



# Situation Analysis and Implementation of Biosecurity Measures in Practice

- ≡ Learning objectives
- ≡ Biosecurity planning and implementation
- ≡ FMD transmission risk context
- ≡ Elements of biosecurity practice
- ≡ Biosecurity assessment checklist
- ≡ Application of disinfectant during fieldwork
- ≡ Carcass and waste disposal
- ≡ Communication on biosecurity application
- ≡ Biosecurity application challenges and incentives
- ≡ Summary

☰ Quizzes

☰ References

# Learning objectives

---

**At the end of the lesson you would be able to**

- Describe concepts of biosecurity application.
- Examine biosecurity measures applied at the small scale farm.
- Explain key factors for application of disinfection in practice.
- Discuss the challenges in implementation of personal and farm biosecurity.
- Describe stakeholder awareness on biosecurity.

**CONTINUE**

## Biosecurity planning and implementation

---



**"In the OIE Terrestrial Animal Health Code, biosecurity is defined as a set of management and physical measures designed to reduce the risk of introduction, establishment and spread of animal diseases, infections or infestations to, from and within an animal population'.**

World Organisation for Animal Health (OIE) (2019) –  
[Terrestrial Animal Health Code](#) "

Click ► to play the video



# Planning for Biosecurity

- **Before field work** : Preparation

- Trained human resources , access to equipment's and supplies
- Refer to biosecurity Checklist and Standard Operating Procedure (SOP).
- Information collection on the suspected case (s) , disease you will be dealing with, transmission risks.
- Team brief

- **During field work** : Situation analysis during outbreak investigation.

- Assess the epidemiological situation and surroundings.
- Assess the household or farm level physical and management measures.
- Apply personal biosecurity measures during field investigation.

- **After field work** :

