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VIRTUAL COURSE

26 March to 15 April 2021

Design of an Active Surveillance for Tilapia Lake Virus (TILV) Disease and Its Implementation

TCP/INT/3707: Strengthening biosecurity (policy and farm level) governance to deal with Tilapia lake virus



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INTRODUCTION

30 March 2021

Introduction to the Virtual Training Course on Design and Implementation of an Active Surveillance for Tilapia Lake Virus (TiLV) using a 12-point Checklist for a Multidisciplinary Team (TCP/INT/3707: Colombia Philippines and Vietnam)

Melba G. Bondad-Reantaso
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TCP/INT/3707: Strengthening biosecurity (policy and farm level) governance to deal with Tilapia lake virus



Background: FAO Project TCP/INT/3707: Strengthening biosecurity (policy and farm level) governance to deal with Tilapia lake virus

Interregional technical cooperation project: Colombia, the Philippines and Vietnam



Background: FAO Project TCP/INT/3707: Strengthening biosecurity (policy and farm level) governance to deal with Tilapia lake virus

Objectives:

- Build knowledge and capacity to deal with TiLV
- Design and implement an active surveillance for TiLV
- Virtual course (March-April)
- Field implementation (April-July)
- Surveillance data analysis virtual workshop (August)
- National feedback consultations (September)
- Report writing and preparation for below event



Background: FAO Project TCP/INT/3707: Strengthening biosecurity (policy and farm level) governance to deal with Tilapia lake virus

Participate in a global virtual event - **International Technical Conference of Tilapia Health (October 2021)** – although the focus is on health it will present that current state of knowledge on various aspects tilapia: production, technologies, market and trade, food safety nutrition and future aspirations



Development of the 12-point checklist

- Surveillance is a systematic process of gathering information about the occurrence of important diseases and pathogens in order to produce meaningful reports on the disease status of a farm, zone, country, or region.

Surveillance will thus support import risk analysis, justify import health certification requirements, and enable export health certification by providing evidence to substantiate claims of the absence of a particular disease (FAO/NACA 2000).



Development of the 12-point checklist

- Surveillance and reporting are important elements of the Asia Regional Technical Guidelines on Health Management for the Responsible Movement of Live Aquatic Animals (FAO/NACA 2000) and fundamental components of any aquatic animal health protection program or national strategy on aquatic animal health management (FAO 2007).



Within the PMP/AB

- Surveillance is the systematic process of data collection, collation, analysis, and dissemination aimed at ascertaining the health status of a given population of aquatic animals. The information gained guides disease control activities and appropriate measures to prevent or stop disease spread.
- Monitoring is the observation of an intervention, measurement of progress aimed at ascertaining changes in epidemiological parameters for example prevalence level, rate and direction of spread of a disease.



World Organization for Animal Health (OIE) Aquatic Animal Health Code (OIE 2019a), surveillance objectives may be one of the following:

- (1) demonstrating the absence of a disease;
- (2) identifying events requiring notification;
- (3) or determining the occurrence or distribution of endemic diseases, including changes to their incidence or prevalence, in order to:
 - i. provide information for domestic disease control programs and/or
 - ii. provide relevant disease occurrence information to be used by trading partners



Reporting systems

- the **World Animal Health Information System (WAHIS)** of the OIE the Animal Disease Notification System (ADNS) of the European Union (https://ec.europa.eu/food/animals/animal-diseases/not-system_en)
 - Globally accepted as a disease information tool to facilitate the WTO's SPS agreement
- the **Emergency Prevention System for Animal Health (EMPRES-AH)** of the Food and Agriculture Organization of the United Nations (FAO) (<http://www.fao.org/ag/againfo/programs/en/empres/home.asp>)



