Biosecurity New Zealand

Tiakitanga Pūtaiao Aotearoa

NZ Animal Health Laboratory and FMD

Rudolfo Bueno

Diagnostic and Surveillance Services

Ministry for Primary Industries

Manatū Ahu Matua

Animal Health Laboratory (AHL) - Walleceville
New Zealand's only reference Veterinary Laboratory

- Exotic animal disease testing
- Diagnostics and Surveillance
- Reference services
- Import/export testing

Biosecurity New Zealand
Ministry for Primary Industries
Manatū Ahu Matua

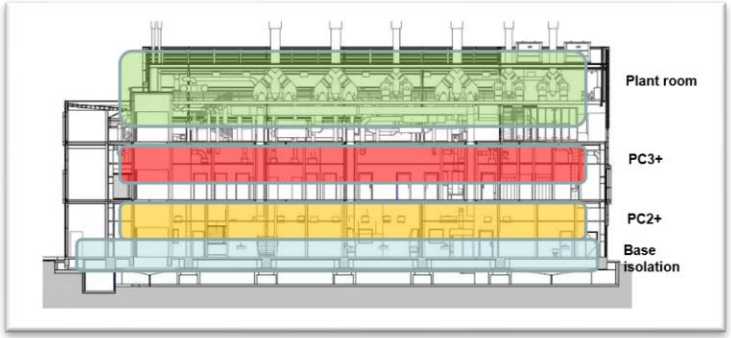
The Animal Health Laboratory - NZ

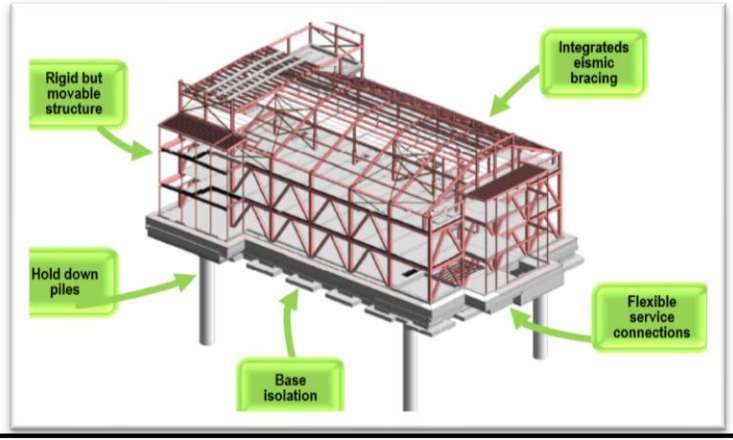
- Current PC2 and PC3 – outdated (>20 years old)
- New lab - due for completion end of 2019 …ready for occupancy mid 2020
- 87NZD (61USD)

The Animal Health Laboratory - NZ

- Improved capacity and flexible capability

- Designed can withstand 1 in 2500 years earthquake





On-going FMD work

1. Pilot slaughterhouse sampling as a surveillance tool (in collaboration with Lao PDR, Myanmar, the Pirbright Institute and OIE)

2. Validation and field testing a penside PCR

Slaughterhouse sampling project

Ultimate goal

Increase the tools for surveillance and understanding of FMDV in Southeast Asia

Pilot slaughterhouse surveillance

Main objectives :

- Determine and pilot a practical method of sampling at slaughter
- Molecular detection of FMDV in various samples
- If possible ..to determine serotype/lineage of positive samples
- Evaluate DNA/RNA shield as medium for field sampling

Sampling and testing approach

- Conducted in 3 slaughter plants
- Cattle / buffaloes (min 100)
- Method of collection varies slightly
- Sample types – swabs (oral, nasal, pharyngeal) and blood serum

virus transport media and DNA/RNA shield (Zymo)

- Collect animal data
- Molecular screening/testing in-country
- *Comparative testing / serotyping at The Pirbright Institute.*