- Disposal of waste, don't forget the procedures!
- Debrief

Advice to  
owners /  
village  
authority


Dissemination of  
communication  
material on  
biosecurity

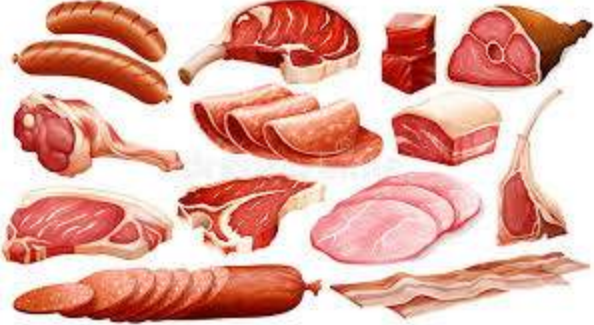
CONTINUE

# FMD transmission risk context

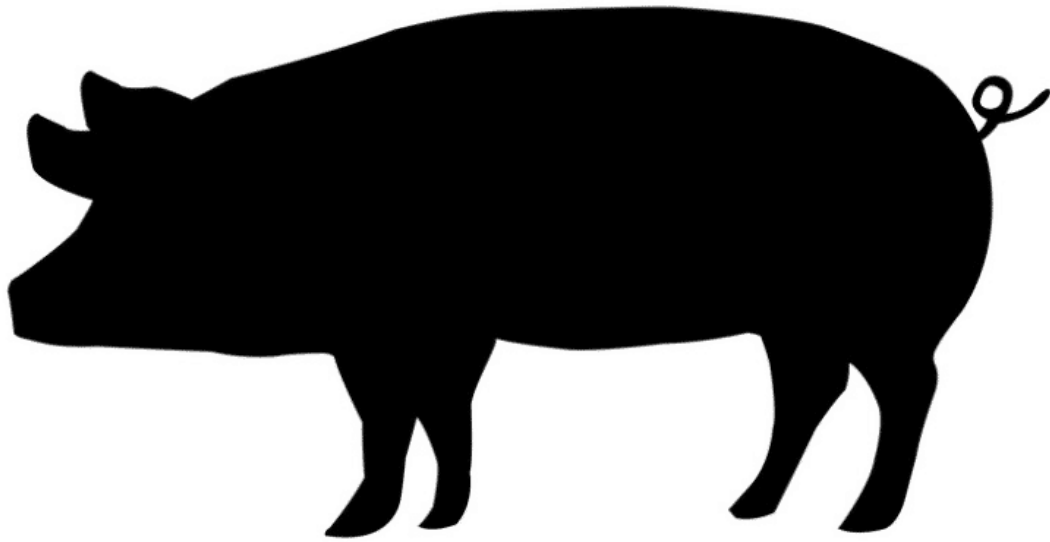
---

## FMD spread by

DIRECT CONTACT	ANIMAL PRODUCTS	AIR	MECHANICAL TRANSMISSION
<ul style="list-style-type: none"><li>• The most likely transmission route is through direct animal contact e.g. common grazing.</li><li>• Infected animals newly introduced into a herd (carrying virus in their saliva, milk, semen, etc.)</li></ul> 			

DIRECT CONTACT	ANIMAL PRODUCTS	AIR	MECHANICAL TRANSMISSION
<ul style="list-style-type: none"> <li>Virus-infected meat or other contaminated animal products (if fed to pigs when raw or improperly cooked).</li> </ul> 			

DIRECT CONTACT	ANIMAL PRODUCTS	AIR	MECHANICAL TRANSMISSION
<ul style="list-style-type: none"> <li>In particular when pigs are involved (large amount of virus particles in their breath).</li> <li>Infected aerosols (spread of virus from an infected property via air currents).</li> </ul>			



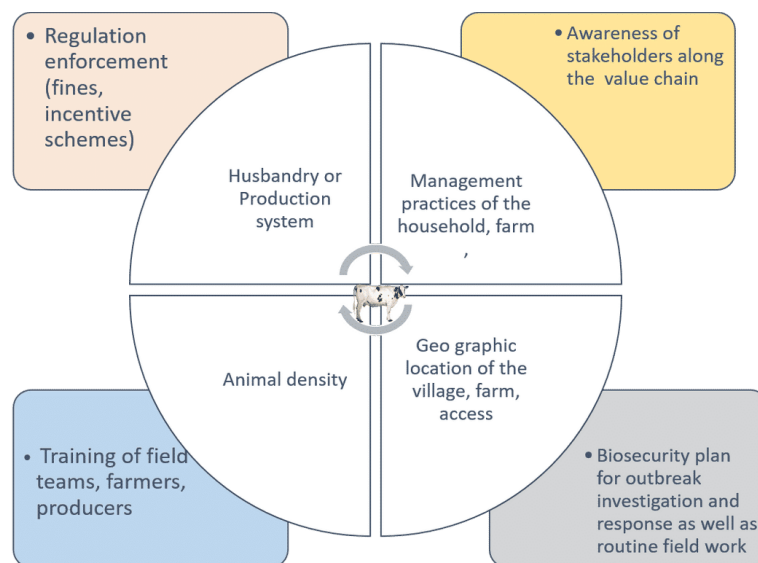
DIRECT CONTACT	ANIMAL PRODUCTS	AIR	MECHANICAL TRANSMISSION
<ul style="list-style-type: none"><li>• Virus present in secretions and excretions can be carried on footwear, clothing, vehicles, etc. e.g. personnel.</li><li>• Contaminated pens/buildings or contaminated animal transport vehicles.</li><li>• Contaminated materials such as hay, feed, water, milk or biologics.</li></ul>			



[CONTINUE](#)

# Elements of biosecurity practice

---



Click ↺ to flip the card

The level of biosecurity application varies depending on the type of husbandry system.

For example, in a free range system, animals comes in direct contact with each other during common grazing increases a risk of spread

Good management practice at the farm expected to have appropriate physical and management measures for biosecurity.

The number of animals at risk varies subject to good management include biosecurity practice, vaccination ,quarantine measures etc.

