Australia's National Science Agency

GFRA/EUFMD/OIE/FAO workshop on Vaccination against FMD – principles and practice

Wilna Vosloo | 30 July 2021

eufmd
european commission for the control of foot-and-mouth disease

SEACFMD

GFRA
Global Foot-and-Mouth Disease Research Alliance

Global FMD Research Alliance (GFRA)

- A coordinated global alliance of scientists producing evidence and innovation that enables the progressive control and eradication of FMD

  - Facilitate research collaborations and serve as a communication gateway for the global FMD research community
  - Conduct strategic research to better understand FMD
  - Development of the next generation of control measures and strategies for their application
  - Determine social and economic impacts of the new generation of improved FMD control
  - Provide evidence to inform development of policies for safe trade of animals and animal products in FMD-endemic areas

GFRA – Organisation and activities

- Currently
  - Executive committee (Argentina, Australia, The Netherlands, Uganda, UK and USA)
    - Current CEO: Alejandra Capozzo
  - Partners (27)
  - Collaborators (15)
  - Stakeholders (15)

  - Active engagement with FAO, EUFMD, OIE and other international organisations committed to FMD research

Second GFRA/EUFMD virtual symposium co-hosted by OIE and FAO

VACCINATION AGAINST FMD – PRINCIPLES AND PRACTISE

Thursday 25 March 2021

Organisers:

GFRA: Wilna Vosloo, Nagendra Singanallur, Alejandra Capozzo

EUFMD: Nadia Rumich, Fabrizio Rosso, Alessandra Alviti, Ludovica Nela, Costanza DeLaurentiis

Moderators: Kees van Maanen, Theo Knight-Jones

Rapporteurs: Nagendra Singanallur, Petrus Jansen van Vuren

Workshop vision

- Share the principles and practical experiences of different parts of the world in topics of vaccination that included vaccine matching strategies, post vaccination monitoring, *in vivo* testing of vaccines, monitoring vaccine quality and novel vaccines
  - Serological monitoring of FMD vaccination - Principles and Practice
  - A new model for independent FMDV vaccine QA/QC as an aid to vaccine selection
  - *In vivo* testing of vaccines in Southeast Asia – how well do antigen matching correlate with protection?
  - Novel FMD vaccines and their future use in developing countries
  - Principles and best practice for official batch control of FMD vaccines
  - Round table discussion and question time

- Report available: **https://www.eufmd.info/gfra25march-workshop**
- Recording available: **https://www.youtube.com/watch?v=CikzDBeVcIU**

368 registrations

63 countries

Main topics

- Serological monitoring of FMD vaccination - Principles and Practice (David Paton)

  - Population immunity serosurveys can address two related but different objectives:
    - Determine how well vaccination has been carried out
      - Knowledge of how animals respond to correctly administered vaccine of a particular target species, background immunity, vaccine batch, vaccination regime, post-vaccination sampling interval and test methodology
    - How well the target animals are likely to be protected from disease
      - Lack of information on heterologous protection
      - Protection over time
    - Survey designs need to fit the objective

Main topics

- A new model for independent FMDV vaccine QA/QC as an aid to vaccine selection (Anna Ludi)
  - Relationship coefficients (r_1-values) are often used to understand the antigenic relationship between a FMDV field strain and a vaccine
  - Values > 0.3 are suggestive of a close antigenic relationship; potent vaccine containing the vaccine strain is likely to confer protection
  - r_1-values rely on access to vaccine strains and monovalent post vaccination sera
  - New model
    - Use panel of circulating viruses against sera from animal vaccinated with commercial vaccine
    - Test multiple vaccines against reference panel to determine neutralising titres
  - Strongly encourage countries to test vaccines independantly

Main topics

- *In vivo* testing of vaccines in South East Asia – how well do antigen matching correlate with protection? (Wilna Vosloo)
  - r_1-values are difficult to interpret in heterologous systems
  - Vaccines with >6PD_{50}/dose antigen load often provide protection against clinical disease if is r_1-values < 0.3
  - Decrease clinical signs, lower amount of virus excreted and shorten time of excretion

- Novel FMD vaccines and their future use in developing countries (Elizabeth Rieder)
  - Novel recombinant vaccines including marker inactivated vaccines, empty capsids, recombinant protein vaccines, and synthetic peptide vaccines
  - Next generation FMD vaccines - improved production technologies to rapidly respond to new emerging strains
  - Potential to reduce costs by eliminating the need for high level containment for production and downstream processes, fully DIVA compatible

Main topics

- Principles and best practice for official batch control of FMD vaccines (David Mackay)
  - Official control authority batch release ("official control") is the process by which regulatory authorities confirm that vaccines released onto their national markets comply with the specifications that are set during the process of approval for licensing (also termed registration or marketing authorisation)
  - Tests to be performed on FMDV vaccines are described in Section 4 of Chapter 3.1.8* of the OIE Manual of Manual of Diagnostic Tests and Vaccines for Terrestrial Animals (the OIE Manual)
  - Primary concerns relate to confirmation of innocuity to demonstrate freedom from live FMD virus and potency
  - The ability of regulatory authorities to independently evaluate potency is greatly facilitated by cooperation with manufacturers to gain access to the protocols, vaccines strains and reference sera used to validate and perform the manufacturer's batch potency test

*https://www.oie.int/fileadmin/Home/eng/Health_standards/tahm/3.01.08_FMD.pdf

Questions from participants

- Summary of topics raised by participants
  - Choice of vaccine strains for regions / countries / vaccine matching, r_1-values
  - Vaccine / vaccination failures, evaluation of vaccines in the field
  - Population immunity and surveys
  - Measuring immune responses and determining protective antibody titres
  - Concerns about differences in tests / interpretation of results
  - Prime-boost vaccinations, combination vaccines
  - DIVA ability of vaccines and testing

- Opportunities
  - Research projects to address regional specific questions
  - Ongoing training – field, laboratory, policy

Scientific Meeting of the
Global Foot-and-Mouth Disease Research Alliance

NOW VIRTUAL! 1-3 November 2021

This meeting brings together researchers from all over the world working on foot-and-mouth disease.

REGISTRATION FEE
USD 100

Deadline for abstract submission
08/20/2021

gfra2021.com

Global Foot-and-Mouth Disease Research Alliance

VI Global Foot-and-Mouth Disease Research Alliance (GFRA) Scientific Meeting (virtual - 11.00 AM to 04.30 PM GMT)

- Registration is open: https://www.gfra2021.com/home-site/
- Call for abstracts: https://www.gfra2021.com/call-for-abstracts/
- Information for sponsors: https://www.gfra2021.com/sponsors/

Thank you

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Acknowledgement
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