Slaughterhouse operations differ in Vientiane and Mandalay

Vientiane

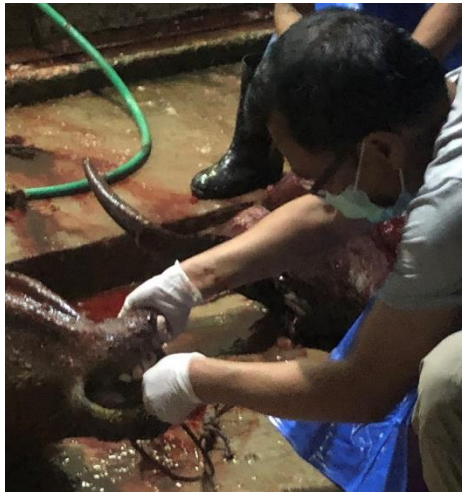
Dongdou

Nongduang

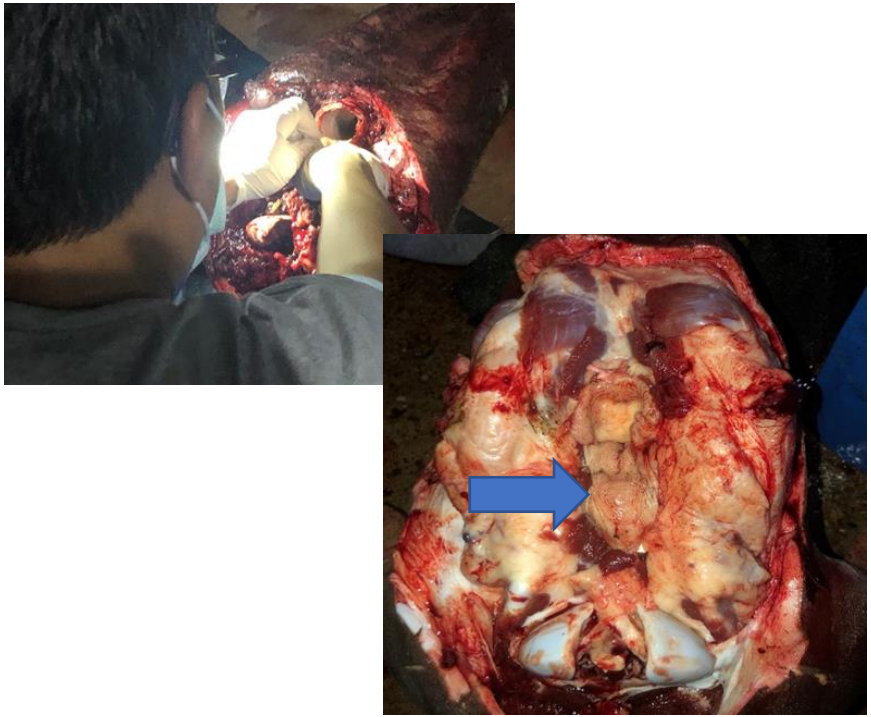
Mandalay

Mandalay City Slaughterhouse

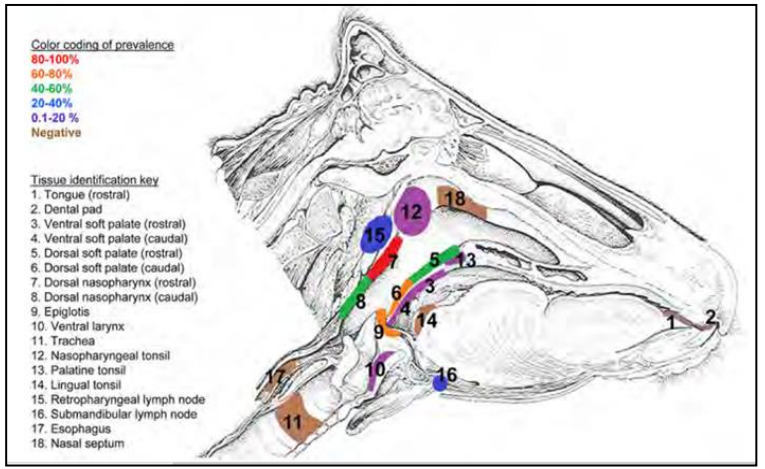
Sampling approach – oral and nasal



Pharyngeal swabbing



Pacheco JM et al 2015



Red = highest sensitivity site for FMDV recovery

Duplicate swabs – simultaneous swabbing

For Virus Transport Media and DNA/RNA shield

Lao PDR

- 132 animals (84 cattle, 53 buffaloes)

type	serum*	VTM	DNA/RNA shield*	total
blood	137			137
oral swab		132	132	264
nasal swab		132	132	264
pharyngeal swab		132	132	264
				929

Salavan
Bolikhamxay
Vientiane

Myanmar

- 130 animals (125 cattle and 5 buffalo)

serum	130
oral swabs (VTM and DNA/Rna shield)	260
nasal swabs (VTM and DNA/Rna shield)	260
pharyngeal swab (VTM and DNA/Rna shield)	260

