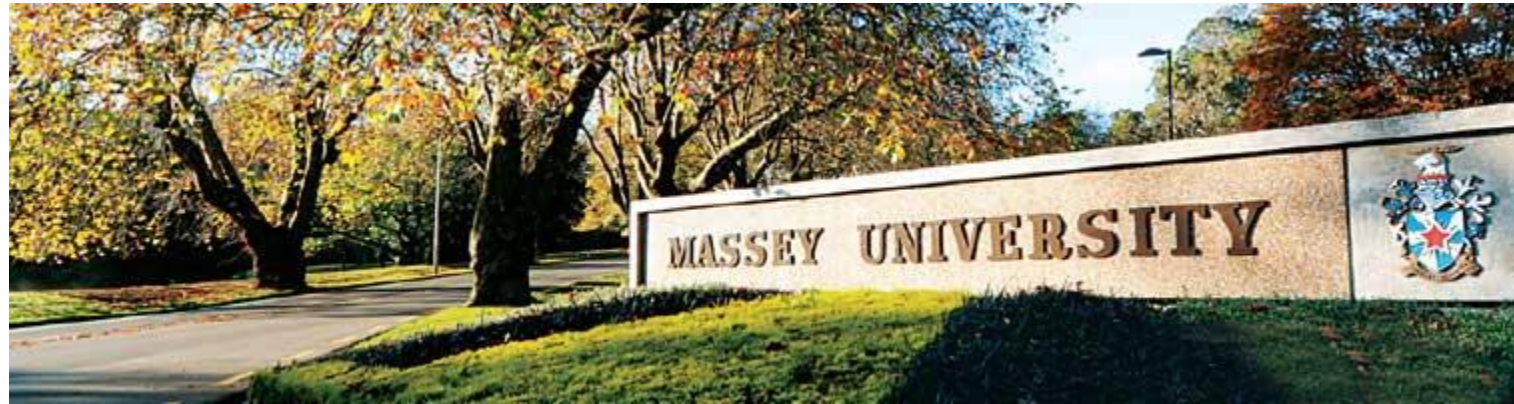


Insights from post-vaccination monitoring for FMD vaccination strategies in Lao PDR



Masako Wada¹, Supatsak Subharat¹, Jun Hee Han¹, Ashish Sutar², Ronello Abila², Syseng Khounsy³, Cord Heuer¹

