The Global Health Security Agenda and FAO, the way forward

Henk Jan Ormel,
Senior Veterinary Policy Advisor of the Chief Veterinary officer of FAO

GHSA Steering Group meeting, Geneva, 21 January 2017
FAO’s mandate

Achieving food security for all

FAO’s three main goals are:

• the eradication of hunger, food insecurity and malnutrition;

• the elimination of poverty and the driving forward of economic and social progress for all;

• the sustainable management and utilization of natural resources, including land, water, air, climate and genetic resources for the benefit of present and future generations.
What is GHSA?

GHSA pursues a multilateral and multi-sectoral approach to strengthen both the global capacity and nation’s capacity to prevent, detect and respond to human and animal infectious diseases threats whether naturally occurring or accidentally or deliberately spread.
FAO’s contribution to GHSA

• Expertise on food, agriculture and environment
• Human – food – animal - environmental interface
• A United Nations organization with 95 national offices, 12 regional and sub-regional offices and 5 liaison offices worldwide
• Regional and national register of FAO experts
• Coordination role
• Connection with other global projects, initiatives, frameworks and agenda’s
Worldwide Offices
## FAO Platforms, Tools, Capacity Development Approaches in support of Global Health Security Agenda

### Good Emergency Management Practice (GEMP)

Promotes best practices in preparing for and responding to animal disease outbreaks.

- **GEMP training** on best practices in preparing for and responding to animal disease outbreaks including Emergency Operations
- **GEMP manuals and SOPs**
- **Rehabilitation planning**
- Integrated (table-top and field) simulation exercises
- Promote national joint response team (Veterinary Services & Public health) in case of zoonotic event
- Promotes national/regional disease control in a sustainable manner.

**Tools:** GEMP - Good Emergency Manage Practice: The Essentials - A guide to preparing for animal health emergencies;

**Examples:** Contingency planning (HPAI, RVF, others available) for rapid containment; Risk management training on priority diseases.

### Crisis Management Centre-Animal Health rapid response (CMC-AH)

Provides rapid support to countries experiencing animal disease emergency situations*.

Rapid assessments and advice on outbreak preparedness, management or response, epidemiological investigations, and coordination. Missions are followed by a project development for follow up (on site missions for 8-14 days + follow up assistance for crisis resolution). Since 2007 through December 2015, the CMC-AH has carried out over 81 missions in 43 countries in Asia, Africa, Near East and Latin America.

* In case of zoonotic events, missions are coordinated with WHO/Ministry of Health.

## FAO Platforms and Tools - Contribution to the Global Health Security Agenda

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*: Objectives D2 and D3 together form one action package
# FAO Platforms, Tools, Capacity Development Approaches in support of Global Health Security Agenda

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<th>Mobile devices for real-time surveillance and reporting; Information Platforms</th>
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Augments national and sub-national disease surveillance, reporting capacity, and decision making.
- Provide a mobile technology applications ("apps"), EMA-i, to capture and report disease events in real time
- "mHealth" augment national and sub-national surveillance and reporting to veterinary services
- Adapt technology to country needs; pilot testing (sub-national)
- Develop mobile apps to collect Agricultural data (livestock markets, animal movement)
- Price differential → Animal and commodity prices (driver of risk?)
- Provide FAO EMPRES-i as a National or regional platform for epi-data hosting, management and analyses
- On-site training /Training workshops, field technical support missions.

Examples: EMA-i (Android application) tested and validated in Uganda for priority diseases (see video); joint FAO/IAEA Division platform.