Reporting systems

- the **Animal Disease Notification System (ADNS)** of the European Union (https://ec.europa.eu/food/animals/animal-diseases/not-system_en)
- first-ever regional aquatic disease reporting system, the **Quarterly Aquatic Animal Disease (QAAD)** Reports (Asia and Pacific Region) was developed by the Network of Aquaculture Centres in Asia-Pacific (NACA), the FAO and the OIE through an FAO (TCP) Project TCP/RAS 6714 (A) and 9065 (<https://enaca.org/?start=80&id=8>)



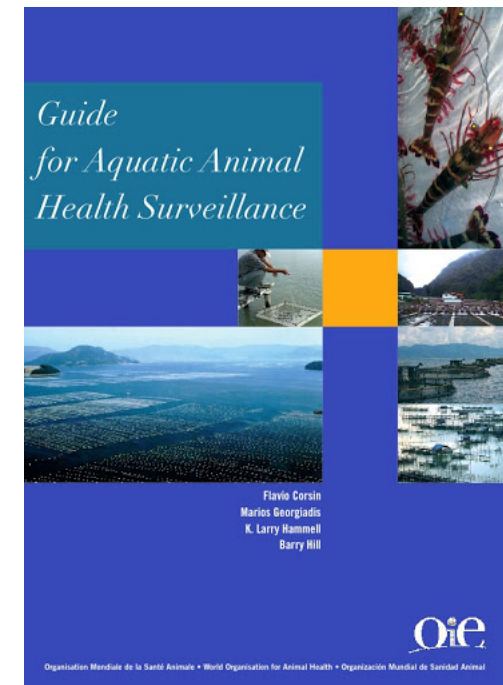
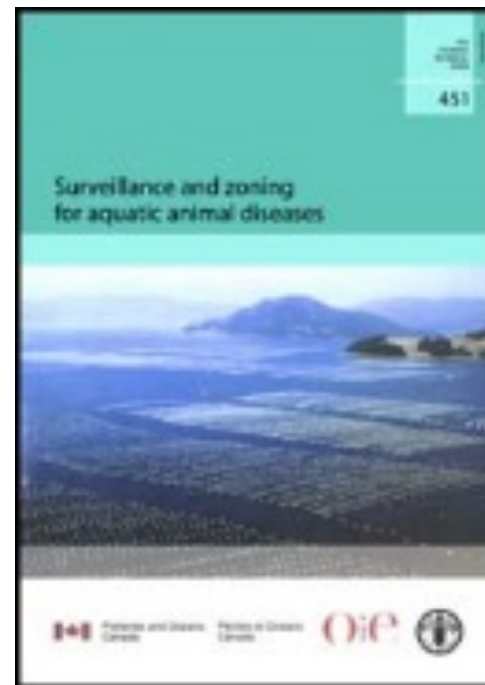
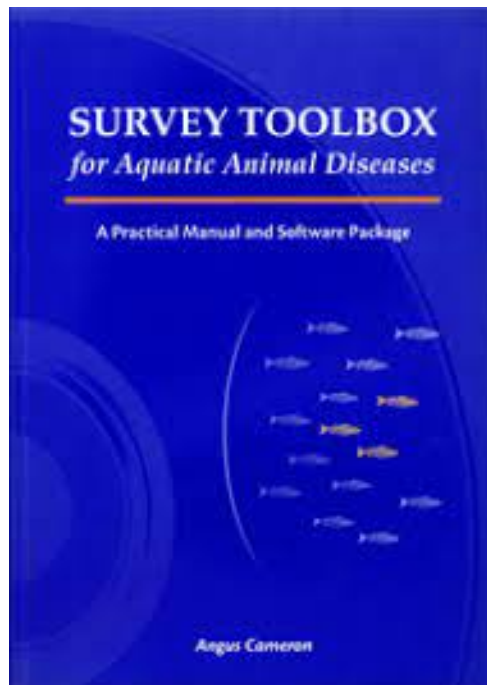
Responsibility for reporting

- It is well recognised that aquatic disease surveillance and reporting falls under the responsibility of the veterinary authorities; while in some countries, it is a task delegated, shared or historically undertaken by other administrative bodies. In most developing countries, aquatic disease surveillance responsibility is separate from veterinary services.
- This has been recognized by the OIE, as evident by their establishment of a country Focal Point for aquatic animal diseases.
- Reporting to the OIE, nonetheless, is through the country's Chief Veterinary Officer.



