Preparation and applications of the
International Aquatic Animal Health Code
and
Diagnostic Manual for Aquatic Animal Diseases
of the Office International des Epizooties

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Summary: The Office International des Epizooties (OIE) has recently prepared an International Aquatic Animal Health Code, based on the principles set out in the corresponding OIE International Animal Health Code for terrestrial animals.

The principal aim of the Code and the companion Diagnostic Manual for Aquatic Animal Diseases is to harmonise health guarantees for international trade in aquatic animals (fish, molluscs, crustaceans) and aquatic animal products, and to guide state Veterinary Services and/or other competent authorities in the preparation of appropriate health certificates.

The Aquatic Animal Health Code and Manual provide detailed information on definitions, notifications, ethics in connection with certification, import risk analysis and import/export procedures.

By these means, the preparation of international health certificates can be based on a uniform approach to health control in aquatic animal populations, using the standardised methods described in the Diagnostic Manual.

In general, health certification under the Aquatic Animal Health Code is required only for diseases notifiable to the OIE. In addition to such notifiable diseases, however, the Code establishes a list of other significant diseases which need consideration.

The listed diseases are recognised as serious transmissible diseases of socio-economic and/or public health importance, in relation to which the international trade of aquatic animals and their products poses a significant risk of transfer between countries.

The current status of the Code and Manual is described in detail.


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INTRODUCTION

The Office International des Epizooties (OIE) has dealt with fish disease matters since the establishment of the OIE Fish Diseases Commission (FDC) in 1960. The principal policy of the OIE is to facilitate international trade in animals and animal products, including aquatic animals and aquatic animal products, on the basis of health control and preventive measures. This work covers fields of importance for public health which are connected to the consumption of animal products, including the following:

- treatment
- drug residues
- radioactive pollution
- risk analysis.

The aim of this work is to reduce the potential for the transfer of serious animal diseases from one country to another through international trade. The need therefore exists for general principles regarding health control and certification procedures, etc. to restrict transmissible diseases in aquatic animals. In addition, there is a need for world-wide collection and distribution of data on epizootics and other health factors in aquatic animals.

The OIE has an important role to play in establishing a legisulatory framework which may be used for strategic planning and decision-making in OIE Member Countries.

The FDC has therefore been preparing, over a number of years, an International Aquatic Animal Health Code and a Diagnostic Manual for Aquatic Animal Diseases (2, 4). The prototypes of the Code and Manual were adopted by the 63rd OIE General Session in May 1995.

Previously, aquatic animal diseases were included in the OIE International Animal Health Code (3), which covers diseases in terrestrial animals, but this presented obvious drawbacks.

The International Aquatic Animal Health Code and the Diagnostic Manual for Aquatic Animal Diseases (henceforth referred to as the Code and the Manual) are based on the same template as the Code and Manual for terrestrial animals, but have been adapted to aquatic animals. While the Code will be published in English, French and Spanish, the Manual will be available only in English. Both publications will be updated each year; any amendments will be presented to the OIE General Session for approval and subsequently published as a separate supplement. It is expected that updated versions of the full text will be printed every four or five years.

The decision to publish a separate Code and Manual for aquatic animals was initially taken in the late eighties, and a tremendous amount of work was involved in preparing both texts, published for the first time in 1995. In addition to the work done by the members of the FDC, contributions were also made by the OIE International Animal Health Code Commission and the OIE Standards Commission, as well as scientific experts in various Member Countries, through their comments and information, but also through the preparation of certain chapters on diseases for which the necessary expertise was not present within the FDC itself.
The end result therefore is based on international teamwork. Not all countries will be able to comply with all the specifications detailed in the Code and Manual, as probably only a few countries will have the necessary resources. In addition, many countries still have concerns which they would like to see resolved, before they decide to subscribe to the principles set out in the Code. This is due, among other things, to differences of opinion on health certification requirements, zoning principles, etc.

The Code sets out general principles regarding the following:
- definitions
- notifications and epizootiological information
- ethics and aquatic animal health rules for international trade
- import risk analysis
- import/export procedures
- diseases notifiable to the OIE
- other significant diseases
- health control and hygiene
- destruction of pathogens
- model international certificates approved by the OIE.

