

Avian influenza Overview

Literature search on phenotypic and genetic characterisation of AI viruses: Protocol and results

The aim of this document is to report on the literature searches performed in the context of the Avian Influenza Quarterly Reports updating on the avian influenza situation within the Union and worldwide published by EFSA, ECDC and EURL

Literature searches are designed to provide information on phenotypic and genotypic characterisation of HPAI viruses circulating on other continents and regions (Africa, Asia, the Middle East) in domestic or wild birds or mammals (excluding humans).

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A.1. Search protocol

Bibliographic searches will be performed in PubMed database in order to retrieve peer reviewed literature. The search strings will combine concepts representing the Avian Influenza Viruses and populations of interest linked with the relevant Boolean operators.

Search terms will include a combination of free-text and subject index terms (Mesh terms). The results will be filtered using the date of introduction on the database in order to limit them to the relevant reporting period.

Two different search strings have been developed to identify the following:

- Phenotypic characterisation of HPAI viruses circulating in the EU in domestic and wild birds
- Phenotypic and genetic characterisation of HPAI viruses circulating on other continents in domestic or wild birds or mammals (excluding humans)

A.1.1. Phenotypic characterisation of HPAI viruses circulating in the EU in domestic and wild birds

Search terms considered

Concept	Terms
Avian influenza	Avian influenza, avian flu, influenza in birds, influenza in bird, bird flu, birds flu, bird influenza, birds influenza, influenza virus A, influenza viruses A, flu virus A, flu viruses A, influenzavirusA, influenza A, influenza A virus, Influenza A viruses, flu A, flu A virus, flu A viruses, fluvirus A, high pathogenic avian influenza, high pathogenic avian influenza virus, HPAI, HPAIV, HPAIVs, low pathogenic avian influenza, high pathogenic avian influenza virus, LPAI, LPAIV, LPAIVs, AIV, AIVs, H5N*, AH5N*, H7N*, AH7N*, H9N*, AH9N*, A(H5N*), A(H7N*), A(H9N*)
Birds	Bird, birds, aves, avian population, avian populations, poultry, poultries, fowl, fowls, chicken, chickens, gallus gallus, g. gallus, waterfowl, waterfowls, water fowl, water fowls, duck, ducks, swan, swans, anatidae, mallard, mallards, Anas platyrhynchos, A platyrhynchos, geese, goose, anser, turkey, turkeys, meleagris, quail, quails, coturnix, partridge, partridges, phasianidae, guineafowl, guineafowls, numida, numidae, ostrich, ostriches, struthio

Search strings

Search	Query	Concept
#3	Search (#1 AND #2)	Avian influenza AND Birds
#2	Search "Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR ((influenza*[tiab] OR flu[tiab]) AND ("virus A" OR "viruses A")) OR "influenza A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR LPAI [tiab] OR LPAIV[tiab] OR AIV[tiab] OR AIVs[tiab] OR H5N*[tiab] OR H7N*[tiab] OR H9N*[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	Avian influenza
#1	Search "Birds"[Mesh] OR bird[tiab] OR birds[tiab] OR aves[tiab] OR "avian population"[tiab] OR "avian populations"[tiab] OR poultr*[tiab] OR fowl[tiab] OR fowls[tiab] OR chicken*[tiab] OR "gallus gallus"[tiab] OR "g gallus"[tiab] OR waterfowl*[tiab] OR duck[tiab] OR ducks[tiab] OR anatidae[tiab] OR mallard[tiab] OR mallards[tiab] OR swan[tiab] OR swans[tiab] OR "Anas platyrhynchos"[tiab] OR "A platyrhynchos"[tiab] OR geese[tiab] OR goose[tiab] OR anser[tiab] OR turkey[tiab] OR turkeys[tiab] OR meleagris[tiab] OR quail[tiab] OR quails[tiab] OR coturnix[tiab] OR partridge*[tiab] OR phasianidae[tiab] OR guineafowl*[tiab] OR numida*[tiab] OR ostrich*[tiab] OR struthio[tiab]	Birds

Date filter will be applied using relevant dates for the reporting period and the field [Date - Entrez].

A.1.2. Phenotypic and genetic characterisation of HPAI viruses circulating on other continents in domestic or wild birds or mammals (excluding humans)

Search terms considered

Concept	Terms
Highly pathogenic avian influenza	High/highly pathogen* avian influenza, high/highly pathogen* avian flu, high/highly pathogen* influenza in birds, high/highly pathogen* influenza in bird, high/highly pathogen* bird flu, high/highly pathogen* birds flu, high/highly pathogen* bird influenza , high/highly pathogen* birds influenza , high/highly pathogen* influenza virus A, high/highly pathogen* influenza viruses A, high/highly pathogen* flu virus A, high/highly pathogen* flu viruses A, high/highly pathogen* influenzavirusA, influenza A, high/highly pathogen* influenza A virus, high/highly pathogen* influenza A viruses, high/highly pathogen* flu A, high/highly pathogen* flu A virus, high/highly pathogen* flu A viruses, high/highly pathogen* fluvirus A, high/highly pathogen* AIV, high/highly pathogen* AIVs, HPAI, HPAIV, HPAIVs, H5N*, AH5N*, H7N*, AH7N*, H9N*, AH9N*, A(H5N*), A(H7N*), A(H9N*)
Animals	<p>In order to simplify the retrieval of studies in animals, the search filter referenced below was used and adapted to include a better coverage of terms related to birds:</p> <p>Hooijmans CR, Tillema A, Leenaars M and Ritskes-Hoitinga M, 2010. Enhancing search efficiency by means of a search filter for finding all studies on animal experimentation in PubMed. Lab Anim, 44, 170-175. doi:10.1258/la.2010.009117</p> <p>The search string is designed to retrieve studies in animal experimentation, but it also can be used to retrieve all type of studies in animals.</p> <p>It contains names of animals not relevant for avian influenza; these terms will not affect the results. However, the use of the already made filter simplifies the construction of the search string.</p>

