The Progressive Control Pathway for FMD (PCP-FMD): a Tool for Developing Sustainable Long Term National and Regional FMD Control

Presented by Keith Sumption – with acknowledgements to PCP team in FAO, EuFMD and OIE:

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Summary

PCP-FMD

- In use since 2008 – FAO-EuFMD
- Since 2011, Joint FAO-EuFMD-OIE Tool
- 5 stages
- Outcome oriented, evidence based
- Strategy development
- Gap analysis
- Comparative
- Work in progress:
  - Tools for assessment
  - Linkages to PVS
FMD – a real disease, an all too common experience - and preventable
Some history: what has changed in 10 years?

June 2002: 10 years ago:
• International Symposium on FMD Control Strategies (OIE/IABS, Lyon)

Agreed upon:
• The need for regional programmes

Gaps:
• How to achieve investment
• Lack of institutional framework (FAO/OIE)
• Lack of framework for strategic planning
• Lack of solutions appropriate to endemic regions
2003- HPAI Crisis

2004- GF-TADS and FAO: OIE Agreement

2005- Increasing regional GfTADS meetings, PVS...

On FMD:
2007-8: Seven virus pools concept – defines regions at common risk
2008: Progressive Control Pathway for FMD (PCP) first applied
2009: OIE/FAO Global Conference, Paraguay
   - supports development and evaluation of the PCP
   - FMD control – national responsibilities, public good
2011: PCP-FMD as a Joint Tool, Global FMD Working Group established
Becoming realistic: recognising the big issues for endemic countries

- lack of incentives at national level
- lack of incentives at producer level to invest in prevention
- lack of opportunity to purchase vaccine (state controlled access, limited or no suppliers, cold-chain issue)
- lack of technical advice to guide vaccine purchase
- commonplace high risk situations: open borders/classical transboundary rangeland issues, and wildlife-domestic interface
- lack of confidence in the vaccination approach to area wide FMD control

FMD is preventable, common and damaging – but who benefits and who should pay for control?
Control issues – who makes the decisions?
Public and private need to pull together
Recognising the behaviour challenge: FMD control – what’s in it for me?
Recognising the market chain challenge

• “if I was vaccinated, I would be less risk when traded”
Recognising the scale of under-reporting

Wagging fingers does not change behaviours

Under-recognition of impacts
Climbing enormous mountains is best done in stages
Faced with such challenges...we needed a framework that would be:

- **Simple** – to communicate, and apply
- **Comprehensive** – technically sound, critical factors for success are addressed
- **Credible** – progress must be validated with evidence
- **Progressive** – easy to enter, each stage a base for progress
- **Risk based** – with focus on optimising impact of limited resources, avoid prescriptions
- **Rewarding** – potential gains from every Stage
- **Objective** – promoting and rewarding active monitoring and the use of evidence
- **Environmentally neutral** – and part of the solution to develop integrated approaches involving wildlife

PCP- FMD
2011: One Framework – from endemic to free without vaccination. 

*In achievable Stages.*

Getting started:

Policy, Strategy, Implementation, Monitoring, Evaluation

Stage 3: *option to apply for OIE endorsed National FMD Control programme*

OIE recognition and endorsement options

FAO/OIE GLOBAL CONFERENCE ON FOOT AND MOUTH DISEASE CONTROL

BANGKOK, THAILAND 27-29 JUNE 2012
PCP – stepwise along the road

- Country Stages - facilitate progress monitoring
- at national and regional level
- Global scale - across Regional Roadmaps

*and at every stage generates information for risk assessment*
Outcome 1

All husbandry systems, the livestock marketing network and associated socio-economic drivers are well described for FMD susceptible species.

Animal movements are understood.

"Thoroughly described" means information is available about numbers, origin and destination, reasons (drivers or motives) for the movement and any seasonal patterns.

