

OIE Procedure for Validation and Certification of Diagnostic Assays

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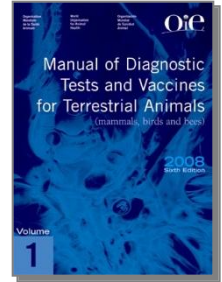
Summary of the presentation

- OIE principles and methods of diagnostic test validation
- OIE Procedure for the validation and certification of diagnostic assays
- Conclusions

OIE Principles and Methods of Diagnostic Test Validation

The relevant OIE Publications

- Manual of diagnostic tests and vaccines for terrestrial animals (chapter 1.1.4. and 1.1.5. in the paper version and combined chapter 1.1.4./1.1.5. on “Principles and Methods of Validation of Diagnostic Assays for Infectious Diseases” available on the OIE website)
- Manual of diagnostic tests for aquatic animals (chapter 1.1.2. identical to the combined chapter 1.1.4/5 of the *Terrestrial Manual*)
- OIE Quality Standard and Guidelines for Veterinary Laboratories: Infectious Diseases (4 Guides)

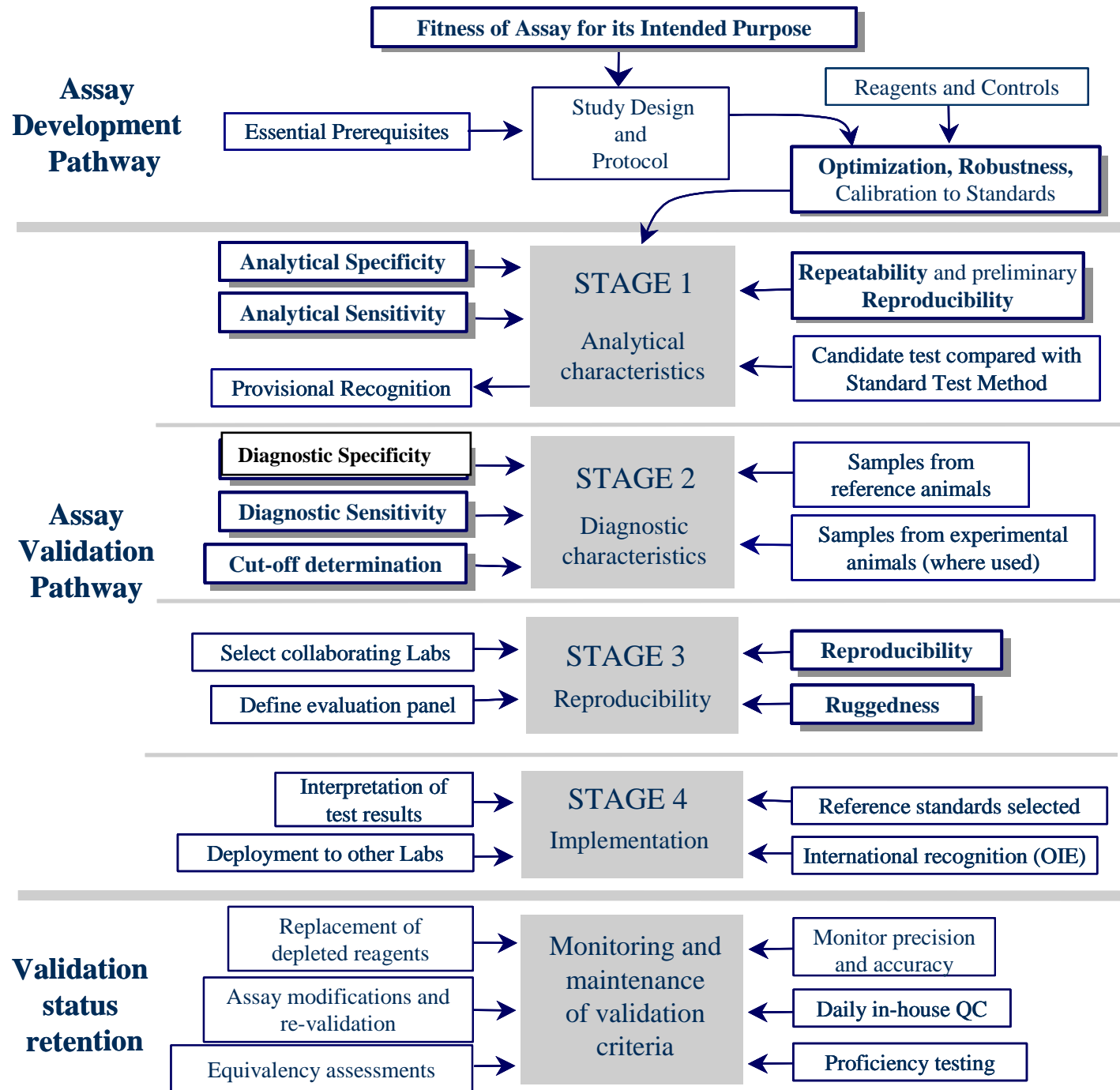


Content of the Principles and Methods of Diagnostic Test Validation

➤ Definition of the validation:

The validation of a diagnostic test method is a **process** that determines the **fitness of the test method**, which has been properly developed, optimised and standardised, for an **intended purpose**.

It is an ongoing process.



Content of the Principles and Methods of Diagnostic Test Validation

1. Development of the diagnostic test:

Definition of the intended purpose(s),

Design of the test method,

Selection of the reference materials,

Calibration, optimisation and standardisation,

Robustness,

Etc.

Content of the Principles and Methods of Diagnostic Test Validation

- The most common purposes are to:
- Demonstrate freedom from infection in a defined population (country/zone/compartment/herd)
 - Certify freedom from infection or presence of the agent in individual animals or products for trade/movement
 - Eradication of diseases or elimination of infection from defined populations
 - Confirmatory diagnosis of suspect or clinical cases
 - Estimate prevalence of infection or exposure to facilitate risk analysis
 - Determine immune status of individual animals or populations

Content of the Principles and Methods of Diagnostic Test Validation

2. OIE validation pathway: 4 stages defined

- The OIE has defined the following chronological validation pathway:
- **Stage 1:** Analytical performance characteristics
- **Stage 2:** Diagnostic performance of the assay