Geographic location and natural barriers might reduce the risk of disease introduction and spread. Though both the farm and regional biosecurity

The farm or village which has proximity to road and animal transport routes, other livestock sites, including abattoirs, live markets, auctions

Regulation for the farms or particular

- For example regulation on swill feeding in

production system to  
apply biosecurity  
measures to prevent  
the entry and spread of

spreading disease.

- A voluntary  
implementation,  
incentives or penalties

Training, refresher  
trainings of veterinary  
services staff, animal  
health workers, traders  
and farmers is  
important to improve  
biosecurity knowledge

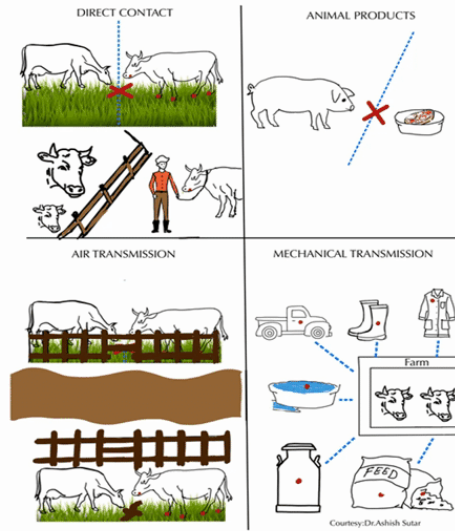
The training should be  
tailor made as per the  
need. The trainer of  
trainer approach could  
be considered. The  
effectiveness and  
impact of these

CONTINUE

Click ► to play the video



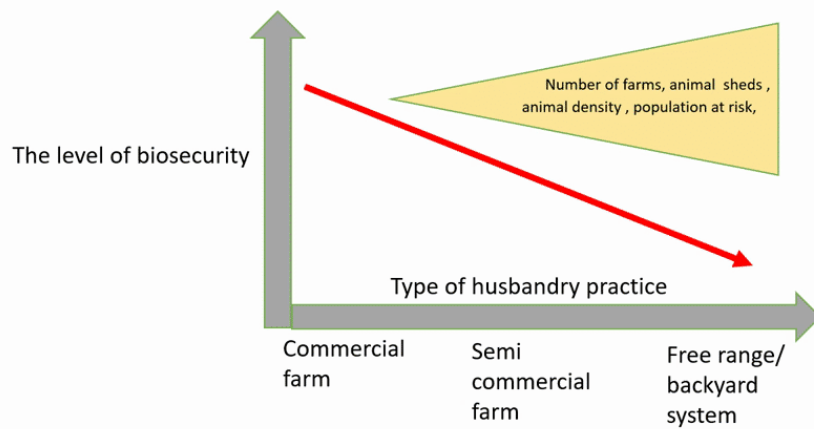
**Biosecurity measures to prevent /mitigate the risk of  
transmission of disease ( for example FMD )**



**CONTINUE**

Click ► to play the video

## Biosecurity at different production system



Source : Krzysztof Jazdzewski

CONTINUE

# Biosecurity assessment checklist

---

## Physical measures

The following points may be taken into consideration while conducting situation analysis on physical measures in place at the farm or household

**Click + to display information**

Is there permanent housing for animals ?



**Are the animal species kept separately ?**



**Do you find full fencing around the farm to control access of people, animals ?**



**Is there a sufficient distance between two farms ?**



Is there strict control of entry and exit at the farm ?



### Management measures

The following points may be taken into consideration while conducting situation analysis on management measures by the farm or household

**Click + to display information**

**Are there newly purchased animals quarantined?**

—



**Is there a dedicated area quarantine or isolation of newly purchase or sick animals maintaining adequate distance?**

—





**Is household feeding scraps and leftovers to Pigs (swill feeding)?**



**Are the dedicated foot ware and clothing used at the farm?**



**Is the foot bath provided at the entry and exit of the animal shed or enclosure?**



**How does the farm look like ? Does animal shed or farm premise cleaned and disinfect regularly?**



**Are the farm equipment's like water/feed trough , restraining equipment's cleaned regularly?**





Are the farm equipment's been shared with neighbors?

