

VRA 21: What are the risks of causing a new outbreak of foot and mouth disease (FMD) by shooting birds?

1. SUMMARY OF OVERALL RISK

This risk assessment was compiled according to terms of reference provided by the Scottish Government regarding time of delivery, title of veterinary risk assessments (VRAs) and level of detail required. EPIC scientists created a generic framework suitable for the VRAs; collated and updated existing information on risks; filled gaps in the documents (including references where appropriate); and drafted new VRAs where necessary. These documents may require updating as new information becomes available or legislation develops, or if more in-depth assessment is necessary.

The purpose of this document is to qualitatively assess the risk of the specified activity in the face of an FMD outbreak in the UK. The assessment includes proposed actions to mitigate the risks associated with the specified activity, and which could form the basis of license conditions where necessary.

DEFINITIONS OF RISK LEVEL (OIE 2004, DEFRA 2011):

Negligible So rare that it does not merit consideration

Very low Very rare but cannot be excluded

Low Rare but could occur

Medium Occurs regularly

High Occurs very often

Very High: Events occur almost certainly

Overall risk: The risk of allowing the activity described is:

	PZ	SZ	RZ
With no mitigation measures	medium	medium	low
With mitigation measures described	medium	low	very low

2. LEGISLATION, DEFINITIONS & ASSUMPTIONS

Statutory disease control requirements are applicable to livestock premises on suspicion and confirmation of FMD. When suspicion of disease cannot be ruled out, and diagnostic samples are taken, a Temporary Control Zone is put in place (TCZ) surrounding the suspect premises. On confirmation of disease, a national movement ban (NMB) is enforced by introducing a national Restricted Zone (RZ). A 3 km Protection Zone (PZ) and 10km Surveillance Zone (SZ) are implemented which place restrictions on movements and activities around infected premises to prevent spread of disease. Later in the outbreak, restrictions may be relaxed either through reducing the size of the RZ or through allowing some resumption of normal activities under licence within the RZ, SZ or PZ. In this VRA, RZ is used to refer to areas which are within the RZ, but do not also fall within the PZ or SZ.

Access to infected premises or premises under suspicion of infection is not permitted. In a PZ, a person may shoot birds under the authority of a licence granted by the Scottish Ministers. In addition the occupier of any land, members of the occupier's household, persons employed by the occupier as beaters and any member of a shooting party of not more than 3 persons authorised by the occupier, may shoot game, other wildlife or deer found on that land (FMD (Scotland) Order 2006 Schedule 4, paragraph 15). In a SZ or RZ, there are no restrictions on shooting birds.

This VRA covers driven game shooting, rough shooting, grouse shooting and wildfowling. The different types of shooting are summarised below:

Driven shoots vary in size from small syndicates to large professional operations. Estates usually have shoots of 6 to 10 guns; shoots also include a large number of beaters, pickers up and other personnel. The pheasant shooting season runs from 1st October to 1st February. Partridge shooting takes place on more open ground and starts in September: it ends on the same date. Most of the birds which will be shot are reared in captivity before being released, and they continue to be fed throughout the shooting season. Shooting of pheasants and partridge differs from grouse shooting in that it is done at a different time of year, and in that most of the birds which are shot will have been reared elsewhere before being released into the wild. In addition, shooting of game birds such as pheasant and partridge takes place on farmland (where the livestock density may be high) rather than open moorland, used for grouse shooting. The use of trained but unrestrained dogs, and the activity of the beaters who drive birds towards the guns will inevitably disturb domestic livestock and wild fauna in the vicinity.

Grouse shoots usually take place in a formal setting similar to driven shoots. Birds are driven over the shooters by beaters. Grouse shooting can also be undertaken by 'walking up' grouse over pointers, or by flushing the birds with other dogs. The season lasts from August 12 to December 10. The grouse are wild and not artificially reared and the shoot takes place on moorland. These areas are often grazed by sheep but the stocking density is usually low.