## Mapping and building laboratory capacities

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Assess laboratory capacity and functionality using the [FAO Laboratory Mapping Tool (LMT)](#) to prioritize improvement needs and monitor progress made. This involves:
- On-site evaluations on competencies, structures, finances, volume and nature of activities, collaborations
- LTM has been applied as self or external assessment tool, yearly application of the LMT in over 30 countries in Africa and Asia
- Additional modules (biosafety, AMR, specific disease testing) under finalization
- Mobile LTM application available
- Regional/global LMT dashboard allows FAO to supported laboratories based on all LMT data and other information (documents, activities in the laboratories)
- National dashboard allows each country to record all laboratory scores (national, provincial and district laboratories) and compile national data
- Provide training for LMT focal points to standardize the use of the FAO LMT by all assessors
- Capacity building of the gaps identified by the LMT: on site/regional laboratory training in all fields (disease testing, molecular epidemiology, bioinformatics, sampling, sample shipment, quality assurance (Regional proficiency testing on AI/ND are organized yearly), biosafety/biosecurity, equipment maintenance, capabilities for detecting novel emerging pathogens (including antimicrobial sensitivities and resistance; external quality assessment), sequencing handbook.

Examples: Bioinformatics e-learning; Molecular Epi training

# FAO Platforms and Tools - Contribution to the Global Health Security Agenda

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- P1: AMR
- P2: Emerg/Spread Zoonoses
- P3: Biosafety/security
- P4: Immunizations

**Detect**
- D1: National diagnostic system
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- D3: Real-time biosurveillance networks*
- D4: Rapid reporting to WHO, OIE, FAO
- D5: Workforce - training / deploying

**Respond**
- R1: Emergency Ops Centers
- R2: Links health/law enforcement
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GHSA Steering Group meeting, Geneva, 21 January 2017
### FAO Platforms, Tools, Capacity Development Approaches in support of Global Health Security Agenda

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<th>Regional and Technical Networks</th>
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<tbody>
<tr>
<td>Enhance national, regional, global collaboration and information sharing on surveillance, diagnosis and control measures.</td>
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<td>P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11, P12</td>
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<tr>
<td>- Regional networks on Epidemiology and surveillance; Laboratory diagnosis; Socio-economics</td>
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<td>- Regional networks collaborate with international networks</td>
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<td>- Build trust among neighbour</td>
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<td>- Proficiency testing schemes (multi-country and global) on detection of known pathogens</td>
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Eastern Africa - **EAREN** for epidemiological surveillance systems, **EARLN** for diagnostic veterinary laboratories; West and Central Africa - **RESOLAB** for diagnostic veterinary laboratories and **RESEPI** for epidemiological surveillance systems; Africa - **LSPNet** for livestock economic and policy network at continental level; Mediterranean - **REMESA** (FAO established with OIE for the Mediterranean region); 4 thematic sub-networks have been set up: laboratories (RELABSA), epidemiology (REPIVET), communication (RECOMSA) and socioeconomic (RESEPSA); South Asia - **REC** for epidemiology network, **RLDLs** for network of national diagnostic laboratories; Southeast Asia - **EPI Consortium, HPAI Lab network**; and International - **OFFLU** (OIE/FAO expertise in animal influenza); **VETLAB** network.

<table>
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<th>One Health tools</th>
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<tr>
<td>Operationalize One Health across sectors.</td>
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<td>- “Four-way linking” [in collaboration with WHO and OIE] - public health/animal health; epidemiology/laboratory units; and environmental/ecosystem health, including wildlife</td>
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<td>- Participatory approaches with local stakeholders to determine prioritization efforts in health, improve awareness, hygiene, disease prevention at local level</td>
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<td>- Development of manuals and guidelines, workshops and stakeholder consultation, community outreach</td>
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<td>- Support evidence-based decision tools and advocacy materials for improved One Health approach at national and regional levels</td>
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<td>- Support establishment of national One Health platform and their operationalisation</td>
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<td>- Disease information exchange between various sectors, community based surveillance and innovative service delivery</td>
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<td>- Development of progressive/step-wise approaches to integrated disease prevention and control</td>
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<td>- Integrated one health surveillance at the animal human interface for selected emerging zoonosis</td>
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<td>- Improved surveillance AND diagnostic capacities of potential animal reservoirs (domestic or wildlife)</td>
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**Examples:** For-way linking frameworks established in Bangladesh, Egypt, Indonesia, Viet Nam; Community Animal Health Worker Manuals/Guides; Farmer/Livestock Field Schools; Village Animal Health Clubs, livestock/wildlife, avian influenza (H5N1, H5N8) long distance spread is thought to have related to wild migratory birds.

