Lessons learned from rinderpest and from past and on-going PPR control

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Outline

These lessons learnt can be stratified into:

• PARTNERSHIP AND COORDINATION
• STRENGTHEN VETERINARY SERVICES
• LABORATORY/EPIDEMIOLOGICAL NETWORK
• POLICY
• MODELS USED
Coordination and partnerships

• The high level of collaboration and synergy among OIE, AU-IBAR, FAO, other bilateral and international donors (EU) demonstrated flexibility in their ability to develop new control mechanisms,

• Ecosystem approach with coordination and harmonization between the veterinary services (HoA, Cent Asia, Malawi-Moz-Zambia...)

• A sustained donor and country support

• GREP Secretariat with global co-ordination unit → Alliance

• “OIE Pathway” gave clear guidance to all countries at each stage of the process.

• Regional Institutions and member countries (well-designed strategy)

• Learn from errors: exit strategy (JP-15), use of vaccine, sero-monitoring/conversion, identification of animals (earmarked, sero+ ...)...
Strengthen veterinary services

• The period of rinderpest eradication in developing countries witnessed the increased investment in surveillance capacity, early detection and rapid response mechanisms as well as effective donor collaboration.

• This has helped to generally strengthen national animal disease surveillance networks for other diseases in these countries, while making use of innovative community-based vaccination programs, participatory surveillance systems based on local knowledge.

• It has also optimized control strategies that targeted high-risk communities through combinations of new service delivery models, participatory epidemiology and epidemiological modelling.

• Sustained funding for effective disease reporting/early warning system, for all stakeholders to ensure early detection and rapid stamping out of any future incursion of disease.
Laboratory and epidemiology networks

- Networks were an essential forum for the discussion and analysis of disease status data and the exchange of information,
- Support provided to national laboratory services for organizing intensive and sustained surveillance programmes
- Reference laboratories for confirmatory diagnosis and vaccines QC,
- Sero-monitoring to verify the success of the vaccination programme,
- Large batches of antigen and control sera were produced to minimise test variation between laboratories.
- Trainings, workshops etc
Policy

• The strategy used for rinderpest eradication, although not applicable to all diseases, could be used as a blueprint for some diseases such as peste des petits ruminants (PPR).
• Key factors other than those mentioned above were the availability of an excellent vaccine, secure long-term funding, the establishment of the GREP Secretariat in FAO Rome as a global co-ordination unit and the evolution of the “OIE Pathway to Freedom from Rinderpest”, which gave clear guidance to all countries at each stage of the process.
• The drive and determination of a few key people was also essential to the remarkable success.
Tools developed and applied

- Innovative approaches: Community Animal Health Workers (CAHWs) and community involvement
- Epidemiology (participatory epidemiology techniques, risk-based surveillance, modelling and random map coordinated)
- Rational and strategic vaccination (immuno-sterilization) based on rigorous epidemiological surveillance and outbreak response: “seek-confirm-eliminate”
- Technical guidelines and communications strategy formulated
- The ecosystem approach with enhanced coordination and harmonization between the veterinary services of neighbouring countries proved critical for the final eradication of rinderpest.
Models used

- **European model**: XVIII, XIX, XX c: zoosanitary measures
- **Southern Africa model (1890-1904)**
- **Edwards’ Myanmar vaccine model** (1936 to 1940) with population immunity level to 60% +epidemiology
- **The Chinese eradication model** (1950 to 1957): integrated approach that combined epidemiological knowledge with compulsory vaccination and zoosanitary measures based on rigorous stamping out, disinfection and surveillance against reintroduction
- **Indian model** (1956 to 1996): failure with 15 - 20% immunity rate. Creation of a central coordinating unit pushing a policy of intensified vaccination targeting 80% immunity rate.
Models used cont

- **African model**: eliminated from the southern part of the Africa through a mixture of pragmatic zoosanitary controls and the introduction of the serum-virus simultaneous method of immunisation.

  JP-15, PARC, PACE, SERECU

- **Middle East**: regional coordination through NEAHI, MIDEADEP, WAREC but national zoosanitary contol measures and surveillance,

- **Asia**: regional coordination through SAREC but national zoosanitary contol measures and surveillance,
Total Cost of RP Eradication (Otte)

- Vaccination 1950s: US$2.50
- Vaccination 1960s: US$1.25
- Vaccination 1970s: US$1.10
- Vaccination 1980s: US$0.95
- Vaccination 1990s: US$0.80
- Coordination: 5% (JP15 3%)
- Verification: PACE & SERECU (EUR81 million)
- Miscellaneous (research, quarantines, movement control, etc): ???
- Coordination

Total: 3.15 billion vaccinations

Total cost of eradication since 1950s very likely to be less than US$ 5 billion !!
Cost of PPR Control

Morocco
• 22 M small ruminants WITH 3 yearly mass vaccination campaign
• 95% by private veterinary
• Total cost: 24 M Euro → Unit cost of the vaccination $\sim 0.42$

Unit cost of the vaccination in Rep Congo $\sim 0.38$

Somalia 11 M Euro to vaccinate 20 m animals (PPR), 7m (CCPP), 20,000 sera for sero-monitoring and cold chain $\sim 0.35$

• Total small ruminants pop at risk: 1.15 billion
• Extrapolated unit vaccination cost: 0.4
• 3 yearly mass vaccination: $0.4 \times 3 \times 1.15 \sim 1.4$ billion
### Few field activities

<table>
<thead>
<tr>
<th>Countries</th>
<th>Activities</th>
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</thead>
<tbody>
<tr>
<td>Algeria, Libya, Mauritania, Morocco</td>
<td>Surveillance, training, mov control, lab equipment, socio-economic data collection to formulate guidelines on socio-economic study.</td>
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<tr>
<td>Angola</td>
<td>Surveillance, vaccination and mov control.</td>
</tr>
<tr>
<td>Tanzania</td>
<td>Surveillance, mov control, vaccination, socio-economic study.</td>
</tr>
<tr>
<td>Pakistan</td>
<td>Surveillance, mov control, vaccination, socio-economic study</td>
</tr>
<tr>
<td>Somalia</td>
<td>Surveillance, vaccination, sero-monitoring, mov control, socio-economic study...</td>
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<tr>
<td>Malawi, Mozambique and Zambia</td>
<td>Emergency preparedness</td>
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<td>Kyrgyzstan, Lebanon, Syria</td>
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Conclusion

• Control and prevention is an international public good and requires long-term investment from Governments, donors, private and public sectors.

• There is need to establish an effective surveillance system for the exchange of disease information and for expeditious emergency responses.

• Need for solid pool of recognized National/Regional experts (disease managers) to be able to respond to demands from Member States.

• Capacity building should be assisted by the provision of technical assistance, and a close partnership with other bodies and international organizations.
Conclusion

- Progressive control on a global basis has to be a priority for national veterinary services, and for regional and international organisations.

- National Policies and programs should be put in place for the control and/or eradication of PPR

- Socioeconomic assessment to be strengthened in order to prioritize actions and interventions

- There is a need to establish Country/Regional Wildlife Disease Associations for professionals in ministries of agriculture, environment, forestry and health.
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• Regional Diagnostic Centres should be established to provide guidelines as well as training continuously to the member countries. It would help in the improvement and standardization of laboratory procedures.

• National livestock departments should arrange in-service training courses for the field veterinarians (disease managers and epidemiologists) and laboratory technicians.

• Quality assured and cost effective vaccines should be available in each country/region.
Let not new ideas die too soon

THANKS