

CREATION BY THE DELPHI METHOD OF AN EVALUATION SCALE ON THE QUALITY OF ANIMAL SURVEILLANCE NETWORKS

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Dans le but d'évaluer qualitativement et quantitativement la qualité du fonctionnement des systèmes de surveillance épidémiologique en santé animale, des grilles d'évaluation ont été élaborées et soumises à l'avis d'un panel de onze experts selon la méthode Delphi.

Ces grilles comportent des critères à noter pour chaque point critique retenu. Chaque expert devait se prononcer sur son degré d'accord avec les propositions effectuées.

Deux consultations des experts ont permis d'apporter des modifications aux grilles d'évaluation. Lors de la deuxième consultation, les deux grilles ont reçu des notes relativement homogènes et favorables de la part de tous les experts consultés.

Les points critiques finalement retenus pour évaluer la qualité de fonctionnement d'un réseau d'épidémiosurveillance sont : les objectifs, l'échantillonnage, les outils utilisés, le recueil et la circulation des données, l'animation du réseau, le traitement et l'interprétation des données ainsi que la diffusion de l'information. Pour les réseaux d'épidémiologie, concernant des maladies exotiques, deux points critiques supplémentaires sont à évaluer : la sensibilisation des acteurs et les facteurs d'environnement.

Given the international situation of free trade determined by the GATT agreements, it becomes essential to have effective surveillance networks in order to protect disease-free areas as well as to know and limit sanitary risks related to animal and products trade. Surveillance networks regarding various diseases have been developing everywhere (Gardner et al. 1985; Dufour, 1995).

Until now, few studies have evaluated the functioning of the surveillance networks (Anonymous, 1988; Declich and Carter, 1994). None of these studies uses a quantified method allowing the comparison of the quality of the functioning of several networks or the evaluation of how to improve a network.

Consequently, a quantified evaluation aid (presented as evaluation scales) on the quality of the surveillance networks was created. Since there is little scientific literature on the subject, the Delphi method was used to create and ratify these scales. This method was selected since it is commonly used in marketing. It has also been used for a few years in veterinary medicine (Forbes et al., 1994).

This article presents the results of the rounds with the experts as well as the evaluation scales regarding the quality of the various surveillance networks.

MATERIAL AND METHODS

1. General presentation

In November 1995 draft evaluation scales were sent to a group of experts in order to have their opinion with the Delphi method, about the evaluation of the quality of surveillance networks for present and exotic diseases.

A brief presentation of their objectives and methods of use was enclosed, as well as a questionnaire in which the experts had to score each question from 0 to 10.

The first round slightly modified the evaluation scales. Subsequently, a second round with the same experts was done.

The new questionnaire and revised scales were sent to the experts, including a document presenting anonymously the results of the first round and a personalized presentation of their answers according to the other experts' answers (median and interquartile intervals). The experts were also asked to make comments on the questions for which their scores were outside inter quartile intervals.

The completed questionnaires of the second round were returned in May 1996. This led to further minor modifications.

2. Evaluation scales

Two evaluation scales have been worked out in order to evaluate the surveillance networks, in terms of quality and quantity. One scale deals with the present diseases in a given territory (epidemiological surveillance network) and the other scale regards the exotic diseases for a given territory (surveillance network for exotic diseases). Two different scales were created since there are different methods of observing the evolution of a disease in a territory and of detecting a disease that previously was exotic.

For each type of network (prevalent diseases, exotic diseases), critical points have been defined according to their importance about the quality of networks' results. Critical points are particularly decisive for the quality of the networks' results. Consequently the critical points should be supervised adequately and mastered to improve the network's quality.

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Each scale has one or several evaluation criteria for each critical point. Each criterion must be scored. (Tables I and II). The global score for each type of network is 100 points.

First, experts were asked to score each proposal from 0 (minimal score) to 10 (maximal score). Furthermore, the open-ended questions required comments on the evaluation.

3. Experts

The experts were selected according to several criteria : competence, availability and sphere of activity. They were all responsible for a surveillance network (or were part of a network's team) and had published at least one article on the network. French and foreign experts of medical or veterinary background were contacted for a greater diversity.

RESULTS

Eleven experts answered the questionnaire. Four experts came from Canada, the United States, Switzerland, and an international organism. All the experts were epidemiologists, but four of them also had a training in microbiology. 10 out of the 11 experts answered the second questionnaire (one veterinary expert did not answer).