In **rough shoots**, shooters use dogs to flush game out of the hedgerows, woods or other cover as they walk along. Longer distances are covered, potentially over farmland, but group sizes tend to be smaller, averaging around 6 people. A variety of game species may be shot.

Wildfowling is usually practised on coastal marshlands and estuaries, but also includes shooting duck on ponds and lakes and geese on farmland. In coastal areas participants tend to operate alone, at dawn and dusk, usually on foot and using a dog to retrieve shot birds. Some wildfowlers use decoys to attract birds displaced by the incoming tide, whilst others may walk the marsh to flush duck or snipe. Sheep and cattle may graze the coastal marshes, but the stocking density is low and the likelihood of contact with wildfowlers is small. Inland, duck are shot at dusk by two or three guns in hides around a pond or lake. Retrievers recover shot birds. Geese are shot at dawn and dusk by concealed guns sited under flightlines between the coast and the birds' feeding grounds on farmland. Some duck are reared to be shot - these are driven and flushed in the same manner as pheasants, though in a different habitat. Because wildfowling depends on stealth and concealment it is likely to cause minimal disturbance to farmed livestock and wild fauna.

In this VRA, the term 'agricultural land' or 'agricultural areas' refers to land that is being used or has been used for keeping livestock or other FMD-susceptible animals. It does not include arable land where no livestock have been present for an extended period of time.

Disinfectants must be approved for use by the Diseases of Animals (Approved Disinfectants) (Scotland) Order 2008 as amended and be used at the FMD Order dilution.