Steps in the development of the 12-point checklist

- **Step 1:** We did a thorough review of available main references on surveillance for aquatic animal diseases to understand the scope and key elements that need to be captured when designing a surveillance program. The main references examined included FAO/NACA (2000, 2001), Cameron (2002), Subasinghe et al. (2004), Corsin et al. (2009) and the OIE Aquatic Animal Health Code (2019a)





Steps in the development of the 12-point checklist

Step 2: The second step was a review of available scientific literature specific to aquatic animal health surveillance to determine findings or recommendations from specific studies related to the practical application of surveillance principles in aquaculture (see, e.g., Baldock et al. 2008; Peeler & Taylor 2011; Oidtmann et al. 2013).

Review | [Open Access](#) | Published: 11 August 2011

The application of epidemiology in aquatic animal health -opportunities and challenges

[Edmund J Peeler](#)  & [Nicholas GH Taylor](#)

[Veterinary Research](#) **42**, Article number: 94 (2011) | [Cite this article](#)



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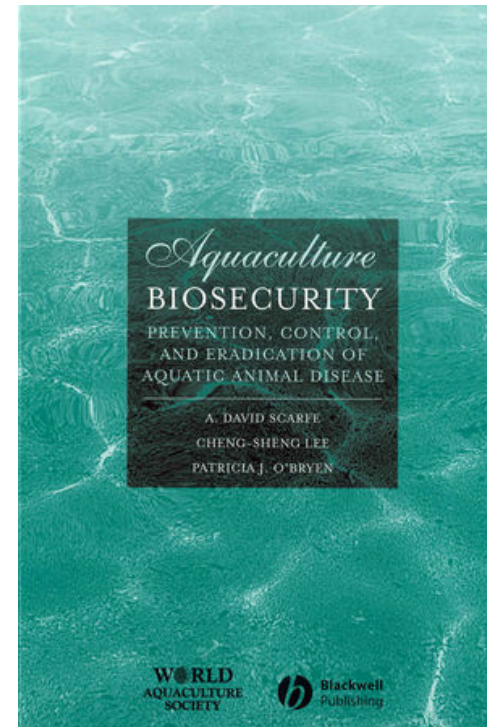
Preventive Veterinary Medicine

journal homepage: www.elsevier.com/locate/prevetmed

Review

Risk-based methods for fish and terrestrial animal disease surveillance

Birgit Oidtmann^{a,*}, Edmund Peeler^a, Trude Lyngstad^b, Edgar Brun^b,
Britt Bang Jensen^b, Katharina D.C. Stärk^c





Steps in the development of the 12-point checklist

Step 2: We reviewed studies on aquatic animal diseases to which surveillance tools were applied. These included the following: estimation of component surveillance sensitivity using scenario tree modelling to demonstrate the freedom from viral haemorrhagic septicaemia (VHS) in farmed Atlantic salmon (*Salmo salar*) in Norway (Lyngstad et al. 2016); Australia's national surveillance program to demonstrate national freedom from white spot disease (WSD) (Hood et al. 2019); use of an active surveillance program to study risk factors of acute hepatopancreatic necrosis disease (AHPND) in shrimp in Bac Lieu province, Viet Nam (Nguyen et al. 2019) and the Mekong Delta, Viet Nam (Boonyawiwat et al. 2018). Other national-level studies, for example in Chile, were also available (see Section 4).