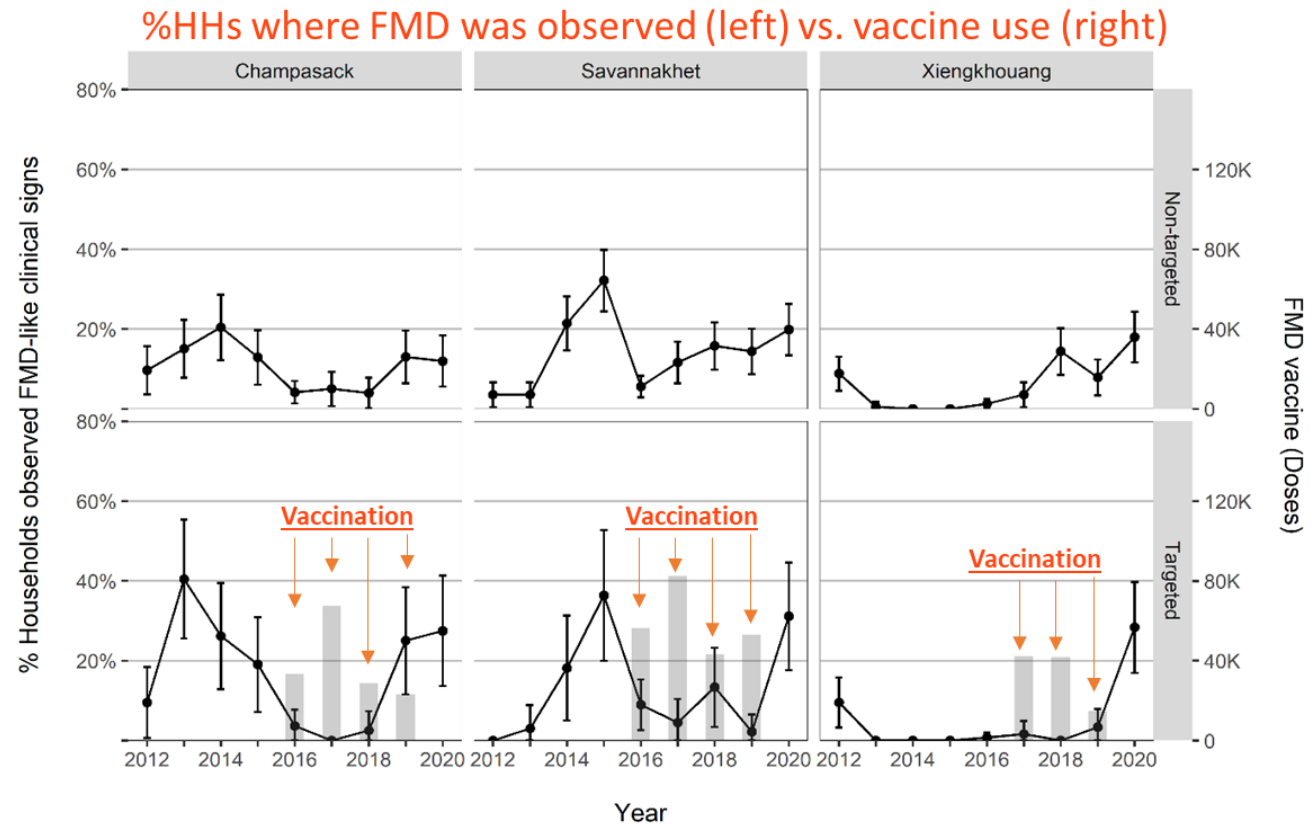
1 EpiCentre, School of Veterinary Sciences, Massey University, Palmerston North, New Zealand

2 WOAHA Sub-Regional Representation for South East Asia, Bangkok, Thailand

3 Department of Livestock and Fishery, Ministry of Agriculture and Forestry, Vientiane, Lao PDR

Background

- Biannual FMD vaccination in target villages in Lao PDR (2016-20)
- Incidence of clinical FMD was reported in the area despite the vaccination campaign (2016-20)
- Post-vaccination monitoring were conducted to
 - Evaluate the vaccination strategy
 - Identify possible factors that contributed to the observed high FMD incidence



