Controlling emerging and re-emerging infectious diseases, animal health approach

FAO ECTAD Indonesia

Bogor, 19 April, 2012
Background

- Since HPAI was declared in Indonesia in 2004, many countries and international organization assisted the government to control the disease.
- In 2005 FAO assisted through a project namely “Immediate Assistance for Strengthening Community Based Early Warning and Early Reaction to HPAI Outbreaks”
- Since then assistance to control HPAI was continued up to present.
- Further an integrated animal disease control (HPAI, rabies, anthrax, brucellosis, hog cholera) is needed therefore, FAO facilitate DGLAHS to strengthen National Veterinary Services (NVS).
- As Bali island was infected by rabies in late 2008, FAO-HQ dispatched a mission to Bali.
- Since 2011 assistance from FAO, USAID and AusAid were provided to DGLAHS and Bali Provincial Livestock Services to support rabies control in Bali and were continued in 2012.
Control HPAI in Indonesia
Goal and Purpose

• Goal: To control HPAI in Indonesia

• Purpose: To enhance the capacity and ability of the GOI and partners to control HPAI
Village-based poultry

- **Outcome:** Increased empowerment of village residents in biosecurity and HPAI prevention and control through an expansion of a government-funded, streamlined PDSR system

- **Outputs**
  - **Communication materials** to support PDSR activities in prevention and control of HPAI distributed and guidance provided (all PDSR locations)
  - **PDSR system streamlined** and revised to incorporate more community-based decision-making (Bali, West Sumatra, Riau)
  - LDCC/PDSR operational **budget provided by local government** (all PDSR locations)
  - **PDSR database system extended to district level** for improved local disease control management (Bali, West Sumatra, Riau)
Commercial Poultry

• Outcome: The number of HPAI-infected poultry from commercial farms is reduced through improved cooperation among all stakeholders

• Outputs
  • Trust built through establishment of effective communication and coordination between government and commercial poultry industry (DIY, Central Java, Lampung)
  • Confidential database of outbreak information from the commercial farms established (DIY, Central Java, Lampung)
  • Increased competency in commercial poultry health in both public and private sectors (DIY, Central Java, Lampung, and parts of East and West Java)
  • Best practices for commercial poultry health advocated (DIY, Central Java, Lampung, East Java, West Java, and Banten)
  • Private sector-funded compensation system trialed (location to be determined)
Market Chain

- **Outcome:** Reduced H5N1 virus at selected critical control points in the market chain through improved biosecurity practices by related stakeholders

- **Outputs:**
  - Improved surveillance system along the market chain
  - Improved biosecurity along post-production market chain (from farm gate to table)
  - Increased demand for healthy poultry end-product

- **Regions:** Western Java and Central Java
Cleaning and disinfection of poultry crates at small collector yard
Cleaning and disinfection at slaughterhouse
Cleaning day at Kramatjati market
Cleaning day at Bunder market, Sragen
B. Infrastructure improvement

Rehabilitation at Anyar market

Before

After
B. Infrastructure improvement

Rehabilitation at Kranggan market

Before

After
B. Infrastructure improvement

Rehabilitation at Parung Panjang market

Before

After
Upgraded slaughterhouse at Rawa Kepiting
Offloading in East Jakarta of native chickens originating from Semanggi CY
Ducks and other waterfowl

• **Outcome:** Improved biosecurity practices in backyard and commercial duck-raising

• **Outputs:**
  - Best practices in duck health management advocated (nationwide)
  - **Duck epidemiological studies** implemented in low incidence areas in Indonesia to understand the reservoir role of ducks (NTB or Bali)
Vaccine Development

- **Outcome:** Reduction of HPAI in poultry farms through widespread use of locally produced vaccines based on local antigens and new strains monitored

- **Outputs:**
  - Effective vaccine in use by farmers
  - Partnership established between commercial poultry industry & government for sharing of virus isolates
  - Sustainable laboratory system established to monitor viruses and identify potential candidate for updated HPAI vaccine

- **Regions:** nationwide
Programme Management

- **Outcome:** Strengthened veterinary services at central, provincial and district levels with increased commitment from related stakeholders

- **Outputs:**
  - National Veterinary Service (NVS) successfully piloted in 3 provinces for selected priority diseases (Bali, West Sumatra, Riau)
  - Program effectively managed with respect to finance, administration, technical inputs and partner relations (donor and GOI)
  - Technical program supported to maximise stakeholder participation and build capacity of animal health services
  - Epidemiological studies conducted to better inform disease control and support government strategic planning
  - Technical support provided to DAH for HPAI policy development
  - Contribution made to the Komnas Zoonosis One Health communication and advocacy strategy
NVS pilot areas

- Bali
  - Klungkung district
- West Sumatera
  - Agam district
- Riau
  - Dumai district
What should NVS pilot look like?

