



PEDV: How does New Zealand detect and respond to emerging risks?

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Growing and Protecting New Zealand



Overview

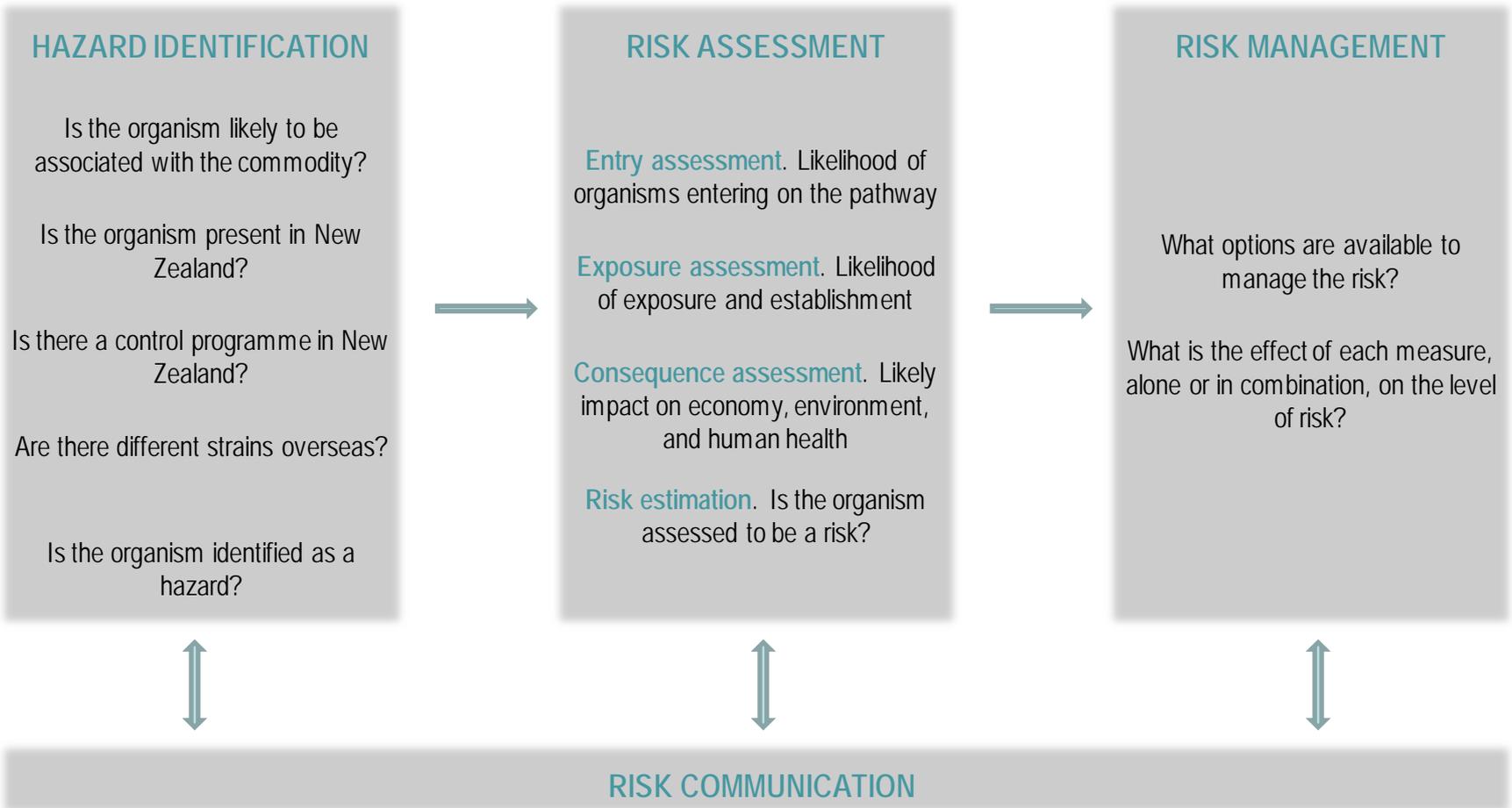
- New Zealand's risk-based import health standards
- The development of an emerging risk system
- Response to PEDV alerts
- Remaining questions