- **Stage 3:** Reproducibility
- **Stage 4:** Programme implementation

Content of the Principles and Methods of Diagnostic Test Validation

- **Stage 1: Analytical performance characteristics**
 - **Analytical sensitivity:** smallest detectable amount of analyte that can be measured with a defined certainty
 - **Analytical specificity:** Degree to which the assay distinguishes between the target analyte and other components in the sample matrix
 - **Repeatability:** Level of agreement between replicates of a sample both within and between runs of the same test method in a given laboratory

Content of the Principles and Methods of Diagnostic Test Validation

- **Stage 1/2:** Possible acceptance of a diagnostic test as validated at this stage
 - **Provisional recognition:**
Example: Assays developed and used in emergency or outbreak situations. To be assessed: ASe, ASp, repeatability and an estimate for reproducibility
 - **Adjunct tests or procedures:**
Example: VNT to type an isolated virus or molecular sequencing to confirm a real time PCR result.
To be assessed: ASe and Asp

Content of the Principles and Methods of Diagnostic Test Validation

- **Stage 2: Diagnostic performance of the assay**
 - Selection of reference animals
 - **Diagnostic specificity** : Proportion of known uninfected reference animals that test negative in the assay
 - **Diagnostic sensitivity** : Proportion of known infected reference animals that test positive in the assay
 - Comparison with existing diagnostic test – Final Threshold determination

Content of the Principles and Methods of Diagnostic Test Validation

➤ Stage 3: Reproducibility

- **Definition:** ability of a test method to provide consistent results when applied to aliquots of the same samples tested at different laboratories
- Provides additional data for the estimation of the repeatability
- Provides data on the ruggedness if the test method has been developed as a diagnostic kit.

Content of the Principles and Methods of Diagnostic Test Validation

- **Stage 4:** Programme implementation
 - Extensive application of the test method in different laboratories,
 - Interpretation of tests results, and
 - International recognition

Content of the Principles and Methods of Diagnostic Test Validation

3. Monitoring and maintenance of the validation criteria:

Organisation of regular proficiency testing,
Consideration for other purposes,
Etc.