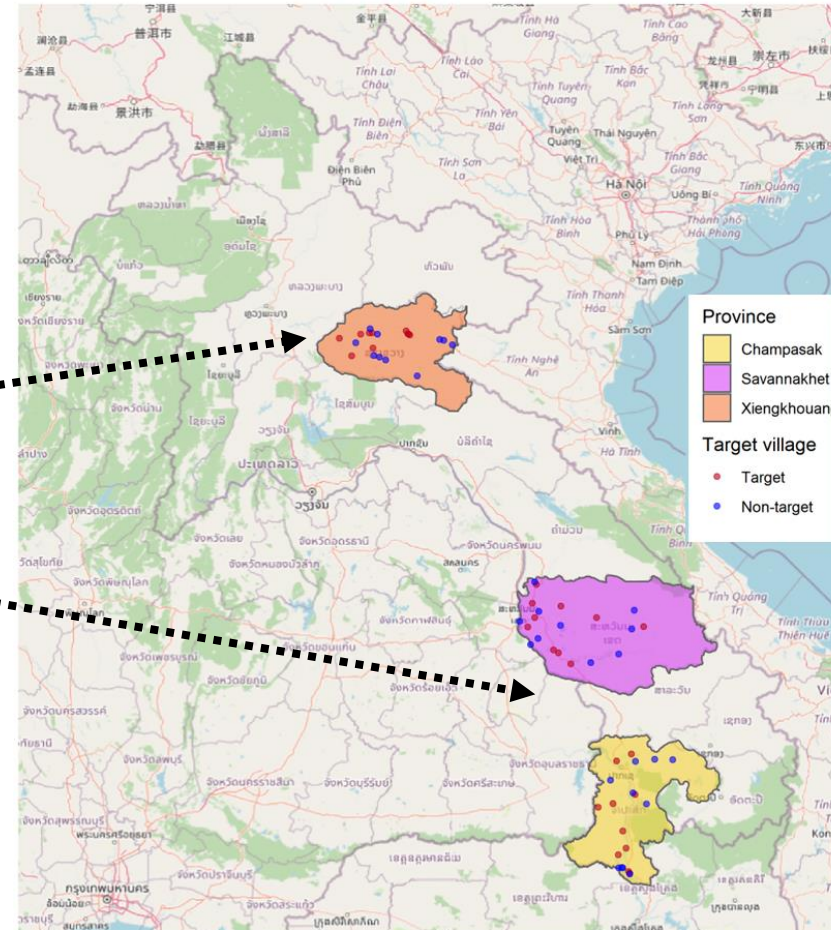
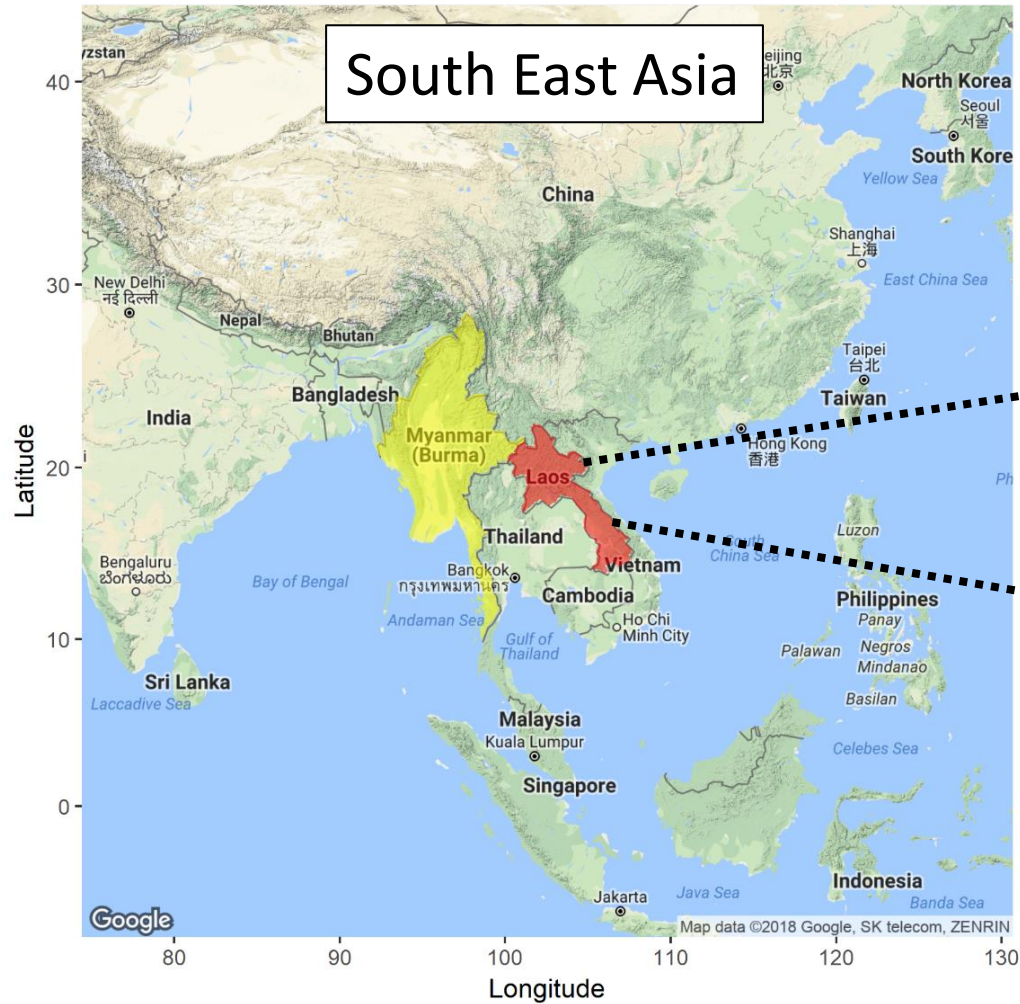
ORIGINAL ARTICLE