IHS development based on risk analysis

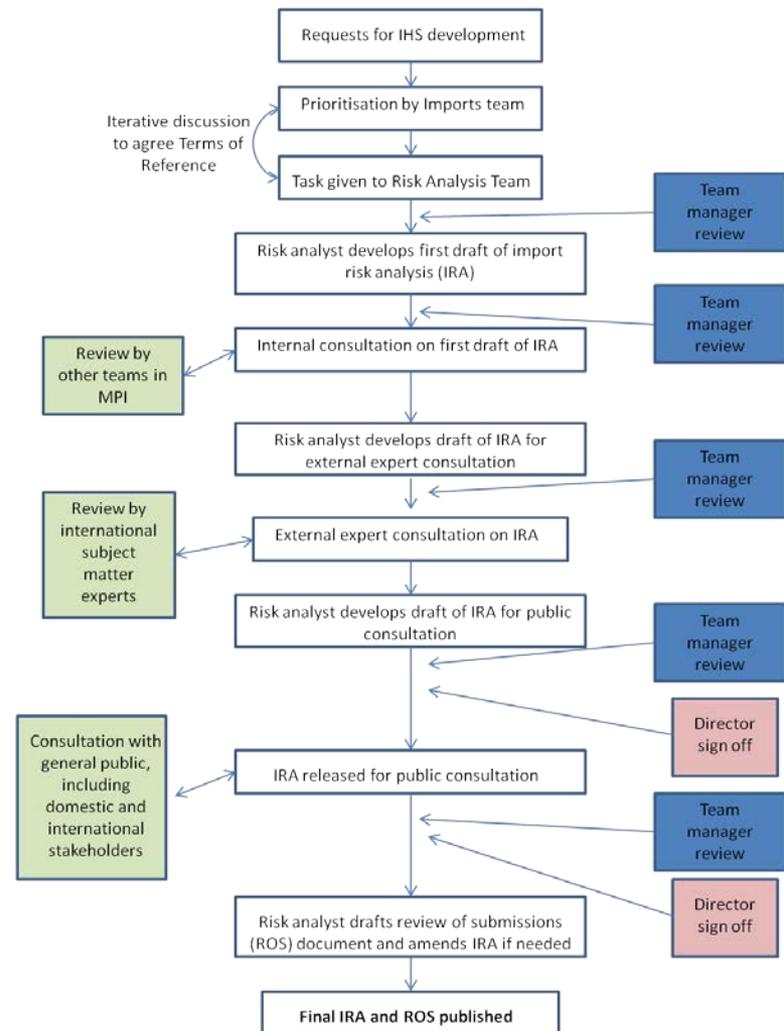
- Risk goods may only be imported under the terms of an import health standard (IHS) - specifies the requirements for effective risk management
- Import risk analysis (IRA) used to provide the scientific basis for these IHS requirements
- IRAs written in line with the guidelines set out in the OIE *Code*

Overview of IRA process



“Fit for purpose” assessment?

- IRA development requires considerable resources and involves several stages of internal and external peer review
- Since 2012 MPI has been developing a system to rapidly process emerging risk information



Bewildered by the 'Information Age'

- New information on existing or emerging risks is reaching us all the time
- Need to filter and assess the overwhelming amount of information



Overview of the ERS triage approach

- Have we looked at this before? What has changed?
- Potential for establishment and impact?
- Viable pathways?
- Has the 'risk' changed?
- Further consideration needed and priority?



The International Biosecurity Intelligence System

By the Center of Excellence for Biosecurity Risk Analysis
Co-funded by Department of Agriculture Australia and Ministry for Primary Industries New Zealand

Key

- Raw
- Keep
- Promoted
- Alert

The success of IBIS relies on subject matter experts to help

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The graphic features a central image of Earth surrounded by a cloud of colorful data points (blue, green, orange, purple) representing different risk levels. A funnel labeled 'Subject Matter Experts' is positioned below the Earth, with more data points falling into it. The background is a dark space with stars.

Turnover of ERS alerts

- Significant alerts prioritised, assessed, and advice provided for border/post-border management
- 31 Aug 2012 to 30 April 2014:
 - 1066 alerts
 - 384 required further risk assessment
 - 86 passed to a risk manager for consideration
 - Searches set up to monitor others for new information

Initial assessment of PEDV

- Initial PEDV reports from US in May 2013
- ERS assessment first completed in June 2013
- Concerns expressed by industry regarding the risk of transmission via semen and pig meat imports
- Conclusions:
 - There is no evidence that trading pig semen or pig meat transmits infection
 - Moreover, the virus is not a food safety concern and does not affect humans.
 - PEDV is not identified as a hazard when importing pig meat or semen.

Work with industry to raise awareness

- Co-authored article with experts from NZPork and MPI's Incursion Investigation team
- Raise awareness with farmers/vets– describe pathogenesis, presentation, diagnosis, prevention and control



Subsequent events and re-assessment

- Subsequently, PEDV spread throughout USA, to Canada, a previously uninfected Prefecture in Japan, Columbia and Mexico.
- Reports suggested the use of spray-dried porcine plasma (SDPP) in pelleted pig feed may be associated with spread
- PEDV DNA found in SDPP but link between this and outbreaks not conclusive. Voluntary recalls of SDPP
- Source of entry of PEDV into USA still unknown – contaminated feed ingredients from China suggested although no legal imports of porcine plasma into US from Asia?