OIE Procedure for the validation and certification of diagnostic assays

Background of the initiative

- Two Consultants Meetings: one in 2002 and a second one in 2003 after the adoption of the Resolution No. XXIX adopted in May 2003
- Resolution No. XXIX, at the 71st General Session of the OIE in May 2003
- The OIE Procedure was launched in May 2005

Aim and Scope of the Procedure

- Developed to meet the needs of OIE Members, the aim of this procedure is:
 1. to certify a kit as validated fit for purpose.
 2. to produce an OIE register of recognised diagnostic kits (available on the OIE web site).
- All diagnostic tests for diseases, including zoonosis, caused by pathogens present in animals can be validated and certified by the OIE procedure.

OIE Procedure for validation and certification of diagnostic assays

Briefly 1/2

- Procedure based on the submission of a dossier by a kit manufacturer wishing to have its kit certified by the OIE.
- Fees requested for the initial assessment and then annual fee if kit included in the OIE Register
- Reassessment of the validation data of the kit included in the OIE Register every 5 years
- Dossier, that has to be filled in, downloadable from the OIE website.
- Dossier based on the OIE validation pathway.

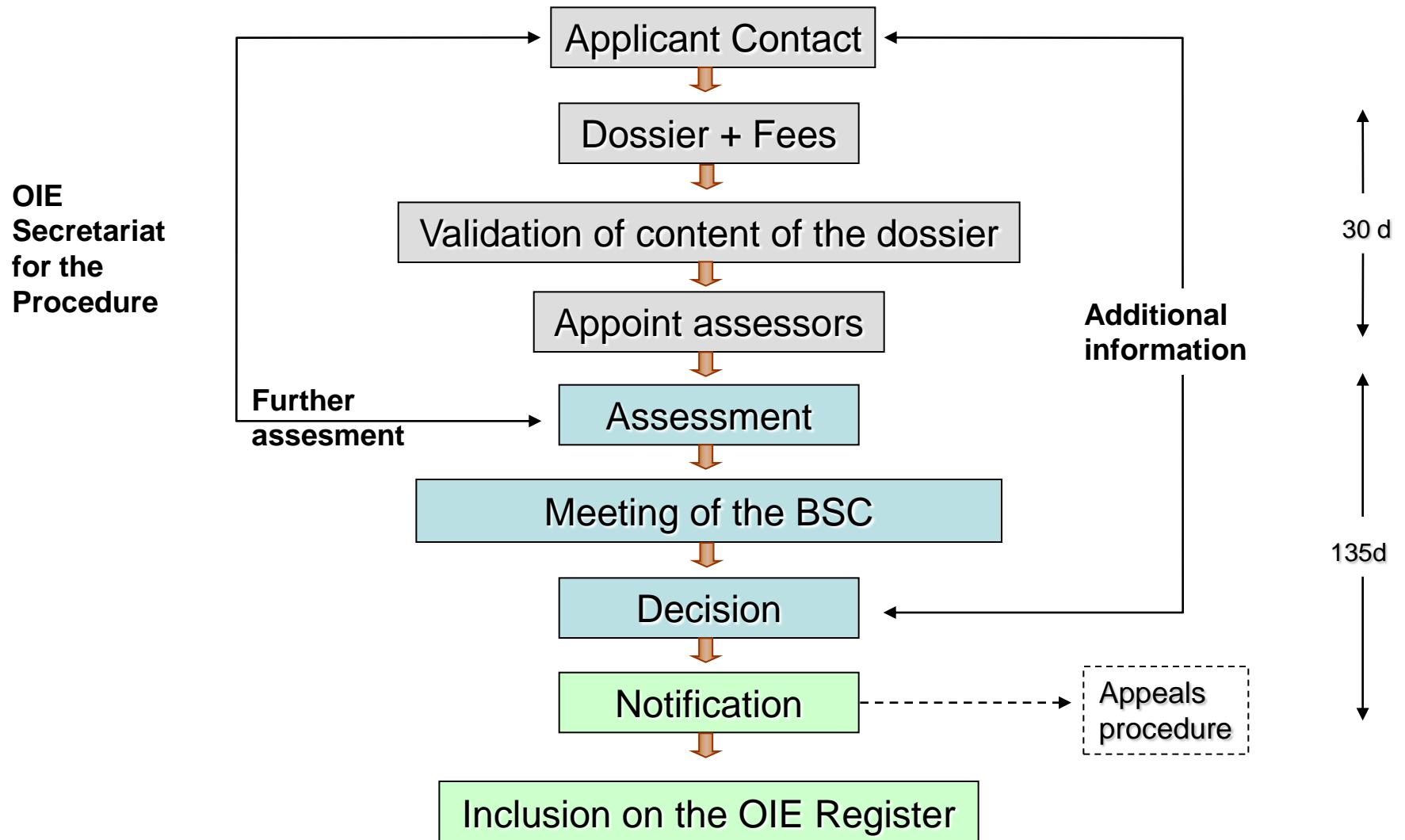
OIE Procedure for validation and certification of diagnostic assays