- Integrated animal disease control programme
- Locally driven
- Veterinary authority
- Sustainable
Integrated animal disease control programme

- Disease control capacity (surveillance, outbreak control, prevention) for Big 5+1 diseases
  - Establish surveillance for Big 5+1
  - Support control of HPAI and rabies, using methods already developed
- Integrate all local government vets (Puskeswan) with PDSR within NVS
- Train non-vet PDSR as paravets
- Integrated information system (database, forms, flow)
  - Single interface for all animal disease surveillance and control information
  - Expand SIKHNAS to enable syndromic reporting
Integrated Rabies Control Program:

The Bali Experience
Dog Vaccination and Campaign Management for Effective Rabies Control
Background: rabies on Bali – a brief history

- Bali Island historically free from rabies until 2008
- Dogs are common, mostly unconfined
- 23 November 2008: first human case reported
- 26 November 2008: first dog case reported in Bukit Peninsula, Badung District
- In 2009-2010: spread to all 9 districts of Bali
- 2008 – mid-2010: mixed strategies used by local government Livestock Services to try to control rabies
  - Targeted vaccination
  - Dog elimination
- 137 human deaths so far
Background: more recent history

• Sept 2010 – March 2011: Bali local government cooperation with BAWA for 1st round of mass dog vaccination
  • WSPA and AusAID funded

• May – Sept 2011: 2nd round of mass dog vaccination led by GOI
  • Primarily funded by GOI
  • Additional support from AusAID, USAID, and FAO

• End of March – June 2012: 3rd round mass dog vaccination led by GOI
  • Primarily funded by GOI
  • Additional support AusAID, USAID, and FAO
Bali Rabies Control Programme: Methods

• Goal to be achieved:
  • Eradicate rabies from Bali Island

• ‘Simple’ control strategy
  • Clear focus: dog vaccination
  • Clear operational goal: vaccinate at least 70% of dogs in each sub-village
Bali Rabies Control Programme: Methods

- Well-managed and coordinated strategy implementation
  - Modified Incident Command System (ICS)
    - Clear divisions of responsibility
    - Still respecting local autonomy
  - Campaign-specific SOPs and in-service trainings
    - SOPs developed to operationalize the control strategy
    - Required competencies identified by reviewing SOP
    - In-service training modules based on SOPs → training with clear focus on work/output following training
Bali Rabies Control Programme: Methods

- Well-managed and coordinated strategy implementation
- **Daily** management of vaccination activities via SMS
  - Daily SMS reporting to provincial coordination unit
    - Vaccination tallies
    - Post-vaccination survey results
  - Daily review of vaccination and survey results from each sub-village
  - Daily meeting of provincial coordinators with decision-making on whether coverage in sub-village is sufficient or if immediate revaccination is necessary
- SMS reporting supplementary to standard paper reporting
Bali Rabies Control Programme: Methods

- Well-managed and coordinated strategy implementation
  - Regularly scheduled weekly and monthly management and coordination meetings
    - Held at provincial level
    - Enabled national government to maintain coordination with local government despite lack of official authority (because of local autonomy)
Bali Rabies Control Programme: Methods

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Bali Rabies Control Programme: Methods

- And what about novel technologies???

- Dog-catching nets!
  - Developed locally by BAWA
  - Inexpensive, produced locally
  - Dog catcher can be trained quickly and inexpensively
  - Enables cost-effective increased coverage to be achieved in outside dogs (roaming, stray)
Results: So has it been successful?

- Total dogs vaccinated during 2\textsuperscript{nd} campaign
  - 234,974

- Estimated dog population
  - 280,000 – 330,000

- Estimated vaccination coverage
  - 71 - 84\%
Estimated dog vaccination coverage of 2\textsuperscript{nd} campaign based on post-vaccination surveys
Impact indicators

- Animal rabies cases
  - Decreased by 77% from 2010 to 2011
- Human rabies cases
  - Decreased by 72% from 2010 to 2011

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
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<tbody>
<tr>
<td>Animal cases</td>
<td>421</td>
<td>98</td>
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<tr>
<td>Human cases</td>
<td>82</td>
<td>23</td>
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</table>
Vaccination and animal cases

Dogs vaccinated and animal rabies cases by month, Bali, Jan 2010 - Dec 2011

- Number of dogs vaccinated
- Number of rabies cases

Legend:
- Total Dog Vax
- Animal
Conclusions

1. Rabies is readily and rapidly controllable with currently available technology and technical resources.

2. Increased focus on simple vaccination strategy, a focus on ensuring outside dogs are vaccinated, and closely monitored vaccination campaigns can bring about dramatic reductions in both animal and human risk to rabies.
Integrated Bite Case Management for Rabies in Bali
Human cases, 2008-2011

Human rabies cases on Bali, 2008-2011

Year
Human cases

2008 2009 2010 2011
Why Integrated Bite Case Management (IBCM)?