—



Is personal cleaning and disinfection practice like washing hands, farm clothes, foot ware is practiced?

—



**Is the farm or outside vehicle cleaned and disinfected upon entry?**

—



**Is the Artificial insemination used instead of moving animals?**

—



**Are the animals being let loose for common grazing / free range feeding?**

—



**How the manure management practice at the farm?**

—



**How parasite and vector control is managed at the farm?**



**Is there a carcass disposal mechanism exist in case of animal mortalities?**





CONTINUE

# Application of disinfectant during fieldwork

---

**The following points may be taken into consideration while applying disinfection into practice**

**Click + to display information**

## Cleaning before disinfection

At the cleaning and disinfectant station and at footbath, it is important to remove the organic matter ( soil, manure ,feed debris ) from equipment, clothing and shoes prior and after contact with animals.



## Monitor the disinfectant

Check and change the disinfectant if require to keep the disinfectant point or footbath or spray effective.



## Effectiveness

Each disinfectant have optimal pH to maximise effectiveness. The effectiveness changes if the disinfectants are mixed together. The sufficient contact time and proper application would be required for effectiveness of the disinfectant.



## Toxicity to animals, personnel and environment

Disinfectants are toxic to animals and have environmental consequences hence appropriate safety measures and care should be taken while its application and its judicious use are important factors to consider.



## OIE recommendations

Please refer to chapter 4.13 for general recommendations of use of disinfectants.

[https://www.oie.int/fileadmin/Home/eng/Health\\_standards/tahc/2018/en\\_chapitre\\_disinfect\\_disinsect.htm](https://www.oie.int/fileadmin/Home/eng/Health_standards/tahc/2018/en_chapitre_disinfect_disinsect.htm)





CONTINUE

## Carcass and waste disposal

---



- Proper disposal can help prevent or mitigate the further spread of pathogens.
- Equipment and materials that are potentially contaminated with an animal disease virus or other pathogen, must undergo treatment or disposal to inactivate or contain the virus or other pathogen
- Wastes requiring disposal following an animal disease outbreak include:

1. carcasses; milk and meat products; eggs and wool
2. contaminated manure or slurry; litter and bedding
3. contaminated feed and feeding stuff
4. contaminated personal protective equipment (PPE)
5. contaminated materials and equipment that cannot be cleaned and disinfected

[FAO 2020. Carcass management guidelines

<https://doi.org/10.4060/cb2464en>;Please see the reference slide for more references]

**CONTINUE**

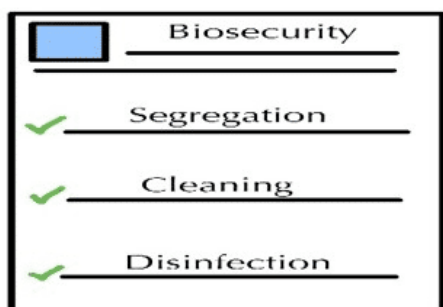
## Communication on biosecurity application

---

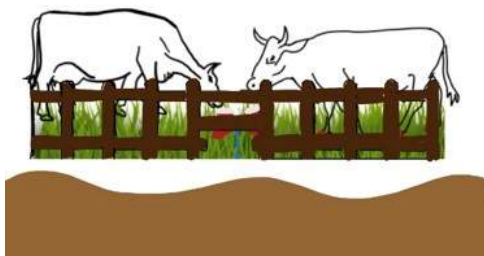
Click ↻ to flip the card



The communication material on biosecurity should be tailored made to the target stakeholders. e.g. farmers, traders, veterinarians, para-veterinarians.



The step-wise clear and action oriented messages are required to be developed for awareness on biosecurity.



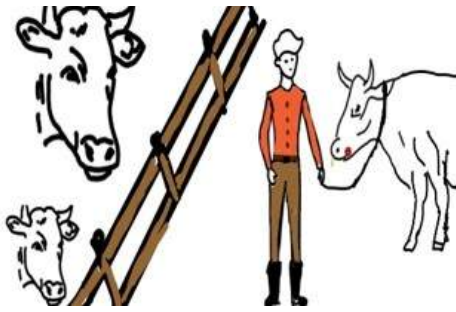
The communication materials should be delivered using local needs and context.



