



Public Health  
England

# **Interim Risk Assessment for Cluster 5 mink-variant SARS-CoV-2 (based on modified NERVTAG tool)**

10 November 2020



# Current situation in Denmark

- Over 200 mink farms in Denmark have been infected with SARS-CoV-2; primarily in the North Jutland Region
- 7 different clusters of mink-variant viruses have been identified
- 214 people have been infected with these mink-variants in 5 of these clusters
- One of these variants, Cluster 5, has four changes in the spike protein (all share the 69+70del, 453F, 614G, 692V, 1229I mutations in the spike gene)
- This has been found on 5 mink farms
- Cluster 5 variant demonstrated less sensitivity for neutralising antibodies when tested against antibodies collected from people with previous infection
- Greatest concern is that this may pose a threat in terms of effectiveness of COVID-19 vaccines targeted at the spike protein



# Cluster 5 mink-variant in Denmark

- 12 human cases in Cluster 5 detected between August and September 2020
  - 9 cases have direct links to mink farms
  - However, 3 cases have no direct links to mink farms indicating human-to-human transmission in the local community
- Danish authorities reported no difference in clinical presentation, disease severity or transmissibility in comparison to other COVID-19 cases.
- No further cases with the cluster 5 strain seen after 15 September 2020



# Responses in Denmark

- Currently Denmark has widespread COVID-19 testing with 8000 tests per 100,000 population and 14% of samples are sequenced
- Although current PCR assays detected the mink-variants, they are developing a mink-variant specific PCR
- Restrictions put onto the North Jutland region
  - No travel in or out of region
  - No gatherings more than 10 persons
  - Closure of public venues and public transport
- Widespread testing being carried out in North Jutland with planned sequencing of all positive cases
- Culling has been completed for all mink farms infected with Cluster 5 virus
- To date, no further evidence of additional cases with Cluster 5 virus have been identified



# Public health actions in England

- Individuals who enter the country from Denmark as of Friday 6/11/2020 are being prospectively monitored:
  - Following IAS contact they will receive a home testing kit pack and will self-test immediately and at day 8 post entry.
- Passenger locator form (PLF) data combined with contact tracing and testing data were used to identify individuals who tested positive within 14 days of entry into the country following travel to Denmark.
  - PLF data is retained for 43 days.
  - Cases who are within 10 days of their test result were followed up by PHE
  - Cases up to and including 7 days post onset of symptoms (or test if asymptomatic) are admitted to a specialist ID centre. They are retested for rapid sequencing.
  - Cases who are 8-10 days post onset are retested may finish their isolation the community provided that PHE/ID network assess their circumstances as appropriate. They will also be retested using a home test kit.
  - Cases that are more than 10 days post onset/test are not isolated or tested. Their samples will be retrieved if possible from the testing laboratory, for sequencing.
- Case finding will be repeated daily until the risk assessment is lowered.
- UK and international viral genomic datasets are being monitored for the mutations described in the Danish mink variants.



# Situation in other countries

- Countries with the largest recognised mink farm industries include China, Poland, Denmark, the Netherlands and the USA
- Some countries have already banned mink farms, for example Germany, Austria, Switzerland, and Croatia.
- There have been no mink farms in England since 2002.
- There are other countries who have very few mink farms – Italy only has nine; Sweden only 40 (20 fewer now); 4 in France; Spain has 30, Ireland just 3.
- SARS-CoV-2 has been detected in mink in the Netherlands, Spain, Italy, Sweden, the USA and Denmark.
- No other countries have reported the same Cluster 5 mutation seen in Denmark at the current time.



# Interim Risk Assessment

- There are a number of sources of information that are still required to fully inform this risk assessment:
  - Results of sequencing from UK travellers returning from Denmark
  - ECDC Rapid Risk Assessment, due for publication on 12 November
  - Results of widespread population testing in North Jutland, Denmark due to be completed by 27 November plus sequencing of any positive cases
  - Confirmation of testing of Cluster 5 virus against vaccine-derived antibodies
- The proposed SARS-CoV-2 risk assessment tool requires review and ratification by NERVTAG and other expert groups



Public Health  
England

# Proposed interim risk assessment for Cluster 5 mink-variant SARS-CoV-2

10 November 2020





# Summary of scoring approach

- Modified NERVTAG assessment tool for avian influenza and other respiratory viruses
- Adapted for use for SARS-CoV-2 Cluster 5 mink-variants, not yet ratified
- There are human cases reported from other mink-variant viruses, but concern is focused on Cluster 5 at present
- Based on information available as of 10 November 2020
- Risk assessment includes assessment of the virus according to supplementary set of indicators:
  - Emergence and transmission from animals to humans
  - Transmissibility between humans
  - Infection severity
  - Susceptibility/interventions



# Cluster 5 mink-variant SARS-CoV-2

		SCORE	EXPLANATION
CORE DOMAINS	EMERGENCE FROM ANIMALS TO HUMANS	2/3	Sporadic transmission from animals to humans
	TRANSMISSIBILITY BETWEEN HUMANS	2/4	Limited non-sustained transmission
	CASE SEVERITY	2/3	Similar to wildtype SARS-CoV-2
SUPPLEMENTARY INDICATORS	POPULATION IMMUNITY/SUSCEPTIBILITY TO NEUTRALISING ANTIBODY	+1	Evidence of in vitro change in susceptibility to naturally occurring neutralising antibody
	INTERVENTIONS	0	Insufficient evidence at current time



# Cluster 5 mink-variant SARS-CoV-2

	Description	Risk Assessment
Baseline public health risk	Risk to humans in direct contact with mink in Denmark.	HIGH
Risk to general population within UK	Risk of exposures to UK residents limited to contact with infected travellers returning from Denmark at current time.	LOW
Risk to UK travellers coming from Denmark	High risk exposures possible in travellers to Denmark.	UNKNOWN