> [Prev Vet Med. 2016 Feb 1;124:85-95. doi: 10.1016/j.prevetmed.2015.12.008. Epub 2015 Dec 19.](#)

Routine clinical inspections in Norwegian marine salmonid sites: A key role in surveillance for freedom from pathogenic viral haemorrhagic septicaemia (VHS)

Trude Marie Lyngstad ¹, Hege Hellberg ², Hildegunn Viljugrein ², Britt Bang Jensen ², Edgar Brun ², Evan Sergeant ³, Saraya Tavornpanich ²

Asian Fisheries Science 31S (2018): 194–209
©Asian Fisheries Society
ISSN 0116-6514
E-ISSN 2071-3720
<https://doi.org/10.33997/j.afs.2018.31.S1.014>



Surveillance and Animal Health Monitoring – Early Detection of Disease

SHUAIB THAIPARAMPIL MUHAMMED*



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Steps in the development of the 12-point checklist

Step 2:



Preventive Veterinary Medicine

Volume 167, 1 June 2019, Pages 159-168



Biosecurity system reforms and the development of a risk-based surveillance and pathway analysis system for ornamental fish imported into Australia

Y. Hood ^a, J. Sadler ^a, J. Poldy ^a, C.S. Starkey ^a, A.P. Robinson ^b