Search strings

Search	Query	Concepts
#3	Search (#2 AND #1)	Highly pathogenic avian influenza AND animals
#2	Search ((high pathogen*[tiab] OR highly pathogen*[tiab]) AND ("Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR "influenza virus A"[tiab] OR "influenza viruses A"[tiab] OR "influenza A"[tiab] OR "flu virus A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR AIV[tiab] OR AIVs[tiab])) OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR H5N*[tiab] OR H7N*[tiab] OR H9N*[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab])	Highly pathogenic avian influenza

#1 ¹	<p>Search "animal experimentation"[MeSH Terms] OR "models, animal"[MeSH Terms] OR "invertebrates"[MeSH Terms] OR "Animals"[Mesh:noexp] OR "animal population groups"[MeSH Terms] OR "chordata"[MeSH Terms:noexp] OR "chordata, nonvertebrate"[MeSH Terms] OR "vertebrates"[MeSH Terms:noexp] OR "mammals"[MeSH Terms:noexp] OR "primates"[MeSH Terms:noexp] OR "artiodactyla"[MeSH Terms] OR "carnivora"[MeSH Terms] OR "cetacea"[MeSH Terms] OR "chiroptera"[MeSH Terms] OR "elephants"[MeSH Terms] OR "hyraxes"[MeSH Terms] OR "insectivora"[MeSH Terms] OR "lagomorpha"[MeSH Terms] OR "marsupialia"[MeSH Terms] OR "monotremata"[MeSH Terms] OR "perissodactyla"[MeSH Terms] OR "rodentia"[MeSH Terms] OR "scandentia"[MeSH Terms] OR "sirenia"[MeSH Terms] OR "xenarthra"[MeSH Terms] OR "haplorhini"[MeSH Terms:noexp] OR "strepsirhini"[MeSH Terms] OR "platyrrhini"[MeSH Terms] OR "tarsii"[MeSH Terms] OR "catarrhini"[MeSH Terms:noexp] OR "cercopithecidae"[MeSH Terms] OR "hylobatidae"[MeSH Terms] OR "hominidae"[MeSH Terms:noexp] OR "gorilla gorilla"[MeSH Terms] OR "pan paniscus"[MeSH Terms] OR "pan troglodytes"[MeSH Terms] OR "pongo pygmaeus"[MeSH Terms] OR ((animals[tiab] OR animal[tiab] OR mice[Tiab] OR mus[Tiab] OR mouse[Tiab] OR murine[Tiab] OR woodmouse[tiab] OR rats[Tiab] OR rat[Tiab] OR murinae[Tiab] OR muridae[Tiab] OR cottonrat[tiab] OR cottonrats[tiab] OR hamster[tiab] OR hamsters[tiab] OR cricetinae[tiab] OR rodentia[Tiab] OR rodent[Tiab] OR rodents[Tiab] OR pigs[Tiab] OR pig[Tiab] OR swine[tiab] OR swines[tiab] OR piglets[tiab] OR piglet[tiab] OR boar[tiab] OR boars[tiab] OR "sus scrofa"[tiab] OR ferrets[tiab] OR ferret[tiab] OR polecat[tiab] OR polecats[tiab] OR "mustela putorius"[tiab] OR "guinea pigs"[Tiab] OR "guinea pig"[Tiab] OR cavia[Tiab] OR callithrix[Tiab] OR marmoset[Tiab] OR marmosets[Tiab] OR cebuella[Tiab] OR hapale[Tiab] OR octodon[Tiab] OR chinchilla[Tiab] OR chinchillas[Tiab] OR gerbillinae[Tiab] OR gerbil[Tiab] OR gerbils[Tiab] OR jird[Tiab] OR jirds[Tiab] OR merione[Tiab] OR meriones[Tiab] OR rabbits[Tiab] OR rabbit[Tiab] OR hares[Tiab] OR hare[Tiab] OR diptera[Tiab] OR flies[Tiab] OR fly[Tiab] OR dipteral[Tiab] OR drosophila[Tiab] OR drosophilidae[Tiab] OR cats[Tiab] OR cat[Tiab] OR carus[Tiab] OR felis[Tiab] OR nematoda[Tiab] OR nematode[Tiab] OR nematoda[Tiab] OR nematode[Tiab] OR nematodes[Tiab] OR sipunculida[Tiab] OR dogs[Tiab] OR dog[Tiab] OR canine[Tiab] OR canines[Tiab] OR canis[Tiab] OR sheep[Tiab] OR sheeps[Tiab] OR mouflon[Tiab] OR mouflons[Tiab] OR ovis[Tiab] OR goats[Tiab] OR goat[Tiab] OR capra[Tiab] OR capras[Tiab] OR rupicapra[Tiab] OR chamois[Tiab] OR haplorhini[Tiab] OR monkey[Tiab] OR monkeys[Tiab] OR anthropoidea[Tiab] OR anthropoids[Tiab] OR saguinus[Tiab] OR tamarin[Tiab] OR tamarins[Tiab] OR leontopithecus[Tiab] OR hominidae[Tiab] OR ape[Tiab] OR apes[Tiab] OR pan[Tiab] OR paniscus[Tiab] OR "pan paniscus"[Tiab] OR bonobo[Tiab] OR bonobos[Tiab] OR troglodytes[Tiab] OR "pan troglodytes"[Tiab] OR gibbon[Tiab] OR gibbons[Tiab] OR siamang[Tiab] OR siamangs[Tiab] OR nomascus[Tiab] OR symphalangus[Tiab] OR chimpanzee[Tiab] OR chimpanzees[Tiab] OR prosimians[Tiab] OR "bush baby"[Tiab] OR prosimian[Tiab] OR bush babies[Tiab] OR galagos[Tiab] OR galago[Tiab]</p>	Animals
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¹ Animals search string adapted from: Hooijmans CR, Tillema A, Leenaars M and Ritskes-Hoitinga M, 2010. Enhancing search efficiency by means of a search filter for finding all studies on animal experimentation in PubMed. *Lab Anim*, 44, 170-175. doi:10.1258/la.2010.009117