Initial action pending re-assessment of risk

- Liaison between risk assessors and risk managers (plus domestic industry) to identify possible risk pathways
- By-product and SDPP IHSs suspended
- Situational awareness for frontline staff

EMERGING RISK REPORT

Ministry for Primary Industries
Manatū Ahu Matua



Porcine Epidemic Diarrhoea (PED)

The Emerging Risk System has highlighted the recent outbreaks of Porcine Epidemic Diarrhoea in Central and North America.

BACKGROUND

Porcine Epidemic Diarrhoea (PED) is a highly infectious viral disease of pigs. Emerging strains of this virus associated with severe disease have been recognised in East and Southeast Asia and were identified in the United States in 2013. Since then it has spread throughout the United States, Canada and Central America.

DISTRIBUTION

PED was first recognised in England in 1971. Since then outbreaks have been reported throughout Western Europe, East and Southeast Asia and Central and North America. PED has never been identified in Australia or New Zealand.

DISCUPTION

PED causes profuse, watery diarrhoea in pigs of all ages. High mortality (up to 100 percent) may be seen in young pigs whereas the disease tends to be less severe in older animals.

SPREAD

PED is transmitted by contact with live infected pigs, pig faeces or manure, and contaminated objects. How PED first entered the United States is still not known. It has been proposed that contaminated feed ingredients from China such as porcine plasma and rice hulls may be to blame.

In the North American outbreak it has been suggested that spray-dried porcine plasma (SDPP) used in pelleted pig feed may be responsible for the spread of PED as viral DNA has been detected in SDPP. Despite



this, studies have been unable to confirm a link between feed containing SDPP and PED cases.



In a precautionary move, certain pelleted feed containing SDPP has been recalled in North America and the British pig industry are also identifying and isolating any feed containing SDPP. Preliminary studies have shown that commercial spray drying should inactivate PED, and that experimentally inoculated SDPP loses infectivity after one week at room temperature.

There is no evidence of PED in pig fat and no suggestion that trade in lard has led to the trans-boundary spread of this virus.

COMMENT

Based on available information, MPI assessed that the import of pig semen, pig meat or pig sausage casings are not risk pathways for this virus. However, spray-dried pig serum can only be imported into New Zealand for use in cat food; and lard can only be imported if intended for human consumption, until further notice.

BORDER CLEARANCE SERVICES ACTIONS

This report is produced for awareness only.

Safety of SDPP?

- SDPP manufacturing: inlet temp 221-248°C, outlet temp 77-91°C
- NASDBPP preliminary studies – PEDV inactivated by commercial process, experimentally inoculated SDPP loses infectivity after 7 days, PCR-positive SDPP did not transmit infection
- Other porcine viruses recognised to be more thermally tolerant known to be inactivated by spray drying process (SVD, ADV, PRRS)

Imports of SDPP

- IHS for spray dried porcine plasma from the United States. Annually circa. 95,000 tonnes imported
- All used in cat food manufacture (subject to rendering at 115-145°C)
- Border staff directed to allow clearance of SDPP only if intended for use in cat food
- Specific evaluation of other uses on a case-by-case basis

Safety of pig by-products?

- IHS for pig by-products from Canada and the United States includes mechanically recovered meat, offal, fat and blood.
- To date, IHS has only been used for importing lard for human consumption
- Unknown risk in blood and offal but likely to be no risk with lard



Conclusions of second ERS assessment

- SDPP imports present a negligible likelihood of exposure to pigs, as (to date) it has only been used as an ingredient in cat food
- PEDV may be associated with imported pig blood subjected to the time/temp requirements we have for PRRS – however, treatment at 60°C for 30 minutes is likely to effectively manage this
- Non-negligible risk of introducing PEDV with imported porcine offal – imports should be suspended until more is known

Current IHS requirements

- Re-instatement of pig by-products
- Directions for post clearance conditions of dried plasma and lard
- Call in of powers for all other pig by-products