Asian Fisheries Science 31S (2018): 226–241
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ISSN 0116-6514
E-ISSN 2071-3720
<https://doi.org/10.33997/j.afs.2018.31.S1.016>



The Journal of the Asian Fisheries Society

Risk Factors Associated with Acute Hepatopancreatic Necrosis Disease (AHPND) Outbreak in the Mekong Delta, Viet Nam

VISANU BOONYAWIWAT^{1,*}, NGUYEN THI VIET NGA² and MELBA G. BONDAD-REANTASO³



Preventive Veterinary Medicine

Volume 167, 1 June 2019, Pages 159-168



Biosecurity system reforms and the development of a risk-based surveillance and pathway analysis system for ornamental fish imported into Australia

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Contents lists available at ScienceDirect

Aquaculture

journal homepage: www.elsevier.com/locate/aquaculture

People matter in animal disease surveillance: Challenges and opportunities for the aquaculture sector

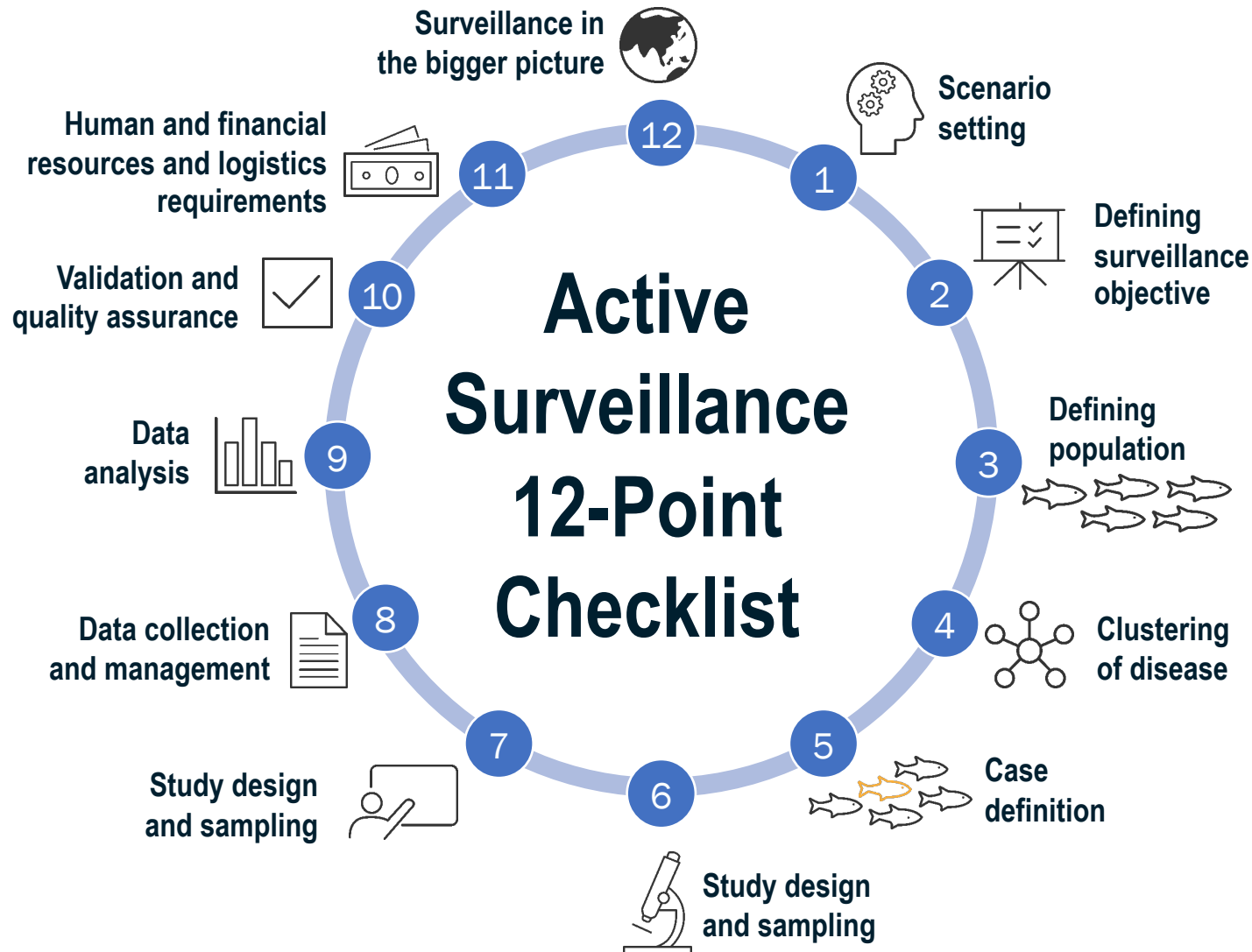
Cecile Brugere ^{a,*}, Dennis Mark Onuigbo ^b, Kenton Ll. Morgan ^c