Transboundary and Emerging Diseases WILEY

Impact of risk-based partial vaccination on clinical incidence and seroprevalence of foot and mouth disease in Lao PDR

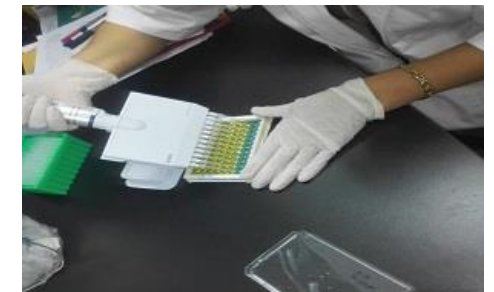
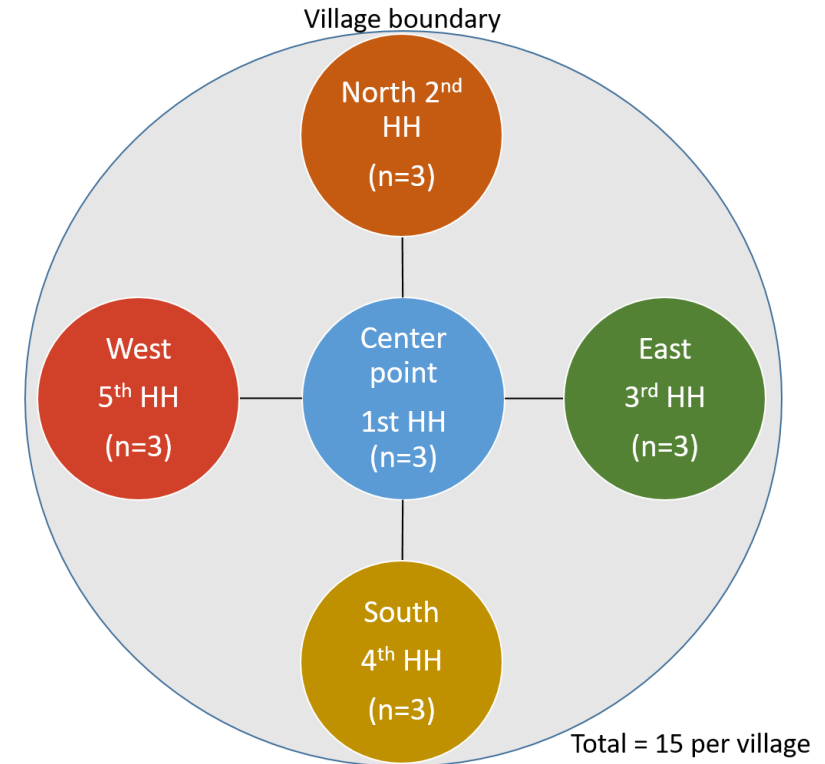
Jun-Hee Han¹ | Supatsak Subharat¹ | Masako Wada¹ | Daan Vink² | Bernard J. Phiri³ | Ashish Sutar⁴ | Ronello Abila⁴ | Syseng Khounsy⁵ | Cord Heuer¹

Project study area



Methods

- Feb 2020 (4–6 months after the 9th vaccination round)
- Multi-stage sampling
 - 450 serum samples from 150 households in 30 targeted villages
 - 450 serum samples from 150 households in 30 non-targeted villages
- Testing by PrioCHECK™ kit
 1. FMD virus (FMDV) structural protein (SP) type O, A and Asia 1 antibodies
 - Indicator for protective immunity
 2. Non-structural protein (NSP)
 - Indicator for historical infection



Vaccination coverage

- Lower than the aimed vaccination coverage of 90%
- Drop-out from the campaign in the previous 6 mo (R9) vs 15mo (R7-8)