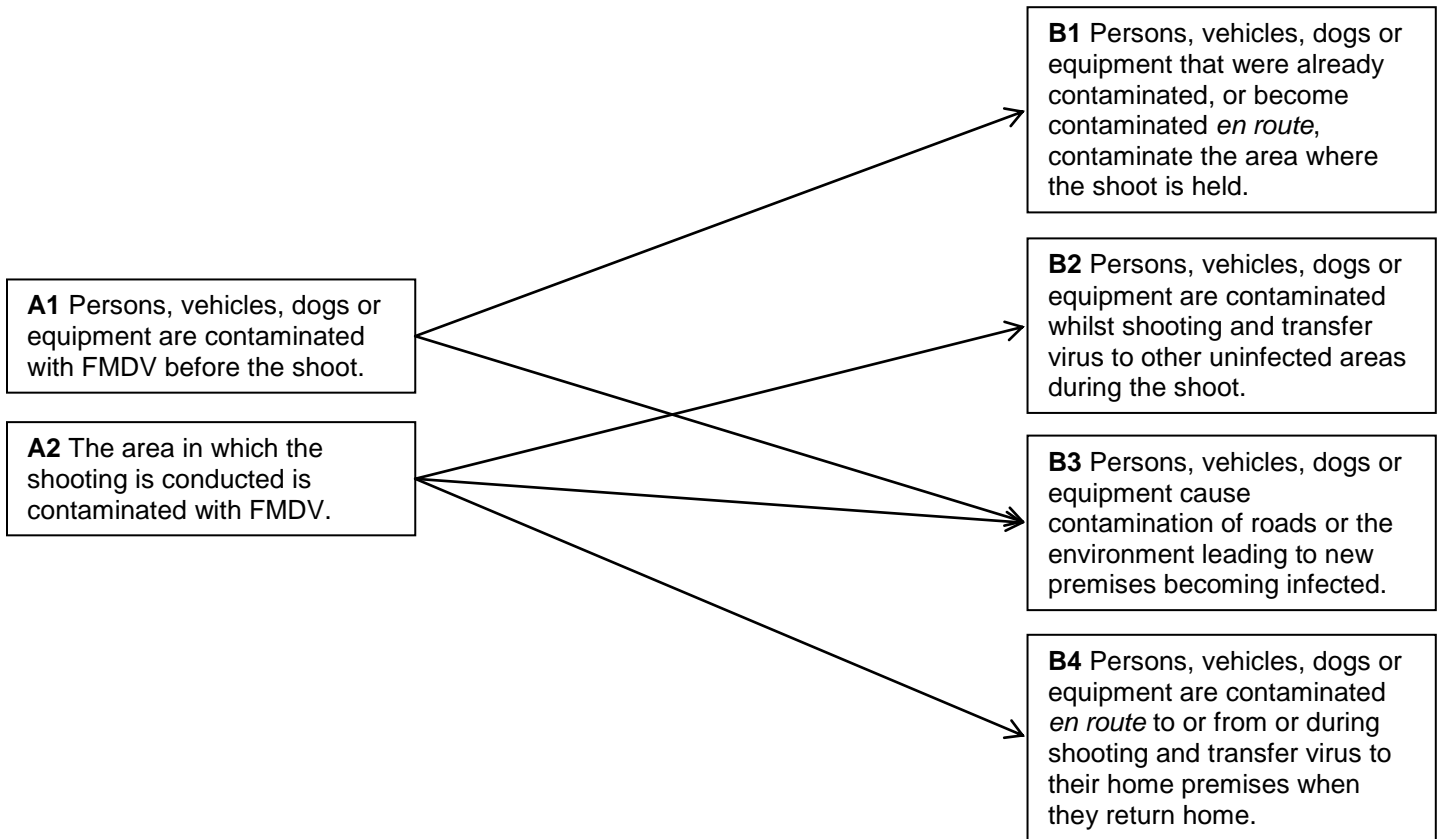
3. HAZARD IDENTIFICATION

(a) Hazard: FMD virus (FMDV)

(b) Specific risk:

During an FMD outbreak people shooting birds may come into contact with FMDV or with susceptible livestock. There is a risk that FMDV will spread via people or other fomites and cause further disease outbreaks.

4. POTENTIAL RISK PATHWAYS



5. EXPOSURE ASSESSMENT

Factors which are likely to affect this probability of exposure are:	Comments and risk estimates if/where appropriate
Infection source: A1 Persons, vehicles, dogs or equipment are contaminated with FMDV before the shoot	
In general, risk of contamination is influenced by: <ul style="list-style-type: none"> Proximity to a premises where FMD has been detected ("infected premises") 	<ul style="list-style-type: none"> Risk of transmission is highest adjacent or close to premises with FMD. Once a NMB is in place, most transmission occurs by local spread (<3k from premises with FMD) (Gibbens <i>et al.</i> 2001, Keeling <i>et al.</i> 2001, Haydon <i>et al.</i> 2003). It is difficult to quantify relative risks associated with different transmission routes within local spread but indirect transmission via fomites and contamination of roads and environment around premises with FMD are likely to play an important role. Risk of airborne transmission decreases rapidly with distance from premises with FMD and is only likely to occur over significant distances if many infected animals (especially pigs) are present (Donaldson and Alexanderson 2001). In a PZ there are known infected premises which may be at varying stage of diagnosis, slaughter, cleansing