Steps in the development of the 12-point checklist

Step 3:

- Drafting of the 12-point checklist
- Presentation in several regional workshops related to projects being implemented by FAO in order to gain further perspectives and insights on their application to diseases in aquaculture systems, the utility for a multidisciplinary team.
- finalize the paper



- Step-wise
- Pragmatic
- Model to build targeted surveillance competency (capacity/capability)
- Basic reference when starting surveillance or to improve existing surveillance programs.
- Educational tool for multidisciplinary groups involved in aquatic animal health efforts in developing countries assist in the development and application of surveillance to manage and control diseases in aquaculture.



Detailed guidance document

Field application to targeted disease: **EHP, EUS, TiLV**

15 April 2021

Very special guest TiLV Presentations
Conclusion and next steps
Closing

27 hours
3 days/week
3 hours/day

Colombia, Egypt, Ghana, Indonesia, Kenya, Malawi, Oman, Philippines, Nigeria, Tanzania, Uganda, Viet Nam, Zambia

13 April 2021

Checklist 10, 11, and 12

29 March 2021

Checklist 1 and 2

Defining surveillance objective

31 March 2021

Checklist 3 and 4

7 April 2021

Checklist 8 and 9

7 April 2021

Checklist 7

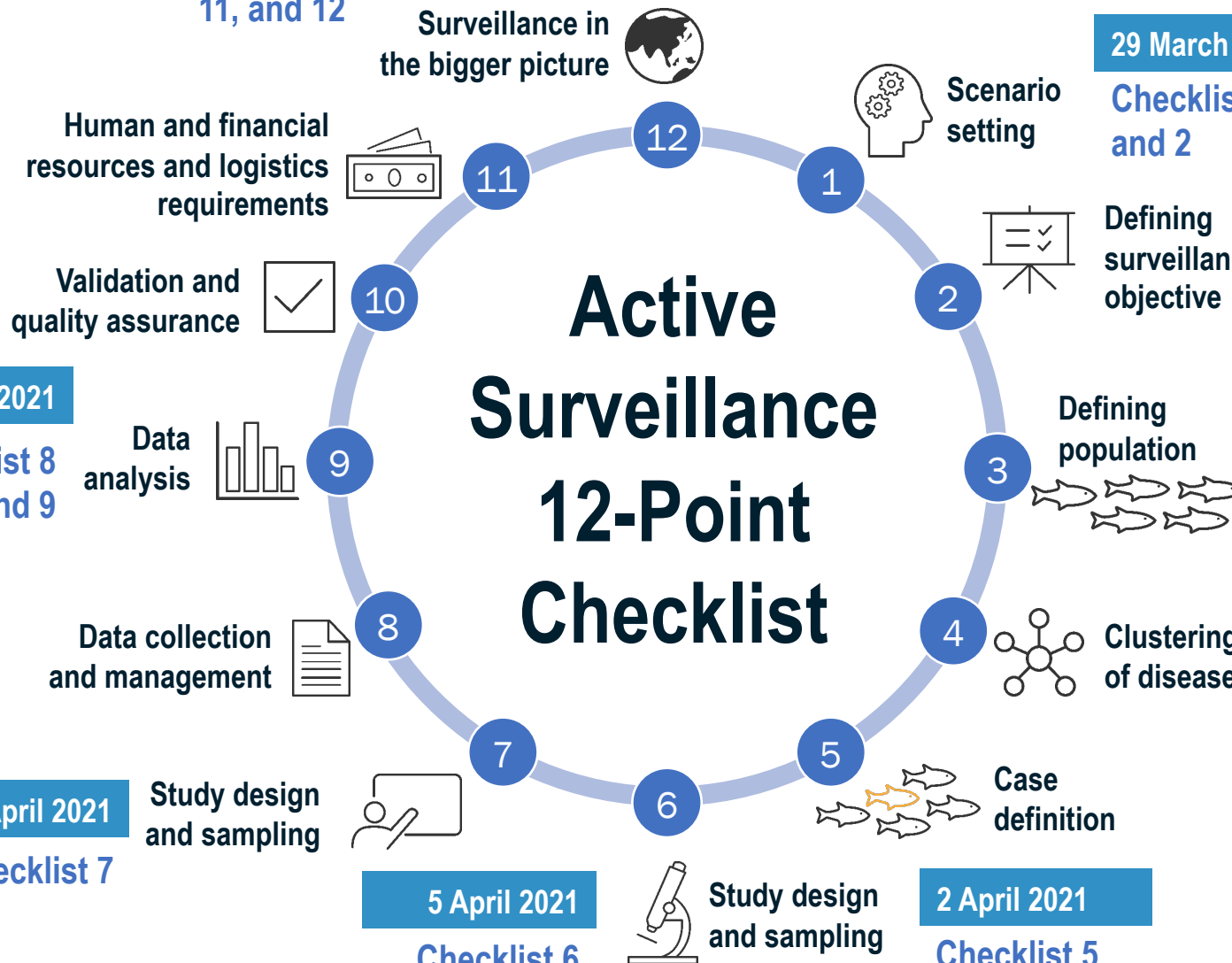