OR pongidae[Tiab] OR gorilla[Tiab] OR gorillas[Tiab] OR pongo[Tiab] OR pygmaeus[Tiab] OR "pongo pygmaeus"[Tiab] OR orangutans[Tiab] OR pygmaeus[Tiab] OR lemur[Tiab] OR lemurs[Tiab] OR lemuridae[Tiab] OR horse[Tiab] OR horses[Tiab] OR pongo[Tiab] OR equus[Tiab] OR cow[Tiab] OR calf[Tiab] OR bull[Tiab] OR reptile[Tiab] OR reptilia[Tiab] OR reptiles[Tiab] OR snakes[Tiab] OR snake[Tiab] OR lizard[Tiab] OR lizards[Tiab] OR alligator[Tiab] OR alligators[Tiab] OR crocodile[Tiab] OR crocodiles[Tiab] OR turtle[Tiab] OR turtles[Tiab] OR amphibian[Tiab] OR amphibians[Tiab] OR amphibia[Tiab] OR frog[Tiab] OR frogs[Tiab] OR bombina[Tiab] OR salientia[Tiab] OR toad[Tiab] OR toads[Tiab] OR "epidalea calamita"[Tiab] OR salamander[Tiab] OR salamanders[Tiab] OR eel[Tiab] OR eels[Tiab] OR fish[Tiab] OR fishes[Tiab] OR pisces[Tiab] OR catfish[Tiab] OR catfishes[Tiab] OR siluriformes[Tiab] OR arius[Tiab] OR heteropneustes[Tiab] OR sheatfish[Tiab] OR perch[Tiab] OR perches[Tiab] OR percidae[Tiab] OR perca[Tiab] OR trout[Tiab] OR trouts[Tiab] OR char[Tiab] OR chars[Tiab] OR salvelinus[Tiab] OR "fathead minnow"[Tiab] OR minnow[Tiab] OR cyprinidae[Tiab] OR carps[Tiab] OR carp[Tiab] OR zebrafish[Tiab] OR zebrafishes[Tiab] OR goldfish[Tiab] OR goldfishes[Tiab] OR guppy[Tiab] OR guppies[Tiab] OR chub[Tiab] OR chubs[Tiab] OR tinca[Tiab] OR barbels[Tiab] OR barbus[Tiab] OR pimephales[Tiab] OR promelas[Tiab] OR "poecilia reticulata"[Tiab] OR mullet[Tiab] OR mullets[Tiab] OR seahorse[Tiab] OR seahorses[Tiab] OR mugil curema[Tiab] OR atlantic cod[Tiab] OR shark[Tiab] OR sharks[Tiab] OR catshark[Tiab] OR anguilla[Tiab] OR salmonid[Tiab] OR salmonids[Tiab] OR whitefish[Tiab] OR whitefishes[Tiab] OR salmon[Tiab] OR salmons[Tiab] OR sole[Tiab] OR solea[Tiab] OR "sea lamprey"[Tiab] OR lamprey[Tiab] OR lampreys[Tiab] OR pumpkinseed[Tiab] OR sunfish[Tiab] OR sunfishes[Tiab] OR tilapia[Tiab] OR tilapias[Tiab] OR turbot[Tiab] OR turbots[Tiab] OR flatfish[Tiab] OR flatfishes[Tiab] OR sciuridae[Tiab] OR squirrel[Tiab] OR squirrels[Tiab] OR chipmunk[Tiab] OR chipmunks[Tiab] OR suslik[Tiab] OR susliks[Tiab] OR vole[Tiab] OR voles[Tiab] OR lemming[Tiab] OR lemmings[Tiab] OR muskrat[Tiab] OR muskrats[Tiab] OR lemmus[Tiab] OR otter[Tiab] OR otters[Tiab] OR marten[Tiab] OR martens[Tiab] OR martes[Tiab] OR weasel[Tiab] OR badger[Tiab] OR badgers[Tiab] OR ermine[Tiab] OR mink[Tiab] OR minks[Tiab] OR sable[Tiab] OR sables[Tiab] OR gulo[Tiab] OR gulos[Tiab] OR wolverine[Tiab] OR wolverines[Tiab] OR minks[Tiab] OR mustela[Tiab] OR llama[Tiab] OR llamas[Tiab] OR alpaca[Tiab] OR alpacas[Tiab] OR camelid[Tiab] OR camelids[Tiab] OR guanaco[Tiab] OR guanacos[Tiab] OR chiroptera[Tiab] OR chiropteras[Tiab] OR bat[Tiab] OR bats[Tiab] OR fox[Tiab] OR foxes[Tiab] OR iguana[Tiab] OR iguanas[Tiab] OR xenopus laevis[Tiab] OR parakeet[Tiab] OR parakeets[Tiab] OR parrot[Tiab] OR parrots[Tiab] OR donkey[Tiab] OR donkeys[Tiab] OR mule[Tiab] OR mules[Tiab] OR zebra[Tiab] OR zebras[Tiab] OR shrew[Tiab] OR shrews[Tiab] OR bison[Tiab] OR bisons[Tiab] OR buffalo[Tiab] OR buffaloes[Tiab] OR deer[Tiab] OR deers[Tiab] OR bear[Tiab] OR bears[Tiab] OR panda[Tiab] OR pandas[Tiab] OR "wild hog"[Tiab] OR "wild boar"[Tiab] OR fitchew[Tiab] OR fitch[Tiab] OR beaver[Tiab] OR beavers[Tiab] OR jerboa[Tiab] OR jerboas[Tiab] OR capybara[Tiab] OR capybaras[Tiab] OR mammal*[tiab]) NOT medline[subset]) OR "Birds"[Mesh] OR bird[tiab] OR birds[tiab] OR aves[tiab] OR "avian population"[tiab] OR "avian populations"[tiab] OR poultr*[tiab] OR fowl[tiab] OR fowls[tiab] OR chicken*[tiab] OR "gallus gallus"[tiab] OR "g gallus"[tiab] OR waterfowl*[tiab] OR duck[tiab] OR ducks[tiab] OR anatidae[tiab] OR

mallard[tiab] OR mallards[tiab] OR swan[tiab] OR swans[tiab] OR "Anas platyrhynchos"[tiab] OR "A platyrhynchos"[tiab] OR geese[tiab] OR goose[tiab] OR anser[tiab] OR turkey[tiab] OR turkeys[tiab] OR meleagris[tiab] OR quail[tiab] OR quails[tiab] OR coturnix[tiab] OR partridge*[tiab] OR phasianidae[tiab] OR guineafowl*[tiab] OR numida*[tiab] OR ostrich*[tiab] OR struthio[tiab]	
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Date filter will be applied using relevant dates for the reporting period and the field [Date - Entrez].