	<p>and disinfection. The risk of local transmission from detected infected premises is medium.</p> <ul style="list-style-type: none"> • In a SZ, there are no detected infected premises. The smallest distance at which infected premises could be located would be 3km away. The risk of local transmission from detected infected premises is low. • In a RZ, there are no detected infected premises. The smallest distance at which infected premises could be located is 10km so the risk of local transmission from detected infected premises is negligible.
<ul style="list-style-type: none"> • Presence of animals with undetected or incubating FMD, or failure to report FMD 	<ul style="list-style-type: none"> • In addition to premises where FMD has been detected (“infected premises”), there may be premises where FMD is present but has not yet been detected. • Infected livestock may excrete FMDV for several days before the appearance of clinical signs, potentially leading to transmission or contamination prior to disease detection, particularly in cattle and pigs (Alexanderson <i>et al.</i> 2003, Orsel <i>et al.</i> 2009). • FMD in sheep can be difficult to detect clinically as not all animals show clinical signs, and clinical signs are usually mild and short lived (Hughes <i>et al.</i> 2002). In addition, sheep may be inspected less frequently/ thoroughly. There is therefore a higher risk of undetected infection on sheep-only premises. • The risk of undetected infection is highest in a PZ, followed by a SZ then a RZ. • The risk of undetected premises with FMD arising from spread over longer distances can be better quantified by analysis of movement data to identify movements of animals from areas where FMD has been detected, before the NMB.
<ul style="list-style-type: none"> • Stage of outbreak 	<ul style="list-style-type: none"> • Early in the outbreak there is increased risk of undetected infection in all zones and lack of information on movements.
<ul style="list-style-type: none"> • Likelihood of detection and transmission is influenced by FMD virus strain 	<ul style="list-style-type: none"> • There are 7 serotypes of FMDV: O, A, C, SAT1, SAT2, SAT3 and Asia 1. The different serotypes (and different strains within each serotype) have different characteristics for example in terms of host species susceptibility, length of incubation period, ease of detecting clinical signs and likelihood of air borne transmission (Kitching and Hughes 2002, Gloster <i>et al.</i> 2008). Much UK research is based on the 2001 outbreak, which was caused by serotype O, strain PanAsia. However future outbreaks may involve other serotypes/strains and therefore present different epidemiological situations. On confirmation of FMD, the serotype and strain would be identified by The Pirbright Institute. This information would help to inform estimates of risk.
<p>Specific risks: Likelihood that vehicles are contaminated (including vehicles travelling to the area and estate vehicles which go the land where shooting is carried out)</p>	
<ul style="list-style-type: none"> • Origin of vehicles 	<ul style="list-style-type: none"> • The risk that vehicles are contaminated is influenced by the proximity of the home premises to premises with FMD, and the presence of susceptible livestock with undetected infection at the home premises, as above. • If vehicles are from the estate only and no susceptible livestock are present on the estate, the risk that vehicles move FMDV to the hills is very low. • If vehicles are from the estate only, and the estate also