In the event of the outbreak, the information should be targeted and disseminated in timely manner using social media, local community networks.



The effectiveness and



impact of the awareness campaign could be evaluated to capture the success stories, identify lessons to improve for the future.



## Getting it right

Now let us walk you through this in detail...

### What you will need – the specific equipment you will use

- **Apron**  
In some instances it may be appropriate to cover your clothes e.g. in wet and muddy conditions. If it warrants it, use an apron to avoid obvious contamination of clothing. If you use an apron, it should be designed to cover underlying clothing as much as possible; with a style that fits with your culture and is practical to use. Ensure the apron is made from material that can be cleaned effectively.
- **Clothing**  
Ensure you have enough clothing so that a fresh set is worn for each village you vaccinate.
- **Footwear**  
Rubber footwear for ease of cleaning. Note: appropriate footwear may be open e.g. sandals or closed such as gumboots (better for protection of your feet).
- **Tarpaulin**  
Use a tarpaulin (approximately 3m x 2m, keep it small for ease of cleaning) at the station so you have somewhere clean and mud free to carry out cleaning and disinfection.

6

- **Vaccination equipment**  
Ice box, needles and syringes.
- **Animal restraint equipment**
- **Cleaning equipment**  
2 buckets (one for cleaning, one for disinfecting) and 2 long-handle scrubbing brushes. The buckets and brushes should be colour coded to separate between equipment used for the detergent and disinfection wash.
- **Detergent**  
Liquid soap.
- **Disinfectant**  
Citric acid, or other approved disinfectant.
- **Storage equipment**  
Sharps container (for example a plastic bottle, could simply be a used drinking bottle), plastic bags.



7

## Main rules

Apply these FIVE main rules at all times.

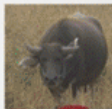
### 1. Have a plan

Don't ignore what is going on around you or else you might end up not vaccinating all animals in the village or vaccinating sick animals. Some planning may need to occur prior to the visit, but a reassessment of the plan will need to occur on the day of arrival in case something has changed.

Do talk with the village head and village animal health worker to get the information you need and have a vaccination plan, including a place where you are going to set up your cleaning and disinfection stations.

#### Which animals should you vaccinate?

Vaccination is about stopping spread. To be effective the team should aim to vaccinate all healthy animals in the village. Vaccination of sick animals will not make them get better. By vaccinating them you could end up spreading sickness to other unaffected animals in the village.



3

### 2. Lead by example

Don't ignore your own responsibilities e.g. don't tell others to clean their footwear and walk around in dirty ones yourself.

Do be a role model and take your work seriously e.g. share knowledge with others in the village.



### 3. Bring the right things

Don't arrive on village unprepared e.g. without a suitable disinfectant or with clothing that has been worn whilst handling livestock at another village.

Do take pride in bringing the right things to get the job done e.g. rubber footwear and a brush for cleaning.

#### How can a good leader make a difference?

A good vaccination team leader will check that all vaccination staff have clothing washed and cleaned after any previous village vaccination visit and that staff have appropriate footwear and aprons (as required). They will also make sure that they do the same themselves.

#### Why do I need to plan where I clean and disinfect?

Planning ensures you won't forget anything, you will be efficient and you will maximise the benefits of vaccination. Your cleaning and disinfection station sets up a barrier that you must pass through before leaving the village. Meaning you will be less likely to spread animal disease to another village.

4



## Be a biosecurity role model when vaccinating

Quick reference guide

### Main Rules

Apply these FIVE main rules at all times.

