumption
- Campylobacter/Poultry meat : preventing cross-contamination



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## Sources of data

- Literature search (first report), extended (nutrition, cardiovascular diseases, alcohol consumption...)
- Inventory of communication interventions aimed at pregnant women, elderlys, parents of young children
- Hearings (consumer associations, professional federations, INPES...)

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### Identification of conditions and criteria of effectiveness for the various information measures that could be applied for the combinations identified

To identify the most appropriate strategies for our hazard/food combinations, the following approach was followed :

- **Analyse risky behaviours and use a behavioural model**
  - Proposal of a model (based on existing models : TPB, COM-B ... ) in the food hygiene domain
- **Analysis of studies on the effectiveness of the following communication strategies :**
  - Mass-media campaigns (5-10% effectiveness)
  - Labelling
  - Education programs
  - Interpersonal relations
  - Nudges



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### Identification of conditions and criteria of effectiveness for the various information measures that could be applied for the combinations identified

#### - Analysis of the choices between a communication strategy addressed to the general population or to a targeted population

- If an intervention towards consumers is necessary, which should be privileged, taking into account effectiveness, costs, and effects on inequalities ?
- Know practices, attitudes and characteristics of the targeted population (pregnant women, elderly, parents of young children)
- How/when can a general population and a targeted population strategy can be combined



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### Quantitative assessment of the health impact of the consumer applying preventive measures on representative hazard-food combinations

- **Simulate the health impact of a communication campaign on preventive measures**
  - ➔ Exposure and risk characterisation of the hazard/food combinations
  - ➔ Simulation of the health impact of a communication campaign about preventive measures : evaluating the impact on risk reduction if 5 to 10% of the population adopted the « correct » behaviour for the hazard/food combinations
  - ➔ Simulating the health impact of upstream control measures for the hazard/food combinations
  - ➔ Simulate the total health impact of a communication campaign about the preventive measures (on all microbiological risks)
- **Evaluate the cost-effectiveness of campaigns on preventive measures (general population or targeted campaigns)**

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### Practicable communication strategies according to different aims and targeted populations

#### 3 criteria :

- attainable character of the population
- complexity of the prevention measure to adopt by the consumer
- consideration of the cost-effectiveness

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- + Case study for the communication strategy for the prevention of infant botulism

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## Thanks

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## Thanks

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Thank you for your attention !

Questions ?