	keeps susceptible livestock, the risk of contaminated vehicles is increased.
<ul style="list-style-type: none"> • Movement history of vehicles 	<ul style="list-style-type: none"> • Movement to other premises with susceptible livestock increases probability of contamination.
<ul style="list-style-type: none"> • Cleansing and disinfection of vehicles 	<ul style="list-style-type: none"> • FMDV is very sensitive to approved disinfectants and good biosecurity will reduce risk of virus transfer via fomites such as personnel, vehicles and equipment.
<ul style="list-style-type: none"> • Length and duration of journey, number of stops and proximity of route to premises with FMD 	<ul style="list-style-type: none"> • Longer journeys, multiple stops and proximity of the route to premises with FMD increase the risk of vehicles becoming contaminated <i>en route</i>.
Likelihood that people are contaminated (including people from estate – beaters, assistants, and people from outwith estate – clients, visitors)	
<ul style="list-style-type: none"> • Recent contact with susceptible livestock 	<ul style="list-style-type: none"> • Risk is greatest if people have had contact with infected animals, and next greatest if they have been to premises with FMD. • The likelihood and amount of contamination varies with species, stage of infection, degree of contact and cleansing and disinfection.
<ul style="list-style-type: none"> • Occupation 	<ul style="list-style-type: none"> • Likelihood and amount of contamination increases with potential occupational exposure to FMD (i.e. farmer, vet).
<ul style="list-style-type: none"> • Cleansing and disinfection prior to arrival 	<ul style="list-style-type: none"> • Risk of contamination decreases if clean clothing worn and cleansing and disinfection of outerwear has been undertaken
Likelihood that dogs are contaminated before the hunt (dogs cannot be infected with FMDV but may carry the virus mechanically, for example on their paws)	
<ul style="list-style-type: none"> • Dogs used or not 	<ul style="list-style-type: none"> • Dogs are usually used and could vary from one for wildfowling to over ten for driven shoots.
<ul style="list-style-type: none"> • Dogs from same estate or brought in from elsewhere 	<ul style="list-style-type: none"> • No risk of bringing FMDV from another premises if dogs are from same estate.
If dogs are brought in from another premises: <ul style="list-style-type: none"> • Proximity to premises with FMD 	<ul style="list-style-type: none"> • See above • Risks are highest in the PZ, followed by the SZ then RZ.
<ul style="list-style-type: none"> • Presence of livestock with undetected infection at home premises 	<ul style="list-style-type: none"> • The risk that dogs are contaminated is greatest if infected animals are present. Risk can be reduced by inspecting susceptible livestock regularly for signs of FMD and preventing dogs coming into contact with livestock.
<ul style="list-style-type: none"> • Location of home premises, kennel facilities and exercise areas 	<ul style="list-style-type: none"> • Risk increases with increasing proximity to premises with FMD.
<ul style="list-style-type: none"> • Movement history of visitors and kennel personnel 	<ul style="list-style-type: none"> • Risk is greatest if persons have had contact with infected animals, and next greatest if they have been to premises with FMD. • The risk can be reduced by limiting visitors and ensuring appropriate cleansing and disinfection.
<ul style="list-style-type: none"> • Movement history of dogs prior to stalking 	<ul style="list-style-type: none"> • Movement to other premises, particularly if there is a high risk of undetected infection, increases the probability of contamination.
<ul style="list-style-type: none"> • Source of feed and bedding 	<ul style="list-style-type: none"> • Feed and bedding from premises with undetected infection may be contaminated. FMDV has been recorded surviving for 3 months on hay (Bartley <i>et al.</i> 2002).
<ul style="list-style-type: none"> • If coming from elsewhere, length and duration of journey, number of stops en route and proximity of route to premises with FMD 	<ul style="list-style-type: none"> • Longer journeys, multiple stops and proximity to infected areas increases risk.
<ul style="list-style-type: none"> • Cleansing and disinfection 	<ul style="list-style-type: none"> • Equipment used for dogs which has been exposed to susceptible livestock or potential contamination can be cleansed and disinfected. Dogs should be free from

	excessive dirt.
Likelihood that equipment is contaminated	
<ul style="list-style-type: none"> • Previous use in contaminated areas without cleansing and disinfection 	<ul style="list-style-type: none"> • There is a risk of transmission through equipment that has been used in other areas and become contaminated.
Infection source: A2 The area in which the shooting is conducted is contaminated with FMDV	
<ul style="list-style-type: none"> • Proximity to premises with FMD, extent and timing of movements of susceptible animals from or close to premises with FMD and stage of outbreak 	<ul style="list-style-type: none"> • See A1.
<ul style="list-style-type: none"> • Presence and density of susceptible livestock in the area that activity is conducted. 	<ul style="list-style-type: none"> • The risk that the environment is contaminated is greatest if susceptible livestock are present in the area. • Since FMDV can survive in the environment, risk is also increased if the area has been used for grazing livestock within the last month (longer if cold weather). • The likelihood that susceptible livestock are or have been present depends on the type of shoot.
<ul style="list-style-type: none"> • Level of use of area where event is held 	<ul style="list-style-type: none"> • The risk that the environment is contaminated increases with increasing level of use
<ul style="list-style-type: none"> • Wildlife in locality 	<ul style="list-style-type: none"> • In other parts of the world, wildlife can play an important role in FMD transmission (Ward <i>et al.</i> 2007). • All British deer species are susceptible to infection and can transmit virus to domestic livestock experimentally (Gibbs <i>et al.</i> 1975). Wild boar are also susceptible (Elbers <i>et al.</i> 2003, Hartley 2010). • However in Western Europe post-outbreak serosurveys and diagnostic testing of animals with suspicious clinical signs have never revealed positive animals (Elbers <i>et al.</i> 2003, Mouchantat <i>et al.</i> 2005) and there is no evidence that deer or boar have played a role in FMDV spread in UK. • The density of wild boar in the UK at present is likely to be too low for boar to be of importance in transmission (Hartley 2010). • The risk of disease spread through infected deer or wild boar is therefore negligible, but this risk could change if ecological factors change, such as deer and boar densities or contact patterns. Ideally risks should be assessed using up-to-date information for a specific location. • Other species can be infected, such as hedgehogs, but are unlikely to be important in transmission. • Wildlife can also move FMDV mechanically if they become contaminated (for example scavengers such as seagulls, crows or foxes). • Overall, the risks of further spread of FMDV associated with wildlife are very low but any activity which causes disturbance to wildlife does increase this risk, especially close to premises with FMD.
<ul style="list-style-type: none"> • Meteorological conditions 	<ul style="list-style-type: none"> • Favourable conditions will increase the probability of survival and thus probability of contamination being present. • FMD can survive on pasture for a few days in hot weather, and up to 2 to 3 months in bovine faeces at 4°C. Survival duration increases with decreasing temperatures, increasing relative humidity and presence of organic material and varies with virus strain (reviewed by Bartley <i>et al.</i> 2002).
Risk of transmission: B1 Persons, vehicles, dogs or equipment that were already contaminated, or become	