### FAO Platforms and Tools - Contribution to the Global Health Security Agenda

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## FAO Platforms, Tools, Capacity Development Approaches in support of Global Health Security Agenda

<table>
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<th>Centres of Excellence / FAO Reference Centres</th>
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<th>Action Packages (Relevance)</th>
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Provide advice and support as centres of excellence. Centres of excellence in thematic areas (epidemiology and risk analysis, socio-economics, EIDs, parasitology, virology, vaccinology, bio-risk, bio-informatics), laboratory diagnosis and agent characterization (species or agent focus). Authoritative FAO technical partners for capacity building programmes and technical inputs for strategic developments. Several FAO Reference Centres are also recognized by the OIE or WHO.

### Good production practices (Agriculture, livestock)

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- Develop and disseminate guidelines on good animal husbandry management, health, hygiene and biosecurity practices
- Promote responsible and prudent use of antimicrobial agents
- Farm and farmer association level capacity development
- Promote Public-Private Partnerships (PPP)

Examples: Manual on biosecurity in dairy, poultry, swine sectors, from commercial to family holdings; incorporate health and hygiene, responsible use of medications e.g. antibiotics in Farmer/livestock field schools scheme.

### Trade Facilitation Standards / Legislation

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- Provide technical assistance in promotion of good governance in trade through improve animal production and health
- Strengthening SPS compliance (incentives for economic growth and wealth, and promote commodity based trade)
- Stakeholder consultation
- Standards and Trade. Development Facility (STDF) mechanisms and projects

In support of OIE, Codex, International Plant Protection Convention (IPPC) and World Trade Organization (WTO). Examples: Expert Panel Meeting to develop socio-economic Guidelines for Foot and Mouth Disease Progressive Control

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- **Respond**
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  - R4 Workforce – training / deploying

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**FAO Platforms, Tools, Capacity Development Approaches in support of Global Health Security Agenda**

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**Strengthen sustained essential veterinary laboratory systems at national and regional levels.**

- Strengthen veterinary laboratory policy and legislation taking into account the required national activities (nature, amounts of testing, distribution), animal populations, diseases incidence/prevalence in animals and humans (for zoonoses) and required surveillance
- Support partnerships with private laboratories; Potential for linking this initiative with OIE-Lab PVS results
- Support partnerships/collaboration with livestock industry
- FAO review of prevailing laboratory policies/legislation at national and regional levels have been developed.
- FAO guidelines for strengthened policy/legislation at national and regional levels have been developed. Experts training and expertise on laboratory policy will be provided to countries (current pilot project in Kenya).

**Example:** Strengthening of laboratory policy in Kenya, other African/Asian countries [in discussion]

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<th>Platforms and Networks on Antimicrobial Resistance (AMR)</th>
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FAO/OIE/WHO approach allows for an integrated framework to address AMR in the human, animal and environment domains and facilitates advocacy across sectors Progressive Management Pathway (PMP-AMR).

- Gap analysis
- Baseline captive
- Legislation review
- Mapping producers/manufacturers
- Behavioural studies in different countries
- Surveillance (abattoirs, commodities)

**Tools:** FAO-Laboratory Mapping Tool (LMT), Progressive Management Pathway (FAO-PMP) [in development]

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# FAO Platforms, Tools, Capacity Development Approaches in support of Global Health Security Agenda

## Antimicrobial Resistance (AMR) Surveillance

Strengthen capacities of countries and regions to undertake integrated AMR Surveillance in key food animal value chains. This involves:

- Assessing AMR laboratory capacities at national and regional level
- Supporting AMR laboratory capacity development (equipment, supplies, training) including technical capacity development of laboratory technicians
- Harmonizing sampling and testing protocols at regional and national levels
- Developing national/regional proficiency scheme on sampling and testing protocols
- Providing database support for data management and sharing (can be based on existing Laboratory Information Management Systems)
- Improving capacities of countries to undertake integrated AMR surveillance; linking AMR surveillance with residues testing results
- Assessment of usage of antibiotic in animal health
- Supports national/regional policy/legislation development based on data generated from surveillance activities

**Tools:** Laboratory Information Management System; FAO Laboratory Mapping Tool AMR module (under development)

## Market and Value Chain Analysis

Value chain analysis is key to effectively implement targeted surveillance and disease intervention (from production to marketing).