Questions

1.1 Are the movements of the key livestock species thoroughly described?
1.2 Are movements of cattle within the country thoroughly described?
1.3 Are movements of small ruminants within the country thoroughly described?
1.4 Are movements of swine within the country thoroughly described?
1.5 Are movements of cattle into the country thoroughly described?
1.6 Are movements of small ruminants into the country thoroughly described?
1.7 Are movements of swine into the country thoroughly described?
1.8 If there is transhumance or nomadic peoples, are the associated animal movement patterns thoroughly described?
1.9 Have key stakeholder categories involved in cattle production been identified?
1.10 Have key stakeholder categories involved in small ruminant production been identified?
1.11 Have key stakeholder categories involved in swine production been identified?
## 2012 Roadmap - provisional

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**Notes:**
- **Kazakh:** 1 = Provisional, 2 = Not yet prepared, 3 = Finalized, 4 = Approved, 5 = Approved
- **Kyrgyz:** 0 = Not yet prepared, 1 = Provisional, 2 = Not yet prepared, 3 = Approved, 4 = Approved
- **Tajik:** 1 = Provisional, 2 = Not yet prepared, 3 = Approved, 4 = Approved
- **Uzbek:** 0 = Not yet prepared, 1 = Provisional, 2 = Not yet prepared, 3 = Approved, 4 = Approved
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- **Thrace (TR):** new = Not yet prepared
- **Marmara Aegean (TR):** 2 = Provisional
- **Central Anatolia (TR):** 2 = Provisional
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Eastern Africa

Vision for the Eastern Africa Roadmap for FMD control:

• “An East African region in which FMD will be under control and approaching disease freedom (PCP-FMD Stage 3) in the majority of member states by 2020, with zonal or country freedom (PCP-FMD Stage 4) being reached in some parts of the sub region””
SAARC Regional Roadmap meeting
Application of the PCP-FMD in Roadmap development – and national target setting -2012

Application of the Progressive Control Pathway for FMD in 2012

Legend:
- PCP Stage 1
- PCP Stage 2
- PCP Stage 3
- Applied to OIE for endorsement of control program
- PCP project planned - no Roadmap
- Roadmap planned
- Established project applying PCP
The PCP in practice

Use as a Tool - defining activities and gaps.
Assessment.
PCP Stage 1 Focus: “To gain an understanding of the epidemiology of FMD in the country and develop a risk-based approach to reduce the impact of FMD”

Comparable with Risk Assessment
Stage 1 of the PCP: 8 outcomes

1. Husbandry systems are described and understood
2. A ‘working hypothesis’ of how FMD virus circulates in the country has been developed
3. Socio-economic impact has been estimated
4. The most common circulating strains of FMDV identified
5. Progress towards an enabling environment for control activities
6. Transparency and commitment to regional FMD control
7. Important risk hotspots for FMD transmission are identified
AND TO PROGRESS TO STAGE 2:

8. A strategic FMD control plan that has the aim of reducing the impact of FMD in at least one zone or husbandry sector is developed
Stage 1: example of surveillance objectives taken in one country

- Establish database about FMD (sero) prevalence
- Incidence of recent virus infection at one-year interval
- Identify high- and low-risk areas.
- Estimate the villages and the within-village prevalence in 6:18 month in old large Ruminant and non-vaccinated small ruminant.
- Identify risk-factors for FMD infection
- Provide data to inform strategy development
Risk factors for testing FMD-NSP antibody positive cattle and buffalo calves

- Manure dealing
- Clinical FMD signs in village
- Transported into village
- Testing FMD-NSP positive
- No relation with age
Risk factors for testing FMD-NSP antibody positive sheep and goats

Veterinary clinic

Animal market

Testing FMD-NSP positive

Cattle and buffalos in the same household

Increasing age
Stage 1 Understanding movement of animals and identifying critical control points for FMD

Effective control HERE can prevent spread downstream
Priority setting based on impact and risk

High impact of FMD

Low impact of FMD

Low risk of getting FMD infection

High risk of getting FMD infection

Dairy farms

Common villages

Beef farms

Trading villages
Big decision point - developing national strategy

• Requires:
  – Epidemiology understanding
  – Public and private stakeholder issues identified
  – Impact of FMD understood
  – Control options identified and costed
  – Funding identified - public and private willingness, cost-recovery
  – Responsibilities clear and capacity to delivery: public and private
  – Objectives of the Strategy identified – national, and sector
  – Consultation and review process
## Monitoring progress through Stage 1 – example of self-assessment