1 Have a plan

2 Lead by example

3 Bring the right things

4 Stick to the biosecurity principles at all times

5 Follow the rules

### Checklist

**What you will need**

- Apron
- Clothing
- Footwear
- Tarpaulin
- Vaccination equipment
- Animal restraint equipment
- Cleaning equipment
- Detergent
- Disinfectant
- Storage equipment

**When you enter a village**

- Ensure you have all the equipment that you need.
- Park vehicle away from animal areas.
- Establish a cleaning and disinfection point near a water source.
- Always use new disposable needles in different villages. Within the same herd/group you can reuse needles.
- Empower others by taking time to explain the biosecurity procedure to key personnel and why it is important to use it.
- Communicate the vaccination plan so everyone knows what you are doing.

**When you exit a village and between visits**

- Clean and disinfect all equipment and yourself.
- Once you have cleaned and disinfected yourself and your equipment avoid contact with livestock and areas where there has been contact or animal contamination.
- If another village is being vaccinated that day, change into a new set of clothes prior to visiting the next village. Pack your dirty clothes into an airtight bag for washing.
- In the evening wash clothes in warm water with detergent and then dry, only freshly cleaned clothing should be used for the next village visit.
- Check that all equipment is complete, clean and disinfected.

### Getting it right

Now let us walk you through this in detail...

1

Make sure you park your motor vehicle away from animal areas.

2

Put on the equipment and biosecurity gear you will need.

3

Station a person to control the plan for biosecurity and vaccination with key villagers.

4

Prepare the biosecurity procedure to be performed.

5

Lay out your equipment and set up cleaning and disinfection point.

6

Explain the biosecurity procedure to the villager and ensure they understand the importance of the procedure.

7

Wash and clean all equipment and yourself.

8

Once all equipment has been cleaned and disinfected, check your hands, then equipment, using rubbing alcohol.

9

Disinfect your hands, feet, equipment, using approved disinfectant.

10

Put equipment in a clean bag and disinfect it with rubbing alcohol.

11

Clean and disinfect equipment parts of arms and legs using rubbing alcohol.

12

Clean and disinfect the vaccine and all equipment, bag it and seal with disinfectant.

13

Leave directly by motor vehicle, change into a new set of clothes prior to visiting the next village.

14

Wash clothes at end of the day, air-dry them and pack in a bag.

CONTINUE



## Biosecurity application challenges and incentives

---



- Implementation of personal biosecurity principles varies depending on veterinary judgement and leadership.
- The practicality, socio-cultural acceptance, climatic conditions and recurring budget could be some of the

key drivers in biosecurity practice. These factors may vary with country context and local situation.

- Incentives to encourage and enhance biosecurity application are being considered to overcome compliance issue . For example certification, higher prices of the livestock, easier access to insurance , loan and compensation.
- Develop capacity to maintain biosecurity equipment and supplies and prepare in advance for outbreak investigation and response.
- Develop fit for purpose and tailor made biosecurity programme for small and semi-commercial operations.
- Enhance awareness campaigns for farmers, traders , community animal health workers as well as decision makers on biosecurity. The focus should be to build /strengthen knowledge, skills and practice on biosecurity culture.

**CONTINUE**

## Summary

---

- Biosecurity compliance is one of the most critical tool and measure to prevent the introduction and spread of transboundary animal disease in routine fieldwork or in the event of outbreak and response management.
- General Biosecurity principles must apply to all farming system and disease however biosecurity plan should be tailored made depending on specific disease, husbandry system and other elements.
- The application of farm and personal biosecurity varies depending on the knowledge, attitude, behaviour and awareness of the risk of introduction and spread of the disease.
- Training of veterinary services, animal health workers, farmers and traders is important to promote leadership and inculcate biosecurity culture.

- Effective communication would ensure an appropriate level of awareness is maintained amongst key stakeholders and the general public to deal with insufficient, incorrect, and non-updated information particularly during disease outbreaks and emergency response management.

**CONTINUE**

## Quizzes

---

1. Which are elements that could influence the farm level biosecurity application ? (select one or more)

---

☐

Legal provision and enforcement

☐

Awareness of communities and other stakeholders on benefits of biosecurity

☐

Animal production system

☐

Knowledge of the transmission of the disease

☐

Field team effectively apply biosecurity principles in practice

SUBMIT

---

2. **True or False?** Foot and Mouth Disease Virus (FMDV) is not easily destroyed by a high or low pH but the disinfectants used may be caustic or corrosive in concentrated form.