- **Goal:** to increase communication between animal and human health services following a human bite case
- **Desired impacts**
  1. Reduction in clinical rabies cases in humans
  2. Increase animal surveillance sensitivity
  3. Target emergency dog vaccination to locations with confirmed rabid dogs
**IBCM Methods**

- Builds upon foundation developed by Participatory Disease Surveillance and Response (PDSR) and District Surveillance Officer (DSO) programs
  - **PDSR**
    - Based in district veterinary/livestock services office
    - HPAI prevention and control in village poultry
    - Utilizes participatory approaches to build trust with communities
    - Active and effective PDSR program in all districts of Bali
    - **All PDSR-trained officers fully trained in rabies rapid response**
  - **DSO**
    - Based in district human health office
    - Originally designed to partner with PDSR for active surveillance of suspect H5N1 human cases (e.g. ILI) following detection of HPAI in poultry
IBCM Methods

• Conduct MOA-MOH coordination meeting to develop and agree on the IBCM concept
• Develop communication protocol
  • Between human health center where human bite case presents and PDSR/RR team in the same district
  • Utilize SMS to expedite and simplify communication
• Conduct joint 2-day training of animal and human health staff
  • Human health center (Puskesmas) staff
  • Animal health center (Puskeswan) staff
  • Rabies referral center staff
  • PDSR, DSO
• Utilize participatory training techniques
  • Use PDSR/rabies Government of Indonesia Master Trainers
  • Build trust between animal and human health colleagues
  • Improve retention of training material
• Conduct follow-up mentoring visits
  • Observe activities in both Puskeswan and Puskesmas
  • Facilitate joint animal-human health meeting at district level
# IBCM-trained officers

<table>
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<tr>
<th>Districts</th>
<th>Health Services</th>
<th>Livestock Services</th>
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<tbody>
<tr>
<td>Bangli</td>
<td>8</td>
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<tr>
<td>Badung</td>
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<tr>
<td>Gianyar</td>
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<td>20</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>87</strong></td>
<td><strong>76</strong></td>
<td><strong>163</strong></td>
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Qualitative assessment

• Markedly improved coordination between animal and human health sectors
  • Communicating daily
  • More frequent interactions between animal and human health staff

• No new reports of bitten humans not receiving post-exposure treatment following presentation to human health center

• Increased appreciation for roles played by partner sector
  • Rapid response investigations by animal health can indicate if continued post-exposure treatment is necessary
  • Human health sector notifications can trigger surveillance investigations to detect and test suspect rabid animals
Pemerintah Kabupaten Bangli
Dinas Kesehatan
Puskesmas Bangli
Desa Tamanbali - Bangli
PUSKESWAN KEC. BANGLI

JL. BRIGJEN NGURAH RAI NO:28
TELP. 0366 : 93758
Quantitative indicators

- Number of rapid response investigations
- Number of submissions of suspect rabid animals to DIC laboratory for diagnostic testing
Response to Human Bite Cases

Number of rapid response per month

IBCM training

Food and Agriculture Organization of the United Nations
Animal Production and Health Division
Approximate 4-fold increase in both submissions and positives cases detected
Lessons Learned

- Keep program design as simple as possible (KISS!)
- **Focus on health outcome** that would clearly benefit from One Health approach
- Build upon platform established for HPAI control
- IBCM results in **immediate improvements** in rabies bite case management
  - easily appreciated in both health sectors, and by the communities which receive better health services
- **Immediate success** also appears to be leading to increased stakeholder **motivation** and **willingness** to work together on more challenging health issues which would benefit from a One Health approach
Rabies mass vaccination round 3
Goal: No new animal or human rabies cases by the end of 2012

Summary of key changes for 2012

- Round 3 vaccination more focused on outside dogs to significantly increase vaccination coverage in the target population
- Post-vaccination surveys modified
  - Village-level after all banjars vaccinated
  - Outside dogs only
- Introduction of post-campaign (sweeping) vaccination
  - Maintain coverage in outside dogs
  - Increase coverage in puppies