Mandalay
Saigang
Magway

Preliminary results - suspicious samples (<40 Cq using 3D RT-qPCR)

Lao PDR

- 5 pharyngeal swabs - 3.6%
- Cqs – 30.8 to 37.15

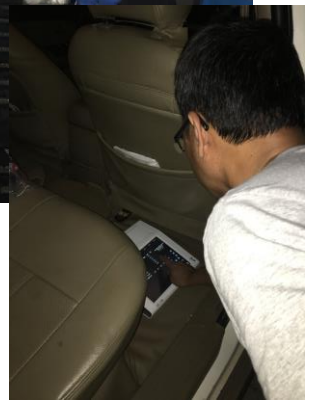
Myanmar

- 25 pharyngeal swabs - 19%
- Cqs - 32-38.7

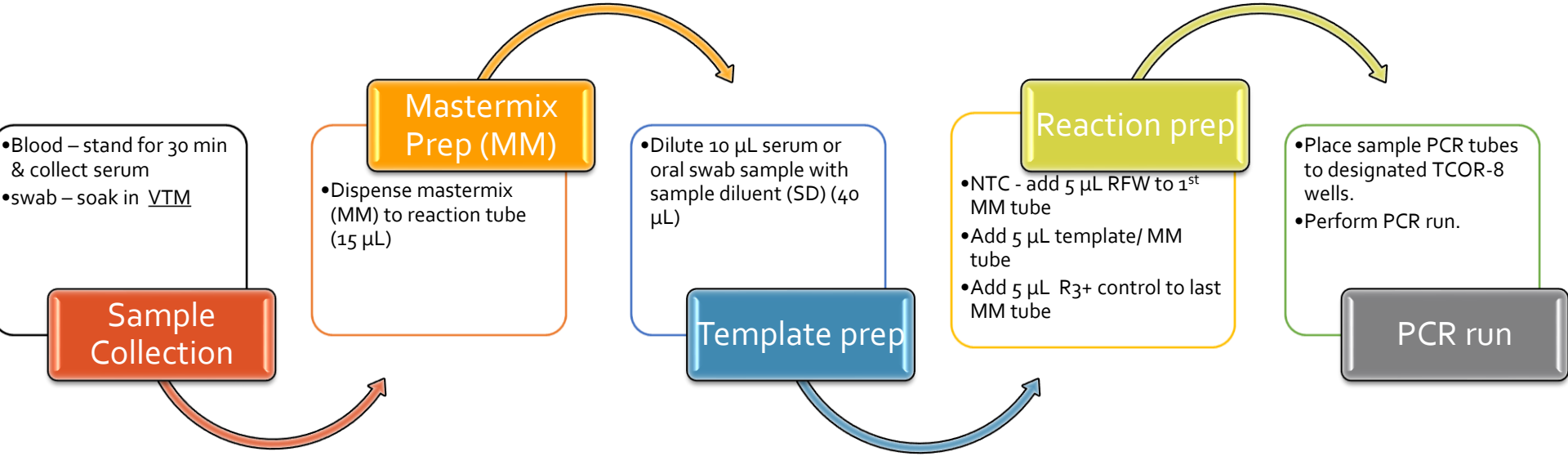
Where to from here?

- Comparative testing at The Pirbright Institute
- Possible serotyping/lineage determination of any positive samples
- Make recommendations/areas improvement

Field testing – portable PCR



Field assay work flow – mRT-qPCR



≤ 25 min / 8 reactions

1 hr / 8 reactions

1 hr and 25 min / run

Testing of pos epithelial suspension from previous outbreak – TCOR 8 field FMD PCR & LFD

Sample ID	3D RT-qPCR (CFX96)	TCOR-8 PCR		Ag detection	
	mean Cq	1:10 dil Cq	1:5 dil Cq	LFD Pan	Serotype
NL1725352	20.33	24.9	24.2	Pos	O
NL1725381	17.28	23.9	24	Pos	O
NL1620179	22.74	28.2	29.7	Pos	O
NL1840602	22.25	34.9	35.3	neg	-
NL1840607	25.23	31.8	34	neg	-

acknowledgment

- OIE staff
- DLF-NAHL, Laos PDR
- LBVD and FMD BSL2 Lab staff, Myanmar
- MPI
- MFAT

Thank you for listening!