A.2. Search results

A.2.1. Avian influenza overview September – December 2022

Phenotypic characterisation of HPAI viruses circulating in the EU in domestic and wild birds in the reporting period

Date of the search: 01/12/2022

Search string covers period: 6th September – 1st December 2022

Search	Query	Items found
3	Search #1 AND #2 AND ("2022/09/04"[Date - Entry] : "3000"[Date - Entry])	139
#2²	Search "Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR ((influenza*[tiab] OR flu[tiab]) AND ("virus A" OR "viruses A")) OR "influenza A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR LPAI [tiab] OR IPAIV[tiab] OR AIV[tiab] OR AIVs[tiab] OR H5N1[tiab] OR H5N2[tiab] OR H5N3[tiab] OR H5N4[tiab] OR H5N5[tiab] OR H5N6[tiab] OR H5N7[tiab] OR H5N8[tiab] OR H5N9[tiab] OR H7N1[tiab] OR H7N2[tiab] OR H7N3[tiab] OR H7N4[tiab] OR H7N5[tiab] OR H7N6[tiab] OR H7N7[tiab] OR H7N8[tiab] OR H7N9[tiab] OR H9N1[tiab] OR H9N2[tiab] OR H9N3[tiab] OR H9N4[tiab] OR H9N5[tiab] OR H9N6[tiab] OR H9N7[tiab] OR H9N8[tiab] OR H9N9[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	64,788
#1	Search "Birds"[Mesh] OR bird[tiab] OR birds[tiab] OR aves[tiab] OR "avian population"[tiab] OR "avian populations"[tiab] OR poultr*[tiab] OR fowl[tiab] OR fowls[tiab] OR chicken*[tiab] OR "gallus gallus"[tiab] OR "g gallus"[tiab] OR waterfowl*[tiab] OR duck[tiab] OR ducks[tiab] OR anatidae[tiab] OR mallard[tiab] OR mallards[tiab] OR swan[tiab] OR swans[tiab] OR "Anas platyrhynchos"[tiab] OR "A platyrhynchos"[tiab] OR geese[tiab] OR goose[tiab] OR anser[tiab] OR turkey[tiab] OR turkeys[tiab] OR meleagris[tiab] OR quail[tiab] OR quails[tiab] OR coturnix[tiab] OR partridge*[tiab] OR phasianidae[tiab] OR guineafowl*[tiab] OR numida*[tiab] OR ostrich*[tiab] OR struthio[tiab]	356,969

Final number of results to be screened: 137 (after de-duplication with previous results)

Phenotypic and genetic characterisation of HPAI viruses circulating on other continents in domestic or wild birds or mammals (excluding humans)

Date of the search: 01/12/2022

Search string covers period: 6th September – 1st December 2022

Search	Query	Items found
#3	Search #1 AND #2 AND ("2022/09/04"[Date - Entry] : "3000"[Date - Entry])	119
#2³	Search ((high pathogen*[tiab] OR highly pathogen*[tiab]) AND ("Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR "influenza virus A"[tiab] OR "influenza viruses A"[tiab] OR "influenza A"[tiab] OR "flu virus A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR AIV[tiab] OR AIVs[tiab])) OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR H5N1[tiab] OR	12,799

² New PubMed platform requires the use of 4 or more characters for a wildcard search. The search string was adapted accordingly to meet this requirement.

³ New PubMed platform requires the use of 4 or more characters for a wildcard search. The search string was adapted accordingly to meet this requirement.

	H5N2[tiab] OR H5N3[tiab] OR H5N4[tiab] OR H5N5[tiab] OR H5N6[tiab] OR H5N7[tiab] OR H5N8[tiab] OR H5N9[tiab] OR H7N1[tiab] OR H7N2[tiab] OR H7N3[tiab] OR H7N4[tiab] OR H7N5[tiab] OR H7N6[tiab] OR H7N7[tiab] OR H7N8[tiab] OR H7N9[tiab] OR H9N1[tiab] OR H9N2[tiab] OR H9N3[tiab] OR H9N4[tiab] OR H9N5[tiab] OR H9N6[tiab] OR H9N7[tiab] OR H9N8[tiab] OR H9N9[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	
#1	<i>Animals search string adapted from: Hooijmans CR, Tillema A, Leenaars M and Ritskes-Hoitinga M, 2010. Enhancing search efficiency by means of a search filter for finding all studies on animal experimentation in PubMed. Lab Anim, 44, 170-175. doi:10.1258/la.2010.009117</i> <i>As reported in the protocol</i>	7,678,951

Final number of results to be screened: 119 (after de-duplication with previous searches)

A.2.2. Avian influenza overview June – September 2022

Phenotypic characterisation of HPAI viruses circulating in the EU in domestic and wild birds in the reporting period