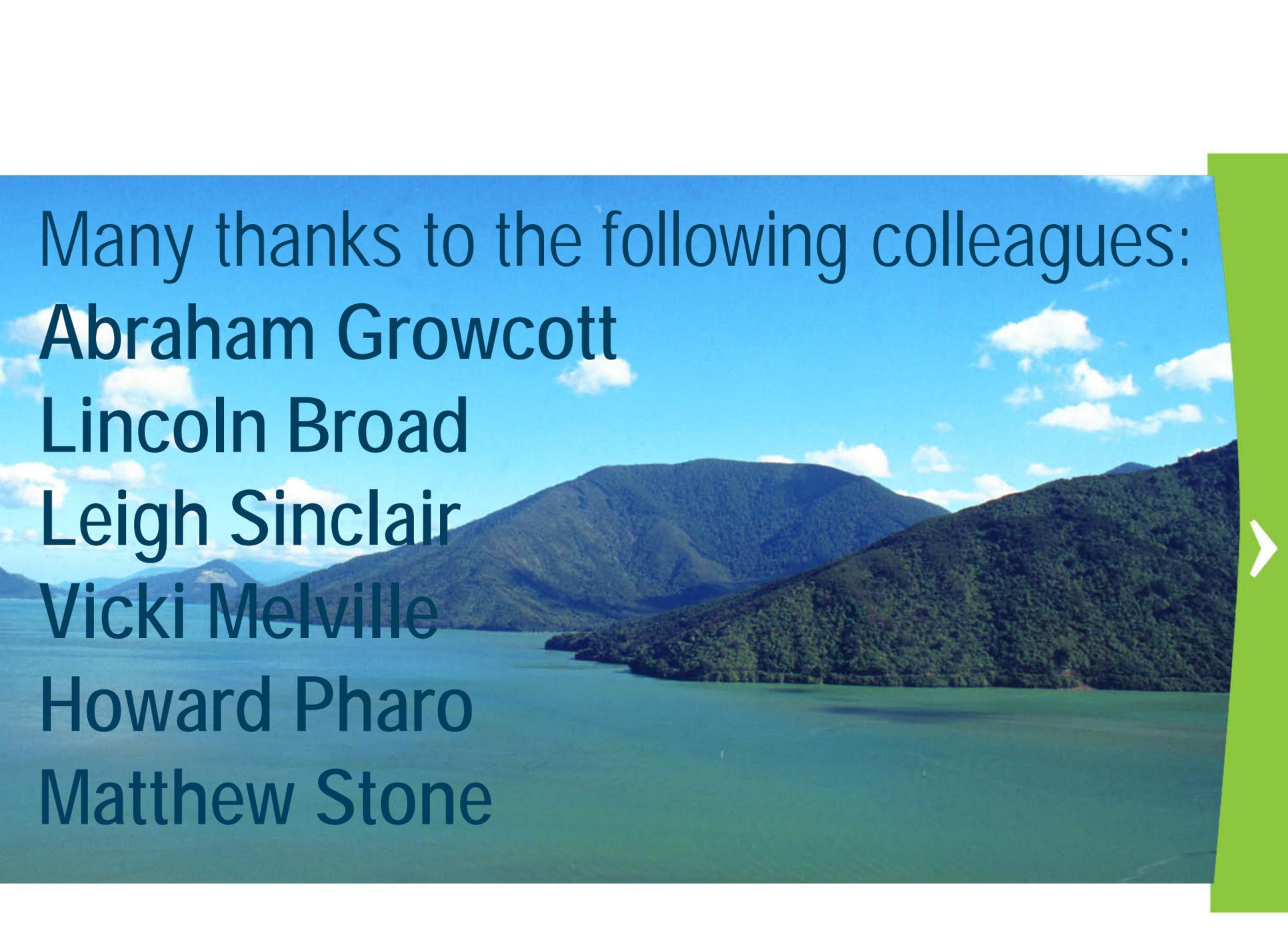


Further information needed

- Likely route of PEDV introduction into the United States?
- Time/temp data for the inactivation of PEDV in blood and offal
- Definitive time/temp inactivation data for PEDV in spray dried blood
- Is pelleted pig feed a vehicle for PEDV transmission?

Questions from Canberra

- Risk products and safe products for trade
- Virus inactivation – in trucks/on farm but mainly as it applies to products (e.g. does salting inactivate PED virus if the virus were a contaminant of natural sausage casings)
- Consistent nomenclature
 - US: nSECDv - caused by emerging porcine coronaviruses, including porcine epidemic diarrhea virus (PEDV) and porcine delta coronavirus (PDCoV)
 - European Commission approach: porcine epidemic diarrhoea - caused by the emerging alphacoronavirus and the new porcine deltacoronavirus



Many thanks to the following colleagues:

Abraham Growcott

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A large school of blue fish swimming in clear blue water. The fish are densely packed and appear to be moving in a coordinated manner. The background is a deep blue, suggesting an underwater environment.

**Many thanks for your
attention**

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