1. Prevalent diseases surveillance network

On the first round, the average score (all experts and all scores) for the network was 7.45 with scores ranging from 4.69 to 8.84. The average shows that experts agreed with the proposals.

The experts' comments on the first round led to the creation of another critical point : methods of information spreading. This new critical point and score modifications for several other critical points and criteria were in the revised evaluation scale on the second round.

On the second round, the difference in scores decreased. The average for the evaluation scale of the surveillance network was 8.51, with scores ranging from 7.73 to 9.55.

Experts gave homogenous and higher scores on the second round. This means they agreed with the proposals.

Table I presents the final modified evaluation scale.

2. Surveillance network for exotic diseases

Only 9 experts gave useful information. On the first round, the average was 8.28 with scores from 7.27 to 9.91.

On the second round, interquartile intervals decreased. The average on the second round was 8.44 with scores from 7.48 to 9.76.

Table II presents the final modified evaluation scale

Table I
Evaluation scale of surveillance network (disease present in a territory)

Critical points	Criteria	Score
Objectives	Relevance evaluation	10
	Precision evaluation	10
		20
Sampling	Accuracy evaluation	10
	Precision evaluation	10
		20
Tools used	<u>Tools for measurement</u>	
	Relevance of their use in relation to the network's objectives	4
	Quality of the standardization	4
	<u>Laboratory analyses</u>	
	Techniques quality	4
	Control of reagents used	4
	Laboratory control and standardization	4
	20	
Data collection and circulation	Standardization of the investigators' work	5
	Evaluation of the quality and time limits of data spreading	5
		10
Network management	Methods of coordination	5
	Relevance of the time devoted by the coordinator	5
		10
Data interpretation and processing	Quality evaluation	5
	Scientific ratification	5
		10
Spreading of information	Periodicity	5
	Spreading field	5
		10
TOTAL		100

DISCUSSION

Both Delphi rounds improved the evaluation scales for surveillance networks. Critical points and lists of criteria were supplemented and slightly modified.

On the second round, evaluation scales were accepted by experts, as indicated by the averages. Experts estimated that the evaluation scales could allow a quantification of the functioning of networks in terms of quality. However, the experts did not agree on all the points, especially as regards the importance of a few critical points. Scores for " Objectives " or " Tools " were considered too high for some experts and too low for others.

Table II
Evaluation scale of surveillance network (exotic disease)

Critical points	Criteria	Score
Objectives	Relevance evaluation	7.5
	Precision evaluation	7.5
		15
Sampling	<u>Exhaustiveness of clinical detection</u>	
	Regulation of declaration	3 (6)*
	Evaluation of the exhaustiveness	4 (14)
	<u>Surveillance with analyses</u>	
	Precision evaluation	5
		20
Awareness programme	Realization of a specific action	5
	Maintenance of the awareness	5
	Evaluation of the awareness level	5
		15
Tools used	<u>Tools for measurement</u>	
	Relevance of their use in relation to the network's objectives	3
	Quality of the standardization	3
	<u>Laboratory analyses</u>	
	Techniques quality	4
	Control of reagents used	4
	Laboratory control and standardization	6
		20
Data collection and circulation	Standardization of the investigators' work	5
	Evaluation of the quality and time limits of data spreading	5
		10
Environment factors	Existence and surveillance of a sensitive wildlife	2.5
	Presence and control of the disease vectors in the country	2.5
		5
Data interpretation and processing	Quality evaluation	5
	Scientific ratification	5
		10
Spreading of information	Periodicity and spreading field	5
		5
TOTAL		100

- The figures between brackets can only be used if it is not necessary to carry out a surveillance other than clinical.

Furthermore, the Delphi method reliability greatly depends on the choice of experts. In this study, experts were chosen according to their experience of networks and their different medical or veterinary background in order to benefit from their knowledge of all the various surveillance networks in France or abroad.

Foreign experts were few in comparison with French experts. However, the results showed no difference regarding the experts' origins. On the contrary, the experts with a medical or veterinary background had not the same point of view.

The number of experts may seem low, but according to Dalkey and Brown (1972), " a panel of 5 to 11 experts allows a sufficient reliability, provided they are carefully chosen. Besides, beyond 13 experts per group, the average error risk of the group does not practically decrease ".

CONCLUSION

Two evaluation scales were created to assess the quality of the functioning of surveillance networks. They were submitted to a Delphi round. Given the difficulty in quantifying this type of evaluation and the methodological limits of the Delphi method, this first step will have to be supplemented by a ratification of networks in operation.

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