

## Review of Concepts and Tools Applied to Assess Risks Associated with Food Imports

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**Abstract :** Introduction: Risk assessments can be performed in various ways and in different degrees of complexity. In order to assess risks associated with imported foods additional information needs to be taken into account compared to a risk assessment on regional products. The present review is an overview on currently available best practise approaches and data sources used for food import risk assessments (IRAs). Methods: A literature review has been performed. PubMed was searched for articles about food IRAs published in the years 2004 to 2014 (English and German texts only, search string “(English [la] OR German [la]) (2004:2014 [dp]) import [ti] risk”). Titles and abstracts were screened for import risks in the context of IRAs. The finally selected publications were analysed according to a predefined questionnaire extracting the following information: risk assessment guidelines followed, modelling methods used, data and software applied, existence of an analysis of uncertainty and variability. IRAs cited in these publications were also included in the analysis. Results: The PubMed search resulted in 49 publications, 17 of which contained information about import risks and risk assessments. Within these 19 cross references were identified to be of interest for the present study. These included original articles, reviews and guidelines. At least one of the guidelines of the World Organisation for Animal Health (OIE) and the Codex Alimentarius Commission were referenced in any of the IRAs, either for import of animals or for imports concerning foods, respectively. Interestingly, also a combination of both was used to assess the risk associated with the import of live animals serving as the source of food. Methods ranged from full quantitative IRAs using probabilistic models and dose-response models to qualitative IRA in which decision trees or severity tables were set up using parameter estimations based on expert opinions. Calculations were done using @Risk, R or Excel. Most heterogeneous was the type of data used, ranging from general information on imported goods (food, live animals) to pathogen prevalence in the country of origin. These data were either publicly available in databases or lists (e.g., OIE WAHID and Handystatus II, FAOSTAT, Eurostat, TRACES), accessible on a national level (e.g., herd information) or only open to a small group of people (flight passenger import data at national airport customs office). In the IRAs, an uncertainty analysis has been mentioned in some cases, but calculations have been performed only in a few cases. Conclusion: The current state-of-the-art in the assessment of risks of imported foods is characterized by a great heterogeneity in relation to general methodology and data used. Often information is gathered on a case-by-case basis and reformatted by hand in order to perform the IRA. This analysis therefore illustrates the need for a flexible, modular framework supporting the connection of existing data sources with data analysis and modelling tools. Such an infrastructure could pave the way to IRA workflows applicable ad-hoc, e.g. in case of a crisis situation.

**Keywords :** import risk assessment, review, tools, food import

**Conference Title :** ICRAM 2015 : International Conference on Risk Assessment and Management

**Conference Location :** Amsterdam, Netherlands

**Conference Dates :** August 06-07, 2015