Briefly 2/2

- Once a dossier has been submitted to the OIE, an administrative revision is carried out to check if the dossier is complete
- Scientific evaluation of the dossier by a group of 2 – 3 independent and internationally recognised experts
- If the kit goes successfully through the procedure, it is proposed by the Biological Standards Commission for **inclusion in the Register** to the vote of the World Assembly of Delegates
- OIE Register currently comprises 6 diagnostic kits certified (kit for Rabies, BSE/TSE, White Spot Disease, AI, Salmonella typing)

OIE Procedure for validation and certification of diagnostic assays

Outline of all the process



OIE Register available on the OIE Web site

The screenshot shows a web browser window displaying the OIE website. The page title is "The register of diagnostic tests: OIE - World Organisation for Animal Health". The URL is <http://www.oie.int/en/our-scientific-expertise/certification-of-diagnostic-tests/the-register-of-diagnostic-tests>. The page features a navigation menu with options like Home, About us, Our scientific expertise, Support to OIE members, Animal health in the World, International Standard Setting, Animal welfare, Food safety, and Publications and documentation. The main content area is titled "Register of diagnostic tests certified by the OIE as validated as fit for purpose". Below this title, there is a paragraph explaining that 'fit for purpose' means the kit has to be validated to a level to show that the kit's results can be interpreted to have a defined meaning in terms of diagnosis or another biological property being examined. A table lists five certified diagnostic kits with columns for Disease, Name of the Diagnostic kit, Name of the Manufacturer, Contact, Type of kit, Purpose(s) validated, Date and Number of registration, Validation studies Abstract Sheet, and Kit insert.

Disease	Name of the Diagnostic kit	Name of the Manufacturer	Contact	Type of kit	Purpose(s) validated	Date and Number of registration	Validation studies Abstract Sheet	Kit insert
Rabies	Platelia Rabies II	Bio-Rad	rabies@bio-rad.com	ELISA	see Resolution No XXX adopted in May 2007 by the World Assembly of the OIE Delegates	May 2007 Registration Number: 20070101	AS Platelia Rabies II	User's manual Quick guide
Avian Influenza	BioChek Avian Influenza Antibody test kit	BioChek UK Ltd	info@biochek.com	ELISA	see Resolution No XXVII adopted in May 2008 by the World Assembly of the OIE Delegates	May 2008 Registration Number: 20080203	AS BioChek AI Antibody test kit	User's manual
White spot disease	IQ 2000 TM WSSV Detection and Prevention System	GeneReach Biotechnology Corp	sales@genereach.com	PCR	see Resolution No XXVII adopted in May 2008 by the World Assembly of the OIE Delegates	May 2008 Registration Number: 20080304	AS IQ 2000	User's manual
Bovine spongiform encephalopathy	Prionics AG - Check WESTERN	Prionics AG	info@prionics.com	Western Blot	see Resolution No XXVII adopted in May 2008 by the World Assembly of the OIE Delegates	May 2008 Registration Number: 20080102	AS Prionics AG-Check WESTERN	User's manual

<http://www.oie.int/en/our-scientific-expertise/certification-of-diagnostic-tests/the-register-of-diagnostic-tests/>

Conclusions

- Framework for a harmonised approach across the world
- Keep on updating the OIE Guidelines and Principles and the Procedure
- Keep on encouraging application of the OIE Standards

Resolution No. XXXII, General Session 2006:

Recognition and implementation of OIE standards for the validation and registration of diagnostic assays by Member Countries

2. Member Countries of the OIE are encouraged to **harmonise their standards** for the validation and registration of diagnostic assays **with the standards, guidelines and recommendations** in the **OIE Manual of Diagnostic Tests and Vaccines for Terrestrial Animals** and where such standards are absent or not yet developed, to **apply the standards in the Manual and in the OIE test register for the registration of such products within their countries.**

Thank you for your attention



Organisation Mondiale
de la Santé Animale

World Organisation
for Animal Health

Organización Mundial
de Sanidad Animal