In addition to these sections, work has commenced on the inclusion of chapters on good laboratory practice (GLP) and quality assurance (QA), as both GLP and QA will be important elements in future health control activities in aquatic animals.

The advantage of the OIE Code is that it is founded on a world-embracing international organisation which is politically independent and has a great deal of experience and a high level of competence in the control of diseases in terrestrial and aquatic animals.

**INTERNATIONAL AQUATIC ANIMAL HEALTH CODE**

**Definitions**

The definitions in the Code are, of course, specifically adapted to aquatic animals, and most can be accepted without scrutiny. A major point has, however, been the definition of zones. Although the definition is very similar to that which is contained in the European Union (EU) Council Directive 91/67/EEC (1), there is one major difference. The present version of the Code defines a zone more narrowly, as being within the territorial limits of a single country. However, in the EU document, a zone is a geographical area that may extend beyond the national boundaries of one country. For example, it allows coverage of an entire catchment area, from the source of the waterway to the estuary, even if the waterway is shared by two or more nations.

**Notifications and epizootiological information**

The scope of the Code includes both disease and disease agents, and this section lays down the general principles to be followed in notifications and communications between Member Countries and the OIE. The responsibility for health control, etc., in aquatic animals in many OIE Member Countries is under the jurisdiction of a
Competent Authority other than the Veterinary Authority. Thus, the OIE has taken steps to liaise directly with any Competent Authority responsible for aquatic animal health on the reporting of aquatic animal diseases, in order to be fully updated on the disease situation in aquatic animals world-wide.

Ethics and aquatic animal health rules for international trade

There may be different philosophies and opinions regarding health certification, ethics, etc., in different countries, but it is important to lay down some basic principles which should be taken into account to ensure that trade is unimpeded, and does not constitute a risk to human and aquatic animal health.

Information on aquatic animal health status and health information systems in each country is important, together with regular and prompt information on the presence of diseases of socio-economic importance. If international trade in aquatic animals is to continue, and the risk of disease transfer to be diminished, all certification must be based on the strictest possible ethical rules.

The chapters in this section of the Code present importing countries with various options in establishing the necessary requirements and certifications.

Import risk analysis

Any importation of aquatic animals or related products may involve a degree of risk to the importing country, and the Code chapter on import risk analysis is intended to provide the importing country with an objective and defensible method of assessing risks associated with importation. The Code thus provides a basis for a more objective decision, and enables the importing and exporting countries to hold productive discussions on problems associated with potential risks.

Import/export procedures

In the context of import and export, it is important that general arrangements be made for transport, and for aquatic animal health measures before and during transport, and upon arrival in the importing country, as well as for procedures to be followed at the frontier posts. Such regulations are of special importance in ensuring safe conditions for the importation of pathological material and biological products.

Diseases notifiable to the OIE and other significant diseases

The Code for terrestrial animals divides notifiable diseases into Lists A and B, on the basis of their seriousness (3). The International Aquatic Animal Health Code, however, establishes a list of diseases notifiable to the OIE, and a list of other significant diseases in aquatic animals of which the international community must be aware (Appendix).

The categorisation and diseases to be listed are, of course, open to debate, and opinions vary greatly. At some point, the FDC will evaluate the categorisation of aquatic animal diseases according to the standardised approach outlined in the OIE Report on the Categorisation of Diseases, when this report has been approved by the
OIE. Until then, the FDC will be open to comments on diseases to be listed, withdrawn from the lists, etc., as this is one of the advantages of the system.

As mentioned in the introductory guide to the *Code* (pages v-vii), it is unnecessary and against the principles of facilitating international trade to seek guarantees of freedom from ubiquitous infections which may be prevalent in an importing country. It is important, however, that the introduction of new strains of pathogens be avoided.

**Health control and hygiene**

Health control and hygiene prior to international trade in live aquatic animals and aquatic animal products is also an important issue. This section of the *Code* provides guidelines for hygienic precautions, and also gives information on the destruction of pathogens through disinfection procedures in fish farms, mollusc farms and crustacean farms.