---

☐ True

☐ False

SUBMIT

---

3. **True or False?** African Swine Fever Virus (ASFV) is susceptible to ether and chloroform and iodine compounds.

---

☐ True

☐ False

SUBMIT

4. Which are **appropriate physical measures** on biosecurity in place at the farm or household from the list? (select one or more)

---

☐

Farm has a strict control of entry and exit

☐

Livestock shed has a full fencing to prevent the movement of people, animals ( feral /wild) and vehicles

☐

Livestock farm equipment's like water/feed trough , restraining equipment's cleaned regularly

☐

Livestock are kept separately as per the species

☐

Livestock has a proper housing or enclosure

SUBMIT

5. Which are **appropriate management measures** on biosecurity in place at the farm or household from the list? (select one or more)

---

☐

A personal cleaning and disinfection practice like washing hands, farm clothes, foot ware is practiced at the farm

☐

The footbath provided at the entry and exit of the livestock shed /enclosure

☐

The quarantine shed/enclosure in place to isolate sick animals

☐

Farm equipment's are shared with neighbors for temporary period

☐

The swill feeding is practiced only after appropriate treatment to the swill

SUBMIT



6. **True or False?** Communication messages to improve biosecurity measures should be tailored made depending on the need and type of stakeholders

---

☐

True

☐

False

SUBMIT

CONTINUE

## References

---

- Application of biosecurity in different production systems at individuals, country and regional levels by Silvia Bellini [https://www.oie.int/en/document/2018\\_eur1\\_bellini\\_a/](https://www.oie.int/en/document/2018_eur1_bellini_a/)
- ASF Disease card. OIE general recommendation on disinfection.  
[https://www.oie.int/fileadmin/Home/eng/Health\\_standards/tahc/2018/en\\_chapitre\\_disinfect\\_disinsect.htm](https://www.oie.int/fileadmin/Home/eng/Health_standards/tahc/2018/en_chapitre_disinfect_disinsect.htm)
- FMD Disease card : <https://www.oie.int/app/uploads/2021/03/foot-and-mouth-disease.pdf>
- FMD transmission : <https://www.oie.int/en/disease/foot-and-mouth-disease/>
- Food and Agriculture Organization of the United Nations/World Organisation for Animal Health/World Bank. 2010. Good practices for biosecurity in the pig sector – Issues and options in developing and transition countries. FAO; Animal Production and Health Paper No. 169. Rome, FAO. [www.fao.org/docrep/012/i1435e/i1435e00.pdf](http://www.fao.org/docrep/012/i1435e/i1435e00.pdf)
- FAO 2020. Carcass management guidelines – Effective disposal of animal carcasses and contaminated materials on small to medium-sized farms. FAO Animal Production and Health Guidelines No. 23. Rome. <https://doi.org/10.4060/cb2464en>
- Guidelines for personal veterinary biosecurity  
[https://www.academia.edu/11800112/Guidelines\\_for\\_Veterinary\\_Personal\\_Biosecurity](https://www.academia.edu/11800112/Guidelines_for_Veterinary_Personal_Biosecurity)
- <https://inspection.canada.ca/animal-health/terrestrial-animals/biosecurity/standards-and-principles/proactive-management/eng/1374175296768/1374176128059?chap=6>
- OIE general recommendation on disinfection.  
[https://www.oie.int/fileadmin/Home/eng/Health\\_standards/tahc/2018/en\\_chapitre\\_disinfect\\_disinsect.htm](https://www.oie.int/fileadmin/Home/eng/Health_standards/tahc/2018/en_chapitre_disinfect_disinsect.htm)
- World Organisation for Animal Health (OIE) (2019) – [Terrestrial Animal Health Code](#)

**Congratulations - end of lesson reached**