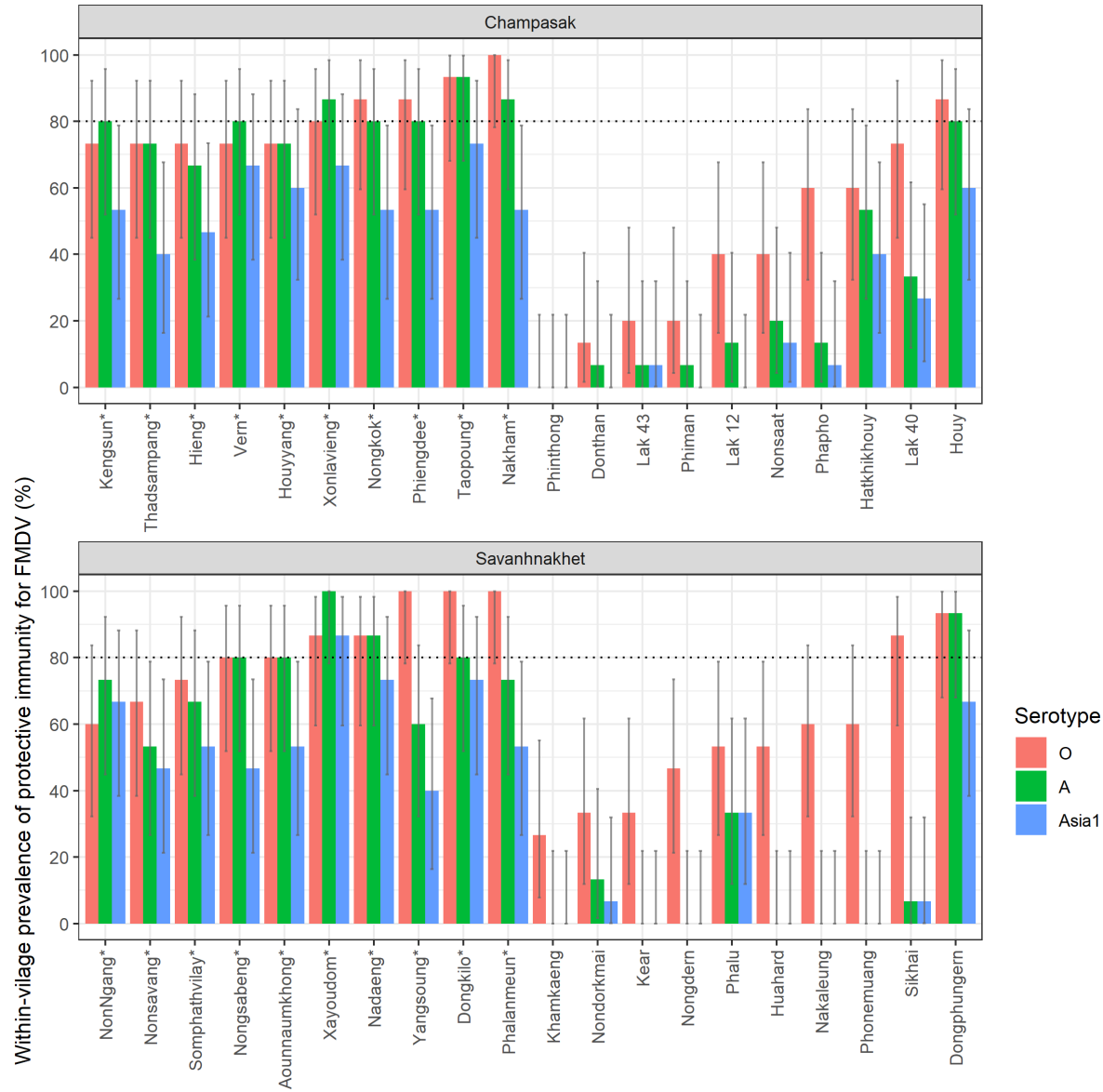
	Target village			Non-target village		
	Yes	Total	%	Yes	Total	%
# Animals vaccinated in the previous 6 mo	248	450	55%	72	450	16%
# Animals vaccinated in the previous 15 mo	319	450	71%	121	450	27%