**Model international health certificates approved by the OIE**

Originally, the *Code* established five different model health certificates, but the FDC soon realised that there was no need for a specific international sanitary certificate for aquatic animal products destined for use in aquatic animal feeds or for industrial or pharmaceutical use. The establishing of the model certificates enables a basic similarity of health certificates world-wide, while also providing each country with an opportunity to list the diseases for which it wishes to receive certification.

**DIAGNOSTIC MANUAL FOR AQUATIC ANIMAL DISEASES**

In accordance with the current listing of diseases notifiable to the OIE and other serious diseases, a *Diagnostic Manual* has been prepared (2).

The *Diagnostic Manual* provides a general basis for health surveillance/control programmes. A comprehensive approach to health control in aquatic animals requires the following elements:

- assessment of health status
- constraint of restocking in open waters and farming facilities
- eradication procedures
- notification of particular requirements for importation of aquatic animals and their products. In this respect, sampling procedures and maintenance of health status, as well as diagnostic procedures, are important issues for certain fish pathogens.

The *Manual* sets out standard diagnostic methods, which could be applied in any laboratory dealing with diagnostic work in aquatic animals. At this stage, more sophisticated methods such as polymerase chain reaction (PCR) and other molecular biological techniques have been deliberately excluded, as such techniques have yet to be adapted for routine diagnostic purposes and remain, to a great extent, a research tool. For the same reason, serological diagnosis is excluded, but this will also be included in the *Manual* when the methodology is more acceptable for practical diagnostic purposes.
The Manual consists of the following sections:
- general bases for fish health surveillance/control programmes
- sampling procedures
- diagnostic procedures for certain fish pathogens
- diagnostic procedures for certain mollusc pathogens
- diagnostic procedures for certain crustacean pathogens
- list of reference laboratories for fish, mollusc and crustacean diseases
- list of organisations with which the OIE has co-operation agreements.

Each chapter in the Manual is written by a distinguished expert in the field and describes the latest methodology for the diagnosis of one of the diseases listed.

CONCLUSION

Although many publications deal with the diagnosis and control of aquatic animal diseases, it is hoped that the Code and the Manual will be key documents in providing a basis for future work in health control/health surveillance in aquatic animals world-wide. If used throughout the world, the Manual will ensure a uniform approach to the diagnosis of the diseases of socio-economic importance listed by the OIE, and thus help exporters and importers to meet the requirements for health certification laid down in the Code.

If followed, the Code itself will ensure that similar standards (legal, ethical, moral, etc.) are followed in certification. Certification must be based on standard procedures, and strict ethical and moral standards are prerequisites for controlling and preventing the spread of aquatic animal diseases. Proper certification based on uniform international norms will facilitate trade in live aquatic animals and their products, while providing importing countries with guarantees that products are free from infections prevalent in exporting countries.

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PRÉPARATION ET APPLICATION DU CODE SANITAIRE INTERNATIONAL POUR LES ANIMAUX AQUATIQUES ET DU DIAGNOSTIC MANUAL FOR AQUATIC ANIMAL DISEASES DE L'OFFICE INTERNATIONAL DES ÉPIZOOTIES. – T. Hâstein.

Résumé : L'Office international des épidiooties (OIE) a récemment préparé un Code sanitaire international pour les animaux aquatiques à partir des principes énoncés dans le Code zoo-sanitaire international de l'OIE, correspondant aux animaux terrestres.

L'objet principal du Code et de son complément, le Diagnostic Manual for Aquatic Animal Diseases, est d'harmoniser les garanties sanitaires applicables aux échanges internationaux d'animaux aquatiques (poissons, mollusques et crustacés) et de leurs produits, ainsi que de guider les Services vétérinaires officiels et/ou les autorités compétentes à préparer les certificats sanitaires appropriés.
Le Code sanitaire international pour les animaux aquatiques et le Manual qui l'accompagne fournissent une information détaillée sur les définitions, les déclarations sanitaires et les questions d’éthique relatives à la certification, à l’analyse des risques à l’importation et aux procédures d’import/export.

Ainsi, la préparation de certificats sanitaires internationaux peut-elle se fonder sur une approche harmonisée des contrôle sanitaires des animaux aquatiques, grâce aux méthodes normalisées décrites dans le Manual.