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To have a comprehensive plan to gain insight into the epidemiology and socio-economic impact of FMD
Pakistan assessment for FMD PCPC Stage I

8. Strategic FMD control plan
7. Identification of "Hotspots"
6. Commitment to regional approach
5. Strengthening Veterinary Services
4. Circulating strains
3. Socio-economic impact
2. FMD distribution & hypothesis
1. Value chain analysis
Plan to study of epidemiology + soc-...

0%  50%  100%

- Percentage achievement-required
- Percentage achievement-recommended
Strategic FMD control plan written

1) Susceptible host: ميژباني كه عامل بيماري در ان بتواند ايجاد بيماري باليني بنمايد.

2) Contact transmission: نوعي از انتقال بيماري در اثر تماس. انتقال كه در اثر تماس مستقيم يا غير مستقيم بين حيوان آلوده و حيوان حساس ايجاد مي شود. انتقال از طريق تماس مستقيم (direct contact) در بيماريهاي آميزشي Indirect مي باشد و انتقال از طريق تماس غير مستقيم (contact) در اثر آلودگي حيوان
PCP Stage 2 Focus: “To implement risk based control measures such that the impact of FMD is reduced in one or more livestock sectors and/or in one or more zones”

Comparable with sector level Risk Management
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Comparable with sector level Risk Management
PCP Stage 2 - examples of national strategies

- **FMD as a public good**
  - State supported vaccination to reduce DISEASE
  - State supported FMD control zones to protect the rest of the population (HIGH RISK areas)

- **FMD as a private good:**
  - Emphasis on private sector action to protect themselves
  - Private sector (stakeholders) can purchase quality vaccines
  - Public role is to monitor FMD risk, license vaccines, and communication.
High impact of FMD

Low risk of getting FMD infection

Vaccination of calves before trading
+ mass vaccination 3x/year

Common Villages
Vaccination of calves (before trading)

Animal movement restriction

Dairy farms

Trading Villages
Mass vaccination 3x/year

Beef farms

Low impact of FMD

High risk of getting FMD infection

Mass vaccination 3+x/year,

Dairy farms

Beef farms
Stage 2 of the PCP: 5 outcomes

1. **Ongoing monitoring** of circulating strains and risk in different husbandry systems
2. Risk-based **control measures are implemented** for the sector or zone targeted, based on the FMD strategic control plan developed in Stage 1
3. It is clearly established that **the impact of FMD is being reduced** by the control measures in at least some livestock sectors and/or zones
4. There is further development of an **enabling environment** for control activities

AND TO PROGRESS TO STAGE 3:

5. **A revised, more aggressive control strategy that has the aim of eliminating FMD from at least a zone of the country has been developed**
## Monitoring progress through Stage 2 – example of self-assessment

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Criteria</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Outcome 1</strong></td>
<td>1.1 Has the <strong>incidence</strong> of FMD been estimated for <strong>one or more regions</strong> (e.g. province, district) of the country, using robust epidemiological data collected within the last 12 months?</td>
<td></td>
</tr>
<tr>
<td><strong>Ongoing monitoring of circulating strains and risk in different husbandry systems</strong></td>
<td>1.2 Has the <strong>incidence</strong> of FMD been estimated for <strong>each and every region</strong> of the country, using robust epidemiological data collected in the last 12 months)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.3 Has the incidence of FMD been estimated in one or more <strong>husbandry systems</strong>, using <strong>robust epidemiological data</strong> collected in the last 12 months)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.4 Has the incidence of FMD been estimated for <strong>each and every husbandry system</strong>, using robust epidemiological data collected in the last 12 months)</td>
<td></td>
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<tr>
<td></td>
<td>1.5 Has an <strong>NSP serosurvey</strong>, specifically designed to estimate FMD incidence been done in the last 12 months?</td>
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<tr>
<td></td>
<td>How many <strong>outbreaks</strong> have been clinically reported in the last 12 months</td>
<td></td>
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<tr>
<td></td>
<td>1.6 For how many outbreaks has the <strong>serotype</strong> been identified? (O, A, Asia-1)</td>
<td></td>
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<tr>
<td></td>
<td>1.7 For how many outbreaks has the <strong>virus</strong> been completely <strong>characterized</strong> in the last 12 months (FMD strain identified, sequenced, vaccine matching done)</td>
<td></td>
</tr>
<tr>
<td><strong>Quality assurance</strong></td>
<td>1.8 Did these <strong>isolates</strong> originate from <strong>different regions</strong> of the country?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.9 Did these <strong>isolates</strong> originate from different <strong>husbandry systems</strong>?</td>
<td></td>
</tr>
</tbody>
</table>