Date of the search: 05/09/2022

Search string covers period: 3rd June – 5th September 2022

Search	Query	Items found
3	Search #1 AND #2 AND ("2022/06/01"[Date - Entry] : "3000"[Date - Entry])	149
#2 ⁴	Search "Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR ((influenza*[tiab] OR flu[tiab]) AND ("virus A" OR "viruses A")) OR "influenza A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR LPAI [tiab] OR IPAIV[tiab] OR AIV[tiab] OR AIVs[tiab] OR H5N1[tiab] OR H5N2[tiab] OR H5N3[tiab] OR H5N4[tiab] OR H5N5[tiab] OR H5N6[tiab] OR H5N7[tiab] OR H5N8[tiab] OR H5N9[tiab] OR H7N1[tiab] OR H7N2[tiab] OR H7N3[tiab] OR H7N4[tiab] OR H7N5[tiab] OR H7N6[tiab] OR H7N7[tiab] OR H7N8[tiab] OR H7N9[tiab] OR H9N1[tiab] OR H9N2[tiab] OR H9N3[tiab] OR H9N4[tiab] OR H9N5[tiab] OR H9N6[tiab] OR H9N7[tiab] OR H9N8[tiab] OR H9N9[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	64,129
#1	Search "Birds"[Mesh] OR bird[tiab] OR birds[tiab] OR aves[tiab] OR "avian population"[tiab] OR "avian populations"[tiab] OR poultr*[tiab] OR fowl[tiab] OR fowls[tiab] OR chicken*[tiab] OR "gallus gallus"[tiab] OR "g gallus"[tiab] OR waterfowl*[tiab] OR duck[tiab] OR ducks[tiab] OR anatidae[tiab] OR mallard[tiab] OR mallards[tiab] OR swan[tiab] OR swans[tiab] OR "Anas platyrhynchos"[tiab] OR "A platyrhynchos"[tiab] OR geese[tiab] OR goose[tiab] OR anser[tiab] OR turkey[tiab] OR turkeys[tiab] OR meleagris[tiab] OR quail[tiab] OR quails[tiab] OR coturnix[tiab] OR partridge*[tiab] OR phasianidae[tiab] OR guineafowl*[tiab] OR numida*[tiab] OR ostrich*[tiab] OR struthio[tiab]	353,48

Final number of results to be screened: 143 (after de-duplication with previous results)

Phenotypic and genetic characterisation of HPAI viruses circulating on other continents in domestic or wild birds or mammals (excluding humans)

Date of the search: 05/09/2022

Search string covers period: November 3rd June – 5th September 2022

⁴ New PubMed platform requires the use of 4 or more characters for a wildcard search. The search string was adapted accordingly to meet this requirement.

Search	Query	Items found
#3	Search #1 AND #2 AND ("2022/06/01"[Date - Entry] : "3000"[Date - Entry])	116
#2 ⁵	Search ((high pathogen*[tiab] OR highly pathogen*[tiab]) AND ("Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab]))) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR "influenza virus A"[tiab] OR "influenza viruses A"[tiab] OR "influenza A"[tiab] OR "flu virus A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR AIV[tiab] OR AIVs[tiab])) OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR H5N1[tiab] OR H5N2[tiab] OR H5N3[tiab] OR H5N4[tiab] OR H5N5[tiab] OR H5N6[tiab] OR H5N7[tiab] OR H5N8[tiab] OR H5N9[tiab] OR H7N1[tiab] OR H7N2[tiab] OR H7N3[tiab] OR H7N4[tiab] OR H7N5[tiab] OR H7N6[tiab] OR H7N7[tiab] OR H7N8[tiab] OR H7N9[tiab] OR H9N1[tiab] OR H9N2[tiab] OR H9N3[tiab] OR H9N4[tiab] OR H9N5[tiab] OR H9N6[tiab] OR H9N7[tiab] OR H9N8[tiab] OR H9N9[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	12,660
#1	<i>Animals search string adapted from: Hooijmans CR, Tillema A, Leenaars M and Ritskes-Hoitinga M, 2010. Enhancing search efficiency by means of a search filter for finding all studies on animal experimentation in PubMed. Lab Anim, 44, 170-175. doi:10.1258/la.2010.009117</i> <i>As reported in the protocol</i>	7,625,047

Final number of results to be screened: 112 (after de-duplication with previous searches)

A.2.3. Avian influenza overview March – June 2022

Phenotypic characterisation of HPAI viruses circulating in the EU in domestic and wild birds in the reporting period

Date of the search: 03/06/2022

Search string covers period: 3rd March – 3rd June 2022

Search	Query	Items found
3	Search #1 AND #2 AND ("2022/03/01"[Date - Entry] : "3000"[Date - Entry])	117
#2 ⁶	Search "Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR ((influenza*[tiab] OR flu[tiab]) AND ("virus A" OR "viruses A")) OR "influenza A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR LPAI [tiab] OR IPAIV[tiab] OR AIV[tiab] OR AIVs[tiab] OR H5N1[tiab] OR H5N2[tiab] OR H5N3[tiab] OR H5N4[tiab] OR H5N5[tiab] OR H5N6[tiab] OR H5N7[tiab] OR H5N8[tiab] OR H5N9[tiab] OR H7N1[tiab] OR H7N2[tiab] OR H7N3[tiab] OR H7N4[tiab] OR H7N5[tiab] OR H7N6[tiab] OR H7N7[tiab] OR H7N8[tiab] OR H7N9[tiab] OR H9N1[tiab] OR H9N2[tiab] OR H9N3[tiab] OR H9N4[tiab] OR H9N5[tiab] OR H9N6[tiab] OR H9N7[tiab] OR H9N8[tiab] OR H9N9[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	63,406
#1	Search "Birds"[Mesh] OR bird[tiab] OR birds[tiab] OR aves[tiab] OR "avian population"[tiab] OR "avian populations"[tiab] OR poultr*[tiab] OR fowl[tiab] OR fowls[tiab] OR chicken*[tiab] OR "gallus gallus"[tiab] OR "g gallus"[tiab] OR waterfowl*[tiab] OR duck[tiab] OR ducks[tiab] OR anatidae[tiab] OR mallard[tiab] OR mallards[tiab] OR swan[tiab] OR swans[tiab] OR "Anas platyrhynchos"[tiab] OR "A	349,134

⁵ New PubMed platform requires the use of 4 or more characters for a wildcard search. The search string was adapted accordingly to meet this requirement.