contaminated <i>en route</i>, contaminate the area where the shoot is held	
<ul style="list-style-type: none"> Contact between vehicles and susceptible livestock 	<ul style="list-style-type: none"> Movement of vehicles onto land where susceptible livestock are or will be present increases the risk of transmission if vehicles are contaminated. This can be reduced by ensuring cars are parked on hard standing in areas that susceptible livestock do not access. Cleansing and disinfection of wheels and undercarriage can eliminate the risk if done properly but this is unlikely to be achievable for all people accessing the countryside.
<ul style="list-style-type: none"> Total numbers of attendees (clients, beaters, assistants, and dogs) 	<ul style="list-style-type: none"> Higher numbers increases the risk that some will be contaminated. Driven shoots may have the greatest number of people and dogs attending and therefore represent a higher risk. Wildfowling or rough shooting presents a lower risk since the number of people and dogs is lower.
<ul style="list-style-type: none"> Number of contaminated personnel, vehicles and animals 	<ul style="list-style-type: none"> Increasing numbers increases the total probable amount of FMDV that would be released, if present
<ul style="list-style-type: none"> Proximity of the area where stalking and shooting is conducted to susceptible livestock 	<ul style="list-style-type: none"> The greatest risks are associated with the presence of susceptible livestock in the area where the event is being held. Susceptible livestock on adjacent premises are also at increased risk. Since FMDV can survive in the environment, there are also risks for livestock which are later moved onto to an area where contamination has been introduced. If the activity is taking place in areas which are not agricultural land and are never used for grazing susceptible livestock or growing feed or bedding for susceptible livestock, the risks are negligible. The likelihood that susceptible livestock are or will be present depends on the type of shoot.
<ul style="list-style-type: none"> Contact between people and susceptible livestock 	<ul style="list-style-type: none"> Any potential contact with susceptible livestock increases the risk of transmission.
<ul style="list-style-type: none"> Duration of shoot and distance covered 	<ul style="list-style-type: none"> Total probable amount of contamination released is increased with duration of meeting and distance covered. Rough shoots are likely to cover longer distances.
<ul style="list-style-type: none"> Season 	<ul style="list-style-type: none"> Both livestock husbandry and shooting vary with season. Seasons for shooting birds vary by species but are predominantly between August and January. If times of highest shooting activity coincide with presence of livestock, there is a higher risk that livestock may be exposed to FMDV.
<ul style="list-style-type: none"> Cleansing and disinfection before starting activity 	<ul style="list-style-type: none"> FMDV is very sensitive to approved disinfectants and good biosecurity will reduce risk of virus transfer via fomites such as personnel, vehicles and equipment. Disinfectant foot baths can be effective at reducing contamination, as long as foot wear are also cleaned and disinfectant is regularly replenished.
<i>Risk of transmission: B2 Persons, vehicles, dogs or equipment are contaminated whilst stalking and transfer virus to other uninfected areas during the shoot</i>	
<ul style="list-style-type: none"> Contact with infected livestock or contaminated areas, number of people, size of group 	<ul style="list-style-type: none"> See B1.
<ul style="list-style-type: none"> Area covered, number of premises covered 	<ul style="list-style-type: none"> See B1 plus if the shooting takes place on land owned by more than one estate, there is an increased risk of transferring FMD between premises.