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*Outcome 2*
Turkey: Stage 2

- 5. Strategic FMD Elimination plan
- 4. Enabling environment
- 3. Reduced FMD impact
- 2. Risk-based control strategy implemented
- 1. Ongoing monitoring
- Min. requirements for Stage 2

Red: % recommended
Blue: % required

0% 20% 40% 60% 80% 100%
2010 : NSP PREVALENCE – small ruminants

% 
0-5 
5-10 
10-20 
20-40 
40-80 

FAO/OIE GLOBAL CONFERENCE ON FOOT AND MOUTH DISEASE CONTROL
Big Decision Point – on the move to Stage 3

• In Stage 2, the aim is to provide services to control FMD as a disease
  – Could be sector based with limited Government involvement in delivery
  – Monitoring is sufficient

• In Stage 3, the aim is to eliminate FMD from at least a zone of the country
  – Requires a comprehensive programme and capacity to deliver
  – Not only vaccination
  – Social impacts may be higher (e.g. movement restrictions)
  – Decision needs a comprehensive review of costs, benefits, stakeholder issues and risks

• Big Decision Point! Keep under review in Stage 2
PCP Stage 3 Focus: “Progressive reduction in outbreak incidence, followed by elimination of FMD virus circulation in domestic animals in at least one zone of the country”
Stage 3 means

- Implementation of surveillance: which differs from monitoring (PCP stage 1-2)
- 'Positive surveillance finding - results in a response action
- Aim to eliminate circulation in zone/country
- Can have zones in Stage 3 and others at 1-2 in same country
- Assessment therefore requires evidence from surveillance indicators of follow-up actions
## Assessment of PCP Stage 3

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Criteria</th>
<th>Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome 2</td>
<td>Rapid detection</td>
<td>2.1 Are there any incentives to encourage reporting of suspect cases?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.2 Have suspected cases of FMD been reported to the veterinary authorities by public and private stakeholders in the past 12 months?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.3 Have there been public awareness campaigns to encourage reporting of suspect FMD?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.4 Is there a dedicated telephone number for people to use to reported suspected FMD cases?</td>
</tr>
<tr>
<td></td>
<td>Monitoring the implementation of control measures</td>
<td>2.5 Is there an established program to monitor the implementation of control measures, such as vaccination performance? (coverage, efficacy, matching to field strains)</td>
</tr>
<tr>
<td></td>
<td>Response to all outbreaks</td>
<td>2.6 Were control measures to limit FMD spread implemented in response to every confirmed FMD outbreak (in the zone(s) where FMD eradication is targeted)?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2.7 Are outbreak investigation reports available for every suspected outbreak? These reports should identify the possible source of infection and premises to which spread might have occurred.</td>
</tr>
</tbody>
</table>

The FMD control plan developed at the end of PCP Stage 2 is implemented, resulting in rapid detection of, and response to, all FMD outbreaks in at least one zone in the country.
It requires more than just vaccination

- Mass vaccination
- Biosecurity measures
- Animal movement restriction
- Quarantine
Managing high risk movements-and stakeholders
How best to target vaccination when vaccination is taken as one of the components of FMD control?
High impact of FMD

Vaccination of calves before trading + mass vaccination 3x/year
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Low risk of getting FMD infection