⁶ New PubMed platform requires the use of 4 or more characters for a wildcard search. The search string was adapted accordingly to meet this requirement.

platyrhynchos"[tiab] OR geese[tiab] OR goose[tiab] OR anser[tiab] OR turkey[tiab] OR turkeys[tiab] OR meleagris[tiab] OR quail[tiab] OR quails[tiab] OR coturnix[tiab] OR partridge*[tiab] OR phasianidae[tiab] OR guineafowl*[tiab] OR numida*[tiab] OR ostrich*[tiab] OR struthio[tiab]

Final number of results to be screened: 114 (after de-duplication with previous results)

Phenotypic and genetic characterisation of HPAI viruses circulating on other continents in domestic or wild birds or mammals (excluding humans)

Date of the search: 03/06/2022

Search string covers period: November 3rd March – 3rd June 2022

Search	Query	Items found
#3	Search #1 AND #2 AND ("2022/03/01"[Date - Entry] : "3000"[Date - Entry])	124
#2 ⁷	Search ((high pathogen*[tiab] OR highly pathogen*[tiab]) AND ("Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR "influenza virus A"[tiab] OR "influenza viruses A"[tiab] OR "influenza A"[tiab] OR "flu virus A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR AIV[tiab] OR AIVs[tiab])) OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR H5N1[tiab] OR H5N2[tiab] OR H5N3[tiab] OR H5N4[tiab] OR H5N5[tiab] OR H5N6[tiab] OR H5N7[tiab] OR H5N8[tiab] OR H5N9[tiab] OR H7N1[tiab] OR H7N2[tiab] OR H7N3[tiab] OR H7N4[tiab] OR H7N5[tiab] OR H7N6[tiab] OR H7N7[tiab] OR H7N8[tiab] OR H7N9[tiab] OR H9N1[tiab] OR H9N2[tiab] OR H9N3[tiab] OR H9N4[tiab] OR H9N5[tiab] OR H9N6[tiab] OR H9N7[tiab] OR H9N8[tiab] OR H9N9[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab])	12,523
#1	<i>Animals search string adapted from: Hooijmans CR, Tillema A, Leenaars M and Ritskes-Hoitinga M, 2010. Enhancing search efficiency by means of a search filter for finding all studies on animal experimentation in PubMed. Lab Anim, 44, 170-175. doi:10.1258/la.2010.009117</i> <i>As reported in the protocol</i>	7,571,271

Final number of results to be screened:117 (after de-duplication with previous searches)

A.2.4. Avian influenza overview November 2021 – March 2022

Phenotypic characterisation of HPAI viruses circulating in the EU in domestic and wild birds in the reporting period

Date of the search: 02/03/2022

Search string covers period: November 2021 – March 2022

Search	Query	Items found
3	Search #1 AND #2 AND ("2021/11/20"[Date - Entry] : "3000"[Date - Entry])	144
#2 ⁸	Search "Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR ((influenza*[tiab] OR flu[tiab]) AND ("virus A" OR "viruses A")) OR "influenza A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR LPAI [tiab] OR IPAIV[tiab] OR	62,810

⁷ New PubMed platform requires the use of 4 or more characters for a wildcard search. The search string was adapted accordingly to meet this requirement.

⁸ New PubMed platform requires the use of 4 or more characters for a wildcard search. The search string was adapted accordingly to meet this requirement.

	AIV[tiab] OR AIVs[tiab] OR H5N1[tiab] OR H5N2[tiab] OR H5N3[tiab] OR H5N4[tiab] OR H5N5[tiab] OR H5N6[tiab] OR H5N7[tiab] OR H5N8[tiab] OR H5N9[tiab] OR H7N1[tiab] OR H7N2[tiab] OR H7N3[tiab] OR H7N4[tiab] OR H7N5[tiab] OR H7N6[tiab] OR H7N7[tiab] OR H7N8[tiab] OR H7N9[tiab] OR H9N1[tiab] OR H9N2[tiab] OR H9N3[tiab] OR H9N4[tiab] OR H9N5[tiab] OR H9N6[tiab] OR H9N7[tiab] OR H9N8[tiab] OR H9N9[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	
#1	Search "Birds"[Mesh] OR bird[tiab] OR birds[tiab] OR aves[tiab] OR "avian population"[tiab] OR "avian populations"[tiab] OR poultr*[tiab] OR fowl[tiab] OR fowls[tiab] OR chicken*[tiab] OR "gallus gallus"[tiab] OR "g gallus"[tiab] OR waterfowl*[tiab] OR duck[tiab] OR ducks[tiab] OR anatidae[tiab] OR mallard[tiab] OR mallards[tiab] OR swan[tiab] OR swans[tiab] OR "Anas platyrhynchos"[tiab] OR "A platyrhynchos"[tiab] OR geese[tiab] OR goose[tiab] OR anser[tiab] OR turkey[tiab] OR turkeys[tiab] OR meleagris[tiab] OR quail[tiab] OR quails[tiab] OR coturnix[tiab] OR partridge*[tiab] OR phasianidae[tiab] OR guineafowl*[tiab] OR numida*[tiab] OR ostrich*[tiab] OR struthio[tiab]	345,796

Final number of results to be screened: 142 (after de-duplication with previous results)

Phenotypic and genetic characterisation of HPAI viruses circulating on other continents in domestic or wild birds or mammals (excluding humans)

Date of the search: 02/03/2022

Search string covers period: November 2021 – March 2022

Search	Query	Items found
#3	Search #1 AND #2 AND ("2021/11/20"[Date - Entry] : "3000"[Date - Entry])	130
#2 ⁹	Search ((high pathogen*[tiab] OR highly pathogen*[tiab]) AND ("Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR "influenza virus A"[tiab] OR "influenza viruses A"[tiab] OR "influenza A"[tiab] OR "flu virus A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR AIV[tiab] OR AIVs[tiab])) OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR H5N1[tiab] OR H5N2[tiab] OR H5N3[tiab] OR H5N4[tiab] OR H5N5[tiab] OR H5N6[tiab] OR H5N7[tiab] OR H5N8[tiab] OR H5N9[tiab] OR H7N1[tiab] OR H7N2[tiab] OR H7N3[tiab] OR H7N4[tiab] OR H7N5[tiab] OR H7N6[tiab] OR H7N7[tiab] OR H7N8[tiab] OR H7N9[tiab] OR H9N1[tiab] OR H9N2[tiab] OR H9N3[tiab] OR H9N4[tiab] OR H9N5[tiab] OR H9N6[tiab] OR H9N7[tiab] OR H9N8[tiab] OR H9N9[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	12,381
#1	<i>Animals search string adapted from: Hooijmans CR, Tillema A, Leenaars M and Ritskes-Hoitinga M, 2010. Enhancing search efficiency by means of a search filter for finding all studies on animal experimentation in PubMed. Lab Anim, 44, 170-175. doi:10.1258/la.2010.009117</i> <i>As reported in the protocol</i>	7,509,691

Final number of results to be screened: 117 (after de-duplication with previous searches)

A.2.5. Avian influenza overview August – November 2021

Phenotypic characterisation of HPAI viruses circulating in the EU in domestic and wild birds in the reporting period

Date of the search: 23/11/2021

⁹ New PubMed platform requires the use of 4 or more characters for a wildcard search. The search string was adapted accordingly to meet this requirement.