Risk of transmission: B3 Persons, vehicles, dogs or equipment cause contamination of roads or the environment leading to new premises becoming infected	
<ul style="list-style-type: none"> Failure to disinfect vehicle, personnel and equipment before outgoing and return journey 	<ul style="list-style-type: none"> Appropriate cleansing and disinfection reduce risk of contamination.
<ul style="list-style-type: none"> Length and duration of journey, number of stops en route and proximity of route to susceptible animals 	<ul style="list-style-type: none"> Longer journeys and multiple stops increase risk of contaminating roads or environment. Proximity to high densities of susceptible animals increases risk of disease outbreak if contamination does occur.
Risk of transmission: B4 Persons, vehicles, dogs or equipment are contaminated en route to or from or during stalking and transfer virus to their home premises when they return home	
<ul style="list-style-type: none"> Presence of susceptible livestock at home premises 	<ul style="list-style-type: none"> Direct or indirect contact with susceptible livestock provides opportunity for transmission, if contamination is present.
<ul style="list-style-type: none"> Failure to disinfect vehicles, personnel and equipment before entering the home premise 	<ul style="list-style-type: none"> Appropriate cleansing and disinfection reduce risk of contamination.

6. CONSEQUENCE ASSESSMENT

Spread of FMD to uninfected premises.

7. RISK MANAGEMENT OPTIONS

There are risks that allowing shooting of birds will allow FMDV to be moved to previously uninfected premises, via contaminated vehicles, personnel, animals and equipment. Indirect transmission of FMDV via fomites is an important source of infection, and any vehicles, people, equipment etc. which come into contact with FMDV risk passing disease to any livestock they come into contact with. However there is little information on the real importance of countryside access in FMD spread, meaning it is difficult to quantify this risk accurately. The risks associated with access to the countryside during an FMD outbreak are predominantly influenced by the likelihood that people/dogs will already be contaminated or that they will come into contact with contaminated land or infected but undiagnosed livestock whilst in the countryside. The highest risks are therefore associated with people who have had contact with infected livestock, or people who come into contact with livestock or livestock grazing areas at the event. The risks are higher in the PZ and to a lesser extent to SZ, since there are likely to be undetected premises with FMD, and people and other fomites are more likely to have come into contact with infected livestock.

The degree that this is likely to occur varies with different types of shooting. The risks are likely to be greatest for driven shoots, which can involve large groups of people and dogs arriving from different locations, and often take place over farmland. Grouse shooting takes place over moorland rather than farmland, hence the density of livestock is low. Rough shooting involves relatively small groups, although can cover longer distances. Wildfowling is likely to be lowest risk as it involves small groups or individuals and usually takes place in areas which do not have high livestock densities. Whilst an overall risk level has been assigned for "shooting birds", the differing risks associated with different types of shooting should be considered.

