Peste Des Petits Ruminants
Summary

Introduction

1. This note provides a brief summary of an analysis undertaken by a DISCONTOOLS group of experts on peste des petits ruminants (PPR). They reviewed the current knowledge on the disease, considered the existing disease control tools, identified current gaps in the availability and effectiveness of the control tools and finally identified the research necessary to develop new or improved tools. Full details of the analysis can be downloaded from the web site at http://www.discontools.eu/.

Disease profile

2. PPR virus (PPRV) is a member of the family Paramyxoviridae, genus *Morbillivirus* and is antigenically closely related to canine distemper virus. Four genetic lineages of PPR virus have been identified, but only one serotype. Since its first description in the Ivory Coast in 1942, PPR has expanded to cover large regions of Africa, the Middle East and Asia. It has recently emerged in Europe within the Europe Union. There have been outbreaks in Georgia 2016, in Bulgaria in 2018, in Romania, Greece, and Bulgaria in 2024 and in Hungary, Albania and Kosovo in 2025.
3. PPR affects sheep, goats, and a large number of species within the order Artiodactyla, both wild and captive. Mortality rates can be as high as 100% in naïve populations or in an immunodeficient population, but lower than 15% in local breeds in regions where PPR is endemic or if animals are in good condition. The outbreak in Mongolia in 2017 resulted in thousands of deaths in endangered Mongolian saiga antelope, highlighting the threat of PPR to endangered wild species.
4. Clinical signs observed in the field will vary depending on host susceptibility and virus strain. Asymptomatic transmission of the virus has been observed during the emergence in Europe. The disease spreads mainly by direct contact with discharges from infected animals. However, there are recorded instances during the outbreak in Romania and Hungary where fomite transfer by humans is the only possible transmission route. Extensive livestock production systems with communal resources and seasonal migration facilitate disease transmission. No carrier or reservoir has yet been identified.

Risk

5. The increase in animal movement for commercial and trade purposes (e.g. the massive imports of small ruminants to the Middle East), transhumance and nomadic customs along with extensive farming practices have all contributed to the maintenance and global spread of PPR. The current spread of PPRV lineage IV across Africa and into Europe is one result of this transboundary dynamic. Emergence in the EU may occur via the illegal importation of animals, notably from Northern Africa or Turkey. Movement of trucks and other fomites may also play a role in disease emergence and spread. The epidemiological role of wild PPRV-susceptible species is still unclear but it is possible that movement of wildlife (e.g. wild deer) throughout Europe could contribute to disease emergence and spread. However, control of PPR in small ruminants is sufficient to stop the spread of the disease.
6. PPR virus infection has for many years been one of the most important constraints to the increase in sustainable production of small ruminants in sub-Saharan Africa and parts of Asia. The presence of disease can limit trade, export, import of new breeds and the development of intensive livestock production. PPR is a major constraint on the availability of protein for human consumption as well, and therefore represents a significant threat to food security. It has an important impact on livelihoods and economic stability for low-income farmers, with women suffering most. There are difficulties in the control of movements of affected and, more importantly, incubating animals into disease-free areas. PPR can be controlled through mass vaccination campaigns, however stakeholders, including farmers and veterinary practitioners, need to be involved and to drive the implementation of the control measures. Timely delivery of vaccine, and early detection of (re)occurrence are necessary conditions for rapid response and the effective management of possible outbreaks of PPR.

Diagnostics

7. Syndromic diagnosis can be difficult in areas where multiple diseases co-circulate. Nucleic acid amplification is the most widely used diagnostic test for PPRV identification. Lateral flow devices are also available for rapid diagnosis in the field. Serological tests including the competitive ELISA are also routinely used to assess herd exposure where mild disease may circulate and/or vaccination status. Commercial serological and virological diagnostic kits are available, but for the routine use in many countries where PPR is circulating these kits are too expensive.
8. Currently it is not possible to differentiate infected from vaccinated animals (DIVA) using existing vaccines and companion diagnostic tests. DIVA tests will be important to provide epidemiological surveillance where the virus is circulating and vaccination is practised. This will be especially important for the last stages of the eradication programme and for countries to progress more rapidly to achieve disease-free status. Development of non-invasive tests to detect the virus in the environment may provide a cost-effective way to monitor circulation of the virus. Validation of new tests must be undertaken both in the laboratory situation but also under field conditions in countries where the disease exists.

Vaccines

9. Current live attenuated vaccines for PPR provide a good immunity which lasts for at least 3 years but vaccinated animals cannot be distinguished serologically from naturally infected animals. A cold chain is required for transport and storage of PPR vaccine. Stability of vaccines in lyophilized form and when resuspended varies among producers. Vaccines highly stable in lyophilized form are now also available. Most vaccine preparations are effective for only 2-3 hours after resuspension, but some can be used for up to 24hrs. Vaccines thermostable in lyophilised form exist and can add value in remote areas if well validated and used. Not all vaccines produced go through strict quality control procedures, so effectiveness of vaccines may vary.
10. Commercially available live attenuated PPRV vaccines are available from more than 20 vaccine production companies and government laboratories in Africa, the Middle East, Asia and Turkey. There are no commercial vaccines authorised for use in Europe.
11. New generations of vaccines are under development or starting to become available: multivalent vaccines, DIVA vaccines, and conventional live attenuated vaccine with high thermostability in reconstituted form.

Pharmaceuticals

12. There is no therapy for PPR. Potential for pharmaceuticals is extremely limited as EU regulations do not allow treatment of PPR-infected animals.

Knowledge

13. Significant areas of uncertainty in the understanding and knowledge about PPR exist especially in relation to pathogenesis, immunology, vaccinology, and epidemiology. Information is needed in areas such as the identification of factors involved in the variation of host susceptibility, determinants of PPRV pathogenicity, the importance of animal species other than sheep and goats in the epidemiology of PPR, the potential importance of indirect transmission of virus, and the transboundary transmission dynamics of PPRV, notably in complex multispecies systems. More information is needed on effectiveness and cost-benefits of intervention strategies to inform national control programs. Research is needed to fill these gaps in knowledge. Full details of the gaps are shown in the Disease and Product Analysis for PPR available on the DISCONTOOLS website.

Conclusions

14. The recent emergence of PPR in Europe emphasises the importance of implementing and maintaining appropriate control and surveillance measures with regards to illegal imports and animal movements to mitigate risks. Equally the tools necessary to detect and control any new incursion into the EU must be available and awareness of the disease must be increased.
15. PPR is one of the most economically important diseases in developing countries. There is now a global effort to eradicate PPR. Filling the gaps in our knowledge of the disease and development of new diagnostic tools and new vaccines will increase our chances to reach this goal. Importantly,

regional coordination and involvement of all stakeholders will be paramount to success. Cooperation of EU member states and European commission should be encouraged.

Please cite this chapter as: Bataille A., Ancuceanu C., Baron M.D., Benfield C., Bordier M., Dione M., Chenais E., Hoffmann B., Tasioudi K., 2026. DISCONTOOLS chapter on Peste des Petits Ruminants.