- A value chain approach to animal diseases risk management ([LINK](#))
- Risk based surveillance manual ([LINK](#))
- Influenza A (H7N9) risk management along the food chain ([LINK](#))
- Mapping influenza A (H5N1) virus transmission pathways and critical control points in Egypt ([LINK](#))
- Value chain analysis activities in Cambodia, Egypt, Viet Nam
- “Impact of avian influenza outbreaks in the poultry sectors of five South East Asian countries (Cambodia, Indonesia, Lao PDR, Thailand, Viet Nam) outbreak costs, responses and potential long term control” ([LINK](#))
- Designing and implementing livestock value chain studies ([LINK](#))
- Rural livelihood and biosecurity of smallholder poultry producers and poultry value chain ([LINK](#))
- Poultry sector reviews ([West and Central Africa, East Africa] / pig sector reviews)

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### FAO Platforms, Tools, Capacity Development Approaches in support of Global Health Security Agenda

#### Risk analysis

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Strengthen targeted risk-based approach in disease control.
- Capacity development and guidelines on qualitative risk assessment
- [Vaccination Planning Tool for avian influenza](#)
- [Risk analysis course/webinars](#)
- [Joint Risk Assessment](#)
- [Regional Risk Assessment](#)

**Examples:** H5N1 HPAI in SE Asia; H7N9 in China and SE Asia; anthrax in Sub-Saharan Africa; Ebola-Reston in Philippines (with WHO); African swine fever in the Russian Federation/Eastern Europe, RVF in East Africa, H5N1 HPAI in West and Central Africa, H7N9 risk assessments, Ebola reservoirs in West Africa

#### Natural Resources Management/Wildlife

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Identification of wildlife/livestock and wildlife/human interface issues; emerging disease threats.
- Monitor disease events in wildlife
- Conduct seasonal and spatial analysis to analyse risk factors
- Surveillance in wildlife/livestock and wildlife/human interface
- Remote sensing/GIS to identify possible wildlife/livestock
- **Reduce risk** in all activities involving domestic, captive exotic and wild birds and their products (H5N1 HPAI)

**Examples:** Manuals on disease surveillance in wildlife ([bats; wild birds](#)), Identify cause of outbreak in animals with zoonotic potential ([Saiga die-off in Kazakhstan 2015](#)), [Bushmeat and human health](#)

### FAO Platforms and Tools - Contribution to the Global Health Security Agenda

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**GHSA Steering Group meeting, Geneva, 21 January 2017**
# FAO Platforms, Tools, Capacity Development Approaches in support of Global Health Security Agenda

## Progressive Control Pathways (PCP)

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</table>

Promote national/regional disease control based on risk management and capacity development of public and private sector cooperation.

Progressive Control Pathway (PCP, Step-wise approaches) in disease management and control to complex animal/zoonotic disease or other threats e.g. AMR, Brucellosis, foot-and-mouth disease, rabies step-wise approach, peste des petits ruminants monitoring tool (PMAT), Risk management training on priority diseases.

Examples: Brucellosis PCP (Central Asia); risk based targeted intervention training (inspection, value chains, investigations, vaccine delivery); determinants in withdrawing vaccination (avian influenza; Viet Nam).

## Participatory epidemiology approaches / syndromic surveillance

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Detection of disease events at early stage and to understand extent of disease outbreak through community outreach and knowledge (strengthen capacities in resource poor environments).

- Active surveillance at local level through the training of veterinarians, and paraprofessionals for syndromic detection of potential threats – particularly useful for remote areas
- Syndromic surveillance (an interactive guide for diagnosis and reporting)

Combines extension work, training and extensive consultation.

Examples: Participatory Disease Surveillance and Response (PDSR) in Indonesia for H5N1 HPAI; Community-Based Animal Health Outreach (CAHO) in Egypt for H5N1 HPAI; Community-based Animal Health Workers (CAHW); Participatory Epidemiology manual (rinderpest, classical swine fever ...)