Search string covers period: August – November 2021

Search	Query	Items found
3	Search #1 AND #2 AND ("2021/08/13"[Date - Entry] : "3000"[Date - Entry]) S	141
#2¹⁰	Search "Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR ((influenza*[tiab] OR flu[tiab]) AND ("virus A" OR "viruses A")) OR "influenza A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR LPAI [tiab] OR IPAIV[tiab] OR AIV[tiab] OR AIVs[tiab] OR H5N1[tiab] OR H5N2[tiab] OR H5N3[tiab] OR H5N4[tiab] OR H5N5[tiab] OR H5N6[tiab] OR H5N7[tiab] OR H5N8[tiab] OR H5N9[tiab] OR H7N1[tiab] OR H7N2[tiab] OR H7N3[tiab] OR H7N4[tiab] OR H7N5[tiab] OR H7N6[tiab] OR H7N7[tiab] OR H7N8[tiab] OR H7N9[tiab] OR H9N1[tiab] OR H9N2[tiab] OR H9N3[tiab] OR H9N4[tiab] OR H9N5[tiab] OR H9N6[tiab] OR H9N7[tiab] OR H9N8[tiab] OR H9N9[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	62,020
#1	Search "Birds"[Mesh] OR bird[tiab] OR birds[tiab] OR aves[tiab] OR "avian population"[tiab] OR "avian populations"[tiab] OR poultr*[tiab] OR fowl[tiab] OR fowls[tiab] OR chicken*[tiab] OR "gallus gallus"[tiab] OR "g gallus"[tiab] OR waterfowl*[tiab] OR duck[tiab] OR ducks[tiab] OR anatidae[tiab] OR mallard[tiab] OR mallards[tiab] OR swan[tiab] OR swans[tiab] OR "Anas platyrhynchos"[tiab] OR "A platyrhynchos"[tiab] OR geese[tiab] OR goose[tiab] OR anser[tiab] OR turkey[tiab] OR turkeys[tiab] OR meleagris[tiab] OR quail[tiab] OR quails[tiab] OR coturnix[tiab] OR partridge*[tiab] OR phasianidae[tiab] OR guineafowl*[tiab] OR numida*[tiab] OR ostrich*[tiab] OR struthio[tiab]	341,564

Final number of results to be screened: 140 (after de-duplication with previous results)

Phenotypic and genetic characterisation of HPAI viruses circulating on other continents in domestic or wild birds or mammals (excluding humans)

Date of the search 23/11/2021

Search string covers period: August – November 2021

Search	Query	Items found
#3	Search (#1 AND #2) AND ("2021/08/13"[Date - Entry] : "3000"[Date - Entry])	120
#2¹¹	Search ((high pathogen*[tiab] OR highly pathogen*[tiab]) AND ("Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR "influenza virus A"[tiab] OR "influenza viruses A"[tiab] OR "influenza A"[tiab] OR "flu virus A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR AIV[tiab] OR AIVs[tiab])) OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR H5N1[tiab] OR H5N2[tiab] OR H5N3[tiab] OR H5N4[tiab] OR H5N5[tiab] OR H5N6[tiab] OR H5N7[tiab] OR H5N8[tiab] OR H5N9[tiab] OR H7N1[tiab] OR H7N2[tiab] OR H7N3[tiab] OR H7N4[tiab] OR H7N5[tiab] OR H7N6[tiab] OR H7N7[tiab] OR H7N8[tiab] OR H7N9[tiab] OR H9N1[tiab] OR H9N2[tiab] OR H9N3[tiab] OR H9N4[tiab] OR H9N5[tiab] OR H9N6[tiab] OR H9N7[tiab] OR H9N8[tiab] OR H9N9[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	12,226
#1	<i>Animals search string adapted from: Hooijmans CR, Tillema A, Leenaars M and Ritskes-Hoitinga M, 2010. Enhancing search efficiency by means of a search filter for</i>	7,436,982

¹⁰ New PubMed platform requires the use of 4 or more characters for a wildcard search. The search string was adapted accordingly to meet this requirement.

¹¹ New PubMed platform requires the use of 4 or more characters for a wildcard search. The search string was adapted accordingly to meet this requirement.

*finding all studies on animal experimentation in PubMed. Lab Anim, 44, 170-175.
doi:10.1258/la.2010.009117
As reported in the protocol*

Final number of results to be screened: 117 (after de-duplication with previous searches)

A.2.6. Avian influenza overview May – August 2021

Phenotypic characterisation of HPAI viruses circulating in the EU in domestic and wild birds in the reporting period