Theoretical risk management options include:

- (i) Not allowing shooting at all (with the exception of a party of up to 3 people as specified in the legislation.)
- (ii) Not allowing shooting in high risk areas i.e. in the PZ, but permitting it in other areas.
- (iii) Permitting some forms of shooting birds, for example limiting the number of people who can attend, or allowing wild fowling only.
- (iii) Preventing participation by people who keep or handle susceptible livestock in the course of their work, particularly in a PZ or SZ, and so are most likely to have been exposed to and contaminated by FMDV.
- (iv) Requiring participants to meet conditions regarding cleansing and disinfection.

These activities do increase the risk of spread of FMD to uninfected premises. However shooting is a significant rural industry in Scotland and not allowing any shooting is disproportionate to the risk. The risk in the RZ is reduced once the early stages of an outbreak have passed and there is less likelihood of undetected premises with FMD.

The risk is:

PZ

SZ

RZ

With no mitigation measures	medium	medium	low
With mitigation measures below	medium	low	very low

These risk levels were assigned based on scientific literature available and expert opinion where appropriate by considering the risk pathways and the factors affecting each risk pathway, as listed in sections 4 and 5.

8. SUGGESTED RISK MITIGATION MEASURES

The risk levels given in section 7 assume that the follow risk mitigation measures are followed:

A. At origin premises of dogs, if they are brought from elsewhere

- (i) If susceptible livestock are present
 - ensure physical separation from dogs and land used by dogs
 - inspect susceptible livestock regularly for evidence of FMD.
- (ii) Ensure that any straw bedding is from FMD-free sources.
- (iii) Vehicles used to carry dogs should not have been used to transport susceptible livestock.
- (iv) Disinfect transport vehicle, equipment and personnel before leaving home and before re-entry. Ensure dogs are not heavily contaminated.
- (v) Dogs should not be allowed to participate if they originate from or have visited a premises or exercise area situated in a PZ in the previous 30 days.
- (vi) Avoid visiting other premises en route as much as possible. If other premises are visited they should comply with the same standards as the Home Premises described above.

B. At location where shoot is held

- (i) Participants should not have visited an infected premises or any premises within the PZ where susceptible livestock are kept within the past 7 days.
- (ii) Vehicles used for access to the drives to be kept to a minimum and be cleansed and disinfected before entering and leaving the premises on which the shoot is held; Approved disinfectants must be used at the correct concentration.
- (iii) Ensure that susceptible livestock are not present on land used for shooting, or any route used to reach the area, or choose routes and shooting sites which avoid livestock areas. If the land or route has been grazed by sheep or cattle, it should not be used for at least 28 days after the last animal was removed, and the land should be kept free of livestock for at least 28 days thereafter. This should be followed at all times in the SZ, and followed where possible in the RZ.
- (iv) All participants (including clients, assistants etc.) should wear clean clothing and footwear when joining the shoot, and disinfect foot wear on arrival and after the shoot.
- (v) Dogs should be kept under close control when not retrieving fallen birds. Do not walk with dogs, even on a lead, where there may be cattle (because cattle are curious and approach dogs, and it may then be impossible to avoid contact with them).
- (vi) Do not approach, and never touch or handle, livestock.
- (vii) All vehicles, personnel and equipment should be cleansed and disinfected at the end of the shoot. If there are susceptible livestock present at the estate premises, cleansing and disinfection should be done before returning to the premises, and on leaving premises.

9. SOURCES OF EXPERT ADVICE

This VRA is based on the following VRAs:

VRA 2001 #26 (AHVLA) "What is the risk of causing a new outbreak of FMD by hunting?" Authors: R. Jones, Lisa Gallagher, Dr. Louise Kelly, Dr. Marion Wooldridge

VRA 2001 #12 (AHVLA) "What is the risk of causing new outbreaks of FMD by staging a specific equestrian event on agricultural land?" Authors Dr Wooldridge, L Gallagher, Dr Kelly, C Livesey, C Proudman, J Woods, P Kitching, KC Taylor, A Turnbull

10. AUTHORS

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12. NOTES

None