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FAO Platforms and Tools - Contribution to the Global Health Security Agenda

- Prevent
- Detect
- Respond

- P1 EMERG/Spread Zoonoses
- P2 Biosafety/security
- P3 Immunizations
- D1 National diagnostic system
- D2 Nat and internet surveillance *
- D3 Real-time biosurveillance networks *
- D4 Rapid reporting to WHO, OIE, FAO
- D5 Workforce – training / deploying

*: Objectives D2 and D3 together form one action package
# FAO Platforms, Tools, Capacity Development Approaches in support of Global Health Security Agenda

<table>
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<th>Laboratory Information Management Systems (LIMS)</th>
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Strengthen quality and capacities of national laboratory information. This involves:
- Tool for management of laboratory data
- Customized LIMS platform ([SILAB for Africa](#)) provided to 6 African countries since 2010 (3 has been supported by FAO)
- Improvement of samples accession recording, results management, validation of testing and issuance of laboratory results
- Increases tracking of samples from submission, reporting and compilation of laboratory results; facilitates the linkage between diagnostic results and response in the field, through a shift from paperwork to computerized systems
- LIMS can support stocks management
- LIMS can be linked with field reporting platform (e.g. Mobile devices) and with national disease information system for real-time data sharing (e.g TADinfo) and with national livestock identification and traceability systems (such as in Botswana and Namibia)

## Sample dispatch

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Support member countries’ early response.
- Facilitating sample submission to OIE and/or FAO Reference Centres for pathogen identification, advanced characterisation, vaccine matching tests and for improvement of diagnostic assays
- Providing IATA approved containers/courier payments to countries in need through [EMPRES-Shipping-Service@fao.org](mailto:EMPRES-Shipping-Service@fao.org)
- Supporting IATA training and certification to veterinary laboratory staff
- Advocacy for improved international sample transport environment in collaboration with WHO and OIE

### FAO Platforms and Tools - Contribution to the Global Health Security Agenda

**Prevent**
- P1 AMR
- P2 Emerg/Spread Zoonoses
- P3 Biosafety/security
- P4 Immunizations

**Detect**
- D1 National diagnostic system
- D2 Nat and internet surveillance
- D3 Real-time biosurveillance networks
- D4 Rapid reporting to WHO, OIE, FAO
- D5 Workforce – training / deploying

**Respond**
- R1 Emergency Ops Centers
- R2 Links health/forensics
- R3 Deployment / operations

*: Objectives D2 and D3 together form one action package
FAO Platforms, Tools, Capacity Development Approaches in support of Global Health Security Agenda

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<th>Laboratory Biosafety Programs</th>
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- Support to countries in safe and secure laboratory management and practices; improved biosafety/biosecurity during sampling, transport and testing of samples
  - Biosafety/biosecurity assessment, determination of safety practices in laboratory settings;
  - Biosafety equipment and instrument calibration, maintenance training and certification
  - Review or assistance in elaboration of biosafety SOPs
  - Regional coordination of biosafety activities under the framework of regional laboratory networks
  - Biosafety module of the FAO Laboratory Mapping Tool (with mobile application) to be linked to provide laboratory context, determination of safety practices in laboratory settings, calibration, maintenance and certification of instrument and equipment
  - Recurrent training and care for biosafety officers and other staff
  - Regional Biosafety Program for SE Asia (developed, further sustained, including initial risk assessments per pathogen followed by laboratory assessments to improve biosafety; biosafety cabinets assessment and certification; regional guidelines/strategy to implement standards; biosafety/biosecurity training).
  - Regional Biosafety Program for Africa: to be developed in African region
  
Implementation under the auspices of Regional Laboratory Networks; animal-human interface for emerging and re-emerging zoonotic diseases based on international standards (WHO, ISO)

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Enable sharing of laboratory results on a real-time basis to analyse trends and to predict changes.
- Share laboratory results (sequences, serology, PCR) on a real-time basis among laboratories and researchers
- Use of common analytical tools
- Link sample accession with epidemiological meta-data, laboratory results, joint analysis, interpretation and communication.
- Inter-operability between epidemiological (EMPRES-i) and sequence databases (OpenFlu, IRD).