5 April 2021

Checklist 6

2 April 2021

Checklist 5 and 6

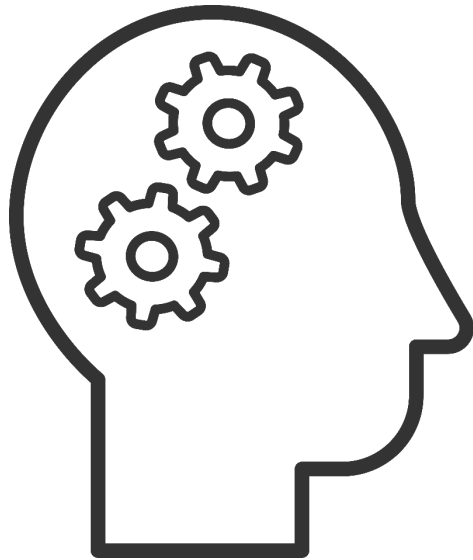
Active Surveillance 12-Point Checklist





CHECKLIST 1

Scenario setting



ON DAY 2
29 March 2021

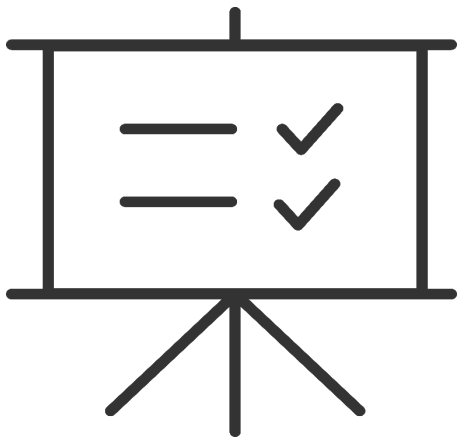
National status of the disease in question; including:

- health status of a specific pathogen in the country
- existence of surveillance activities
- health status of a specific pathogen in neighboring countries and/or trading partners
- health status of a specific pathogen in shared water sheds
- data sources



CHECKLIST 2

Defining surveillance objective



ON DAY 2
29 March 2021

Set with respect to the disease

Set with respect to the disease presence

Set with respect to the level of certification

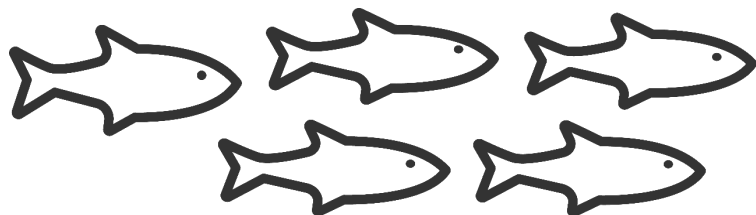
Set with respect to the timeframe



CHECKLIST 3

ON DAY 3
2 April 2021

Defining population



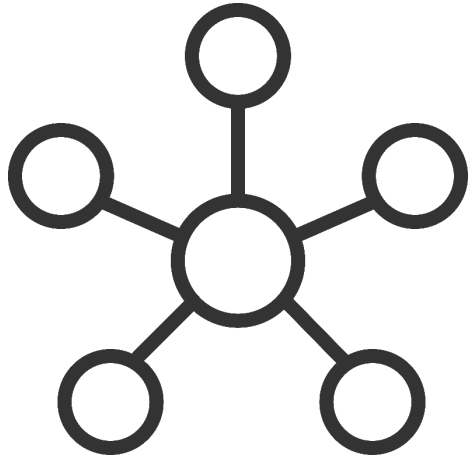
Populations of interest

- Definition of targeted populations
- Definition of studied populations (populations used for sampling)
- Inclusion criteria set and described
- Inclusion criteria set and described



CHECKLIST 4

Clustering of disease



ON DAY 3
2 April 2021

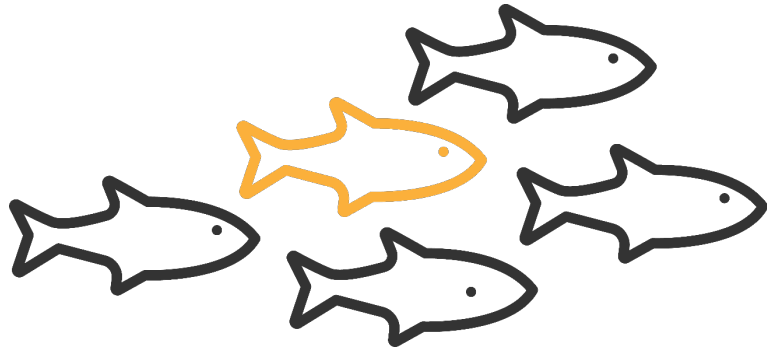
Clustering effect of the disease:
is considered and described