Protective immunity

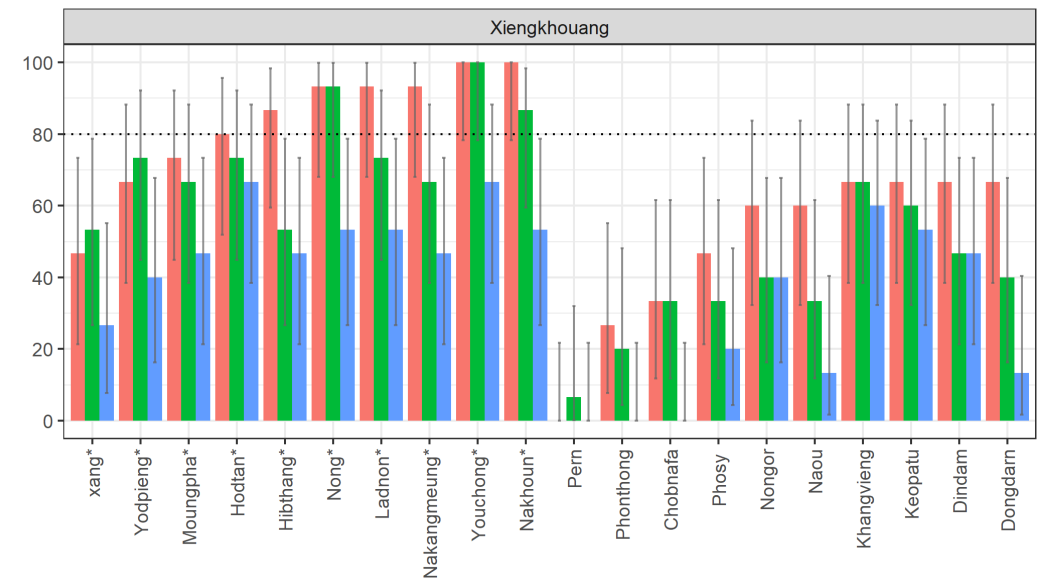
- Higher in target villages than in non-target villages
 - specific immunity increased due to vaccination

	Target village			Non-target village		
	Positive	Total	%	Positive	Total	%
FMDV type O/NSP-	139	203	69%	44	235	19%
FMDV type A/NSP-	141	203	70%	33	235	14%
FMDV type Asia1/NSP-	97	203	48%	20	235	9%

Protective immunity by village



- Increased herd immunity in targeted villages for all 3 serotype
- Non-targeted
 - Serotype O from natural infection
 - Serotype A and Asia-1 from vaccination error



NSP prevalence

- Exposure to FMDV was higher in target villages (55%) vs non-target villages (48%)
- Frequent circulation of FMDV in 2019-20 (40-52%; 18mo)

	Target village			Non-target village		
	Positive	Total	%	Positive	Total	%
All animals	247	450	55%	215	450	48%
Calves \leq 18 mo	53	101	52%	29	72	40%
Young $>$ 18 – 36 mo	57	119	48%	47	121	39%
Mature \geq 36 mo	137	230	60%	139	257	54%

Results (logistic regression model)

- The risk of clinical FMD in 2020
 - Households that never vaccinated (reference)
 - Households that vaccinated within the last 3 months (protective; -75%)

	Coeff	Relative risk (95% CI)	p value (Wald test)
Days since last vaccination			
Never/unknown	Reference		
0-90 days	-1.382	0.25 (0.07, 0.81)	<0.05
91-180 days	0.258	1.29 (0.46, 3.70)	0.6
181-294 days	0.062	1.06 (0.31, 3.64)	0.9

Discussion

- FMDV evidently circulated in the study area in 2019-20, suggesting high FMDV circulation and an inadequate herd immunity
- Low vaccine coverage and dropout from booster vaccines may be responsible for the FMDV circulation
 - Need for incentivising farmers for vaccination
- The importance of up-to-date routine vaccination

Acknowledgement

NZ Ministry of Foreign Affairs and Trade

NZ Ministry for Primary Industries

Mr Richard Swainsbury

Department of Livestock and Fishery, Lao PDR

Mr Chattouphone Keokhamphet, Ms Khamphok Phithacthep, Ms Vilayvanh Soukvilai

WOAH-SRR-SEA

Epicentre, School of Veterinary Science, Massey University

Ministry for Primary Industries
Manatū Ahu Matua



Thank you for your attention