Examples: IVM on line (Indonesia); IRD workbench (http://www.fludb.org/brc/workbench_landing.spg?decorator=influenza&method=WorkbenchDetail); EMPRES-i Genetic Module linked with OpenFlu, OpenFMD.

Food and Agriculture Organization of the United Nations
### Field epidemiology training programmes for veterinarians (FETPV)

Strengthen national epidemiology capacity, disease recognition and investigation procedures.

24 month on-the-job programme with mentorships, periodical schooling and field exercises, in close collaboration with counterparts in public health; certificates upon completion and Master Degree can be awarded by university counterpart, where agreed.

The FETPV provides a series of training through periodical schooling and field exercise on:
- Field outbreak investigation methods and epidemiology training
- Surveillance, design, implementation and evaluation
- Risk assessment
- Sample collection and submission protocols (including epidemic or emerging diseases of unknown aetiology)
- Field pathology training (links with One Health, wildlife, AMR, EIDs)
- Needs assessment tool for epidemiological capacities at national levels

Examples: Regional FETPV is jointly hosted by the Government of Thailand. The programme has been adapted for China FETPV and Applied Veterinary Epidemiology in Cambodia and Viet Nam; FETPV in East Africa and India

### Field Disease reporting capacities

Mitigate disease impact through early detection of disease outbreaks.

- Promote good practices for in-country timely disease reporting
- Enhancing regulatory frameworks for reporting (legislation, notification at country level, information systems)
- Establish policies, mechanisms, good practices and incentives for disease reporting at the animal/human/eco-system interface.

- Capacity development for enhancing disease reporting include:
  - FETPV
  - Training on interoperability
  - Enhancing interoperability and linking event-based and indicator-based surveillance systems to support risk assessment, detection and reporting
  - Incentives for passive reporting and support to active surveillance including four-way-linking (4WL), field-lab.

Examples: Compensation, participatory approaches, regulatory frameworks, stakeholders engagement, risk communication, good practices, veterinary legislation

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**FAO Platforms and Tools - Contribution to the Global Health Security Agenda**

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FAO Platforms, Tools, Capacity Development Approaches in support of Global Health Security Agenda

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Alert member countries on disease risk analyses to facilitate disease prevention, risk mitigation and early response. The FAO GLEWS component emphasizes:
- Perform trend analysis, risk analysis, identification or risk factors and drivers, risk assessments, rumour tracking through GLEWS+ Platform.
- Collect data on specific priority diseases to conduct in-depth analyses
- Share analysis/assessment results on GLEWS priority diseases with member countries in timely fashion to mitigate/prevent disease impact.

FAO hosts the FAO-OIE-WHO GLEWS+ Platform incorporates data and information from OIE’s WAHIS/WAHID, FAO’s Global Animal Disease Information System (EMPRES-i), FAO’s Global Livestock Production and Health Atlas (GLIPHA) and information from WHO, which serves for disease intelligence, interoperability and data sharing on transboundary animal diseases and major zoonoses.

Examples: GLEWS+ Platform; Trend analyses and recommendations for prevention (global and regional interest) on a particular subject of animal (and possibly public) health importance available: Global Animal Disease Intelligence Report; EMPRES Watch; Focus On; H7N9 update, FMD monthly / annual reports (EuFMD), Joint FAO/IAEA Division - a build in system for data submission to FAO EMPRES and OIE WAHIS.

FAO Platforms and Tools - Contribution to the Global Health Security Agenda

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Challenges for 2017

• GHSA is One Health
• GHSA is more than the International Health Regulations (IHR2005)
• From strategizing to practice
• To move from meeting room to field activities
• Sustainable funding of activities
• Making the JEE tool more multi-sectoral
• Follow up of JEE assessments
• Involvement of more countries
• Private – public partnerships
Core message

Food and agriculture need to be more involved

In the

Global health Security Agenda