Clustering effect of the disease is
accounted for in sampling/survey
design and data analysis



CHECKLIST 5

Case Definition



ON DAY 4
5 April 2021

Case definition including different levels:
clinical,
laboratorial, and
epidemiological



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CHECKLIST 6

Diagnostic testing



ON DAYS 4 - 5

5 April 2021 – 7 April 2021

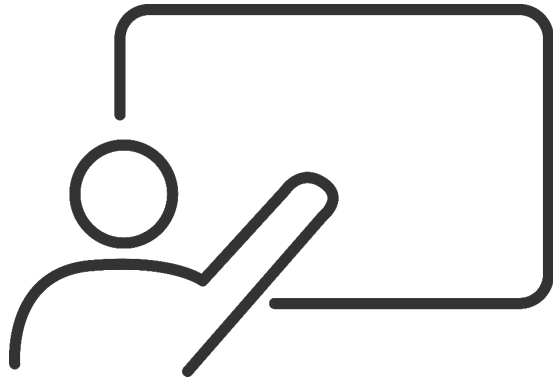
Description of tests used (procedures, interpretation of results, sensitivity and specificity), and competent laboratories



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CHECKLIST 7

Study design and sampling



ON DAY 6
7 April 2021

Description
survey design,
sampling frame and
sample selection process:
units,
methods,
sample size,
sampling materials



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CHECKLIST 8

Data collection and management



ON DAY 7
9 April 2021

Data forms

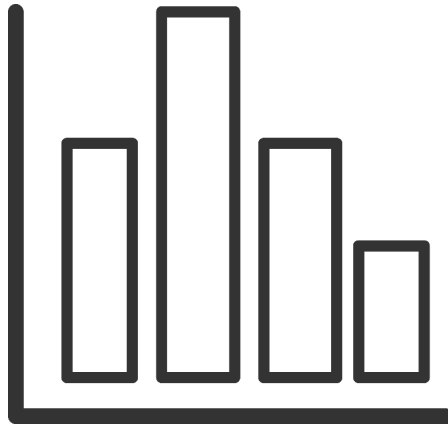
Database (design, entry,
management)

Other information technology
(mapping GPS, etc.)



CHECKLIST 9

Data analysis



ON DAY 7
9 April 2021

Description survey design, sampling frame and sample selection process: units, methods, sample size, sampling materials



CHECKLIST 10

Validation and quality assurance



ON DAY 8
13 April 2021

Statistical estimation of the level of confidence (sensitivity of surveillance program)

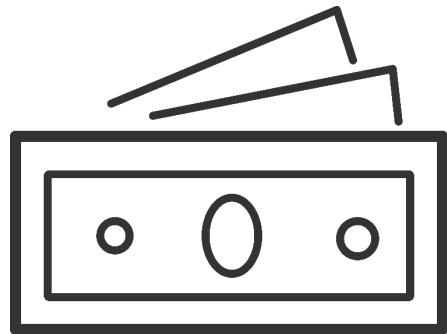
Pilot trials, expert/external evaluation (peer review)

Audit and corrective measures



CHECKLIST 11

Human and financial resources and logistics requirements



ON DAY 8
13 April 2021

Requirements described, e.g. personnel, cost of materials and field sampling, and cost of laboratory tests and analysis of data, etc.

Producer sector engaged



CHECKLIST 12

Surveillance in the bigger picture



ON DAY 8
13 April 2021

Surveillance as an essential component of aquatic animal health/aquatic biosecurity strategies, disease management and control plans

One Health



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Thank you for your attention!

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This was also made possible with the support of the Norwegian Agency for Development Cooperation under the project GCP/GLO/979/NOR Improving Biosecurity Governance and Legal Framework for Efficient and Sustainable Aquaculture Production.



Norad

TCP/INT/3707:

Strengthening biosecurity
(policy and farm level) governance
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