En général, la certification sanitaire, aux termes du Code sanitaire international pour les animaux aquatiques, n’est obligatoire que pour les maladies devant être déclarées à l’OIE. Outre ces maladies, le Code donne une liste d’autres affections importantes devant être prises en considération.

Les maladies figurant sur ces listes sont considérées comme graves, transmissibles, importantes du point de vue socio-économique et/ou sanitaire et comme faisant peser un risque non négligeable sur le commerce international d’animaux aquatiques et de leurs produits.


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PREPARACIÓN Y APLICACIÓN DEL CÓDIGO SANITARIO INTERNACIONAL PARA LOS ANIMALES ACUÁTICOS Y DEL DIAGNOSTIC MANUAL FOR AQUATIC ANIMAL DISEASES DE LA OFICINA INTERNACIONAL DE EPIZOOTIAS. – T. Hâstein.

**Resumen:** La Oficina Internacional de Epizootias (OIE) ha elaborado recientemente un Código sanitario internacional para los animales acuáticos, basado en los principios que establece el correspondiente Código zoosanitario internacional de la OIE para los animales terrestres.

El principal objetivo del Código y del Manual que lo acompaña (Diagnostic Manual for Aquatic Animal Diseases), reside en la armonización de los requisitos sanitarios impuestos sobre el tráfico internacional de animales acuáticos (peces, moluscos, crustáceos) y de sus productos derivados. También pretende servir de guía a los Servicios veterinarios oficiales y/o demás autoridades competentes en la materia para la elaboración de certificados sanitarios adecuados.

El Manual y el Código sanitario internacional para los animales acuáticos proporcionan detallada información sobre definiciones, declaración obligatoria de enfermedades, diversos aspectos éticos ligados a la concesión de certificados, análisis de riesgos en materia de importación y procedimientos de importación/exportación.

Con el empleo de los métodos normalizados descritos en el Manual, la elaboración de certificados sanitarios internacionales puede efectuarse sobre la base de un enfoque homogéneo del control sanitario de las poblaciones de animales acuáticos.
En términos generales, el Código sanitario internacional para los animales acuáticos sólo exige un certificado sanitario en el caso de las enfermedades de declaración obligatoria a la OIE. Sin embargo, el Código propone además una lista de otras enfermedades importantes que se han de tomar en cuenta.

Todas las enfermedades consideradas han sido reconocidas como graves, transmisibles e importantes desde el punto de vista socioeconómico y/o de salud pública; además, plantean el problema del posible riesgo de propagación de agentes patógenos entre los países que participan en el comercio internacional de animales acuáticos y productos derivados.

El autor describe asimismo el grado de elaboración actual tanto del Código sanitario internacional para los animales acuáticos como del Manual.


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Appendix

Diseases in aquatic animals

Diseases notifiable to the Office International des Epizooties

Fish
Epizootic haematopoietic necrosis
Infectious haematopoietic necrosis
*Oncorhynchus masu* virus disease

Spring viraemia of carp
Viral haemorrhagic septicaemia

Molluscs
Bonamiosis (*Bonamia ostreae*, *Bonamia* spp.)
Haplosporidiosis (*Haplosporidium nelsoni*)
Marteiliosis (*Marteilia refringens*, *M. sydneyi*)

Microcytosis (*Mikrocytos mackini, M. roughleyi*)
Perkinsosis (*Perkinsus marinus, P. atlanticus, P. olseni*)
Iridovirosis (Iridovirus)

Other significant diseases in fish, molluscs and crustaceans

Fish
Channel catfish virus diseases
Viral encephalopathy and retinopathy
Infectious pancreatic necrosis
Infectious salmon anaemia

Epizootic ulcerative syndrome
Bacterial kidney disease
Enteric septicaemia in catfish
Piscirickettsiosis
**Bivalve molluscs**

None at present

**Crustaceans**

- Baculoviral midgut gland necrosis virus infection
- Nuclear polyhedrosis baculoviroses
  - Penaeus monodon-type baculovirus and Baculovirus penaei

Infectious hypodermal and haematopoietic necrosis

Yellowhead disease

Crayfish plague (*Aphanomyces astaci*)

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**REFERENCES**