High risk of getting FMD infection

Animal movement restriction
Endemic Free

Self-assessment tool developed and managed by FAO, supported by OIE

Endorsement of official FMD control programmes

Official procedures developed and managed by OIE
AND (TO Repeat) – to PROGRESS TO STAGE 4:

There is a body of evidence that FMD virus is not circulating endemically in domestic animals within the country or zone
Assessment of national PCP stage

Don’t forget me when you make your paper strategies
Principles of Assessment

- Based on PCP Guidelines
- Transparent, Evidence-based
- Consistent: regionally and globally
- Not too arduous
Tool 1: Self Assessment

• Written questionnaire for veterinary services:
  • Follows PCP Guidelines – Outcomes for each Stage
  • Questions based on defined criteria and questions – each Outcome
  • Yes/no answers explained by manual
  • Minimum Requirements differ by outcome
  • Yearly completion - to retain status, demonstrate commitment

• Enables PCP- Gap Analysis
• Enables review/revision of forecast progress
• Yearly completion recommended
Assessment of PCP Stage 1: checklist for the 8 Outcomes

<table>
<thead>
<tr>
<th>Achievement</th>
<th>Minimal number of issues required</th>
<th>Additional number of issues requested</th>
<th>Total number of issues asked for</th>
</tr>
</thead>
<tbody>
<tr>
<td>To enter Stage 1</td>
<td>6</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Outcome 1</td>
<td>All husbandry systems, the livestock marketing network and associated socio-economic drivers are well described for FMD susceptible species</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>Outcome 2</td>
<td>Describe the FMD distribution and develop working hypothesis of how FMD circulates</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Outcome 3</td>
<td>Estimate socio-economic impact on different stakeholders</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Outcome 4</td>
<td>Identification circulating strains</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Outcome 5</td>
<td>Development of enabling environment, strengthening Veterinary Services</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Outcome 6</td>
<td>Demonstrate transparency and commitment to FMD control in region</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Outcome 7</td>
<td>Identify important risk hotspots for FMD transmission</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Outcome 8</td>
<td>To adopt a strategic FMD control plan, based on risks and socio-economic impacts</td>
<td>3</td>
<td>8</td>
</tr>
</tbody>
</table>
Regional Roadmap meetings- an opportunity to share and review progress

1. PCP checklist completed prior to REGIONAL ROADMAP meetings

2. Countries come to the meeting with **evidence** on FMD control progress:
   1. Country presentations
   2. Reports, strategic documents

3. At conclusion of the meeting, a **provisional PCP Stage** will be assigned

4. Further evidence may be requested:
   - examination of documentation (dossier)
   - mission to the country

• **Provisional PCP Stage Assignments to be endorsed by GF-TADS regional and global committees**
Linkages between the FMD PCP and OIE procedures and PVS tool
Tool 2: External Assessment

• External assessment includes
  – FAO (and OIE experts) reviewing national self-assessments
  – Expert review with national authorities - FAO/OIE Workshops
  – Country visits – assessment with national representatives
  – Regional Meetings with opportunities for countries to assess presented progress reports - peer-to-peer scrutiny

• Comparison of progress on paper – with evidence from monitoring and surveillance reports

• Year to Year change - both “”paper”” and direct measures (incidence)
PCP – Plenty to Chew over, Properly
PCP-FMD: a tool to assist national policy and strategy development

- PCP assists with **policy development**
- Integrates epidemiological and economic assessments
- **Assists decision making** - on policy options, on national targets
- Assists longer term strategy development
- **Framework for investment** – with achievable outcomes

- The processes are relevant to national policy development on other major livestock diseases

- **Investment in the PCP-FMD** – spin-off for other diseases
PCP – needs investment in people capacity

- Skills needed:
  - FMD specific
  - Epidemiology and socio-economics methods
  - Managing decision making

- PCP-TRAINING: benefits beyond FMD
  - Practical, process and outcome oriented

- Practical Epidemiology for Progressive Control (PEPc)
  - First Training Course planned
    - September 2012
Working together
Acknowledgements

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