Date of the search: 16/08/2021

Search string covers period: May – August 2021

Search	Query	Items found
#3	Search #1 AND #2 ("2021/05/01"[Date - Entrez]:"2021/08/15"[Date - Entrez])	99
#2 ¹²	Search "Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR ((influenza*[tiab] OR flu[tiab]) AND ("virus A" OR "viruses A")) OR "influenza A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR LPAI [tiab] OR IPAIV[tiab] OR AIV[tiab] OR AIVs[tiab] OR H5N1[tiab] OR H5N2[tiab] OR H5N3[tiab] OR H5N4[tiab] OR H5N5[tiab] OR H5N6[tiab] OR H5N7[tiab] OR H5N8[tiab] OR H5N9[tiab] OR H7N1[tiab] OR H7N2[tiab] OR H7N3[tiab] OR H7N4[tiab] OR H7N5[tiab] OR H7N6[tiab] OR H7N7[tiab] OR H7N8[tiab] OR H7N9[tiab] OR H9N1[tiab] OR H9N2[tiab] OR H9N3[tiab] OR H9N4[tiab] OR H9N5[tiab] OR H9N6[tiab] OR H9N7[tiab] OR H9N8[tiab] OR H9N9[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	61,321
#1	Search "Birds"[Mesh] OR bird[tiab] OR birds[tiab] OR aves[tiab] OR "avian population"[tiab] OR "avian populations"[tiab] OR poultr*[tiab] OR fowl[tiab] OR fowls[tiab] OR chicken*[tiab] OR "gallus gallus"[tiab] OR "g gallus"[tiab] OR waterfowl*[tiab] OR duck[tiab] OR ducks[tiab] OR anatidae[tiab] OR mallard[tiab] OR mallards[tiab] OR swan[tiab] OR swans[tiab] OR "Anas platyrhynchos"[tiab] OR "A platyrhynchos"[tiab] OR geese[tiab] OR goose[tiab] OR anser[tiab] OR turkey[tiab] OR turkeys[tiab] OR meleagris[tiab] OR quail[tiab] OR quails[tiab] OR coturnix[tiab] OR partridge*[tiab] OR phasianidae[tiab] OR guineafowl*[tiab] OR numida*[tiab] OR ostrich*[tiab] OR struthio[tiab]	341,453

Final number of results to be screened: 98 (after de-duplication with previous results)

Phenotypic and genetic characterisation of HPAI viruses circulating on other continents in domestic or wild birds or mammals (excluding humans)

Date of the search: 16/08/2021

Search string covers period: May – August 2021

Search	Query	Items found
#3	Search (#3) AND ("2021/05/01"[Date - Entrez]:"2021/08/15"[Date - Entrez])	125
#2 ¹³	Search ((high pathogen*[tiab] OR highly pathogen*[tiab]) AND ("Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR "influenza	12,076

¹² New PubMed platform requires the use of 4 or more characters for a wildcard search. The search string was adapted accordingly to meet this requirement.

¹³ New PubMed platform requires the use of 4 or more characters for a wildcard search. The search string was adapted accordingly to meet this requirement.

	virus A"[tiab] OR "influenza viruses A"[tiab] OR "influenza A"[tiab] OR "flu virus A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR AIV[tiab] OR AIVs[tiab])) OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR H5N1[tiab] OR H5N2[tiab] OR H5N3[tiab] OR H5N4[tiab] OR H5N5[tiab] OR H5N6[tiab] OR H5N7[tiab] OR H5N8[tiab] OR H5N9[tiab] OR H7N1[tiab] OR H7N2[tiab] OR H7N3[tiab] OR H7N4[tiab] OR H7N5[tiab] OR H7N6[tiab] OR H7N7[tiab] OR H7N8[tiab] OR H7N9[tiab] OR H9N1[tiab] OR H9N2[tiab] OR H9N3[tiab] OR H9N4[tiab] OR H9N5[tiab] OR H9N6[tiab] OR H9N7[tiab] OR H9N8[tiab] OR H9N9[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	
#1	<i>Animals search string adapted from: Hooijmans CR, Tillema A, Leenaars M and Ritskes-Hoitinga M, 2010. Enhancing search efficiency by means of a search filter for finding all studies on animal experimentation in PubMed. Lab Anim, 44, 170-175. doi:10.1258/la.2010.009117</i> <i>As reported in the protocol</i>	7,365,363

Final number of results to be screened: 124 (after de-duplication with previous searches)

A.2.7. Avian influenza overview February– April 2021

Phenotypic characterisation of HPAI viruses circulating in the EU in domestic and wild birds in the reporting period

Date of the search: 30/04/2021

Search string covers period: February – April 2021

Search	Query	Items found
#4	Search #3 AND ("2021/01/31"[Date - Entrez]:"2021/04/30"[Date - Entrez])	110
#3	Search (#1 AND #2)	12,808
#2 ¹⁴	Search "Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "infl15uenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR ((influenza*[tiab] OR flu[tiab]) AND ("virus A" OR "viruses A")) OR "influenza A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR LPAI [tiab] OR IPAIV[tiab] OR AIV[tiab] OR AIVs[tiab] OR H5N1[tiab] OR H5N2[tiab] OR H5N3[tiab] OR H5N4[tiab] OR H5N5[tiab] OR H5N6[tiab] OR H5N7[tiab] OR H5N8[tiab] OR H5N9[tiab] OR H7N1[tiab] OR H7N2[tiab] OR H7N3[tiab] OR H7N4[tiab] OR H7N5[tiab] OR H7N6[tiab] OR H7N7[tiab] OR H7N8[tiab] OR H7N9[tiab] OR H9N1[tiab] OR H9N2[tiab] OR H9N3[tiab] OR H9N4[tiab] OR H9N5[tiab] OR H9N6[tiab] OR H9N7[tiab] OR H9N8[tiab] OR H9N9[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	60,288
#1	Search "Birds"[Mesh] OR bird[tiab] OR birds[tiab] OR aves[tiab] OR "avian population"[tiab] OR "avian populations"[tiab] OR poultr*[tiab] OR fowl[tiab] OR fowls[tiab] OR chicken*[tiab] OR "gallus gallus"[tiab] OR "g gallus"[tiab] OR waterfowl*[tiab] OR duck[tiab] OR ducks[tiab] OR anatidae[tiab] OR mallard[tiab] OR mallards[tiab] OR swan[tiab] OR swans[tiab] OR "Anas platyrhynchos"[tiab] OR "A platyrhynchos"[tiab] OR geese[tiab] OR goose[tiab] OR anser[tiab] OR turkey[tiab] OR turkeys[tiab] OR meleagris[tiab] OR quail[tiab] OR quails[tiab] OR coturnix[tiab] OR partridge*[tiab] OR phasianidae[tiab] OR guineafowl*[tiab] OR numida*[tiab] OR ostrich*[tiab] OR struthio[tiab]	332,847

Final number of results to be screened: 109 (after de-duplication with previous results)

Phenotypic and genetic characterisation of HPAI viruses circulating on other continents in domestic or wild birds or mammals (excluding humans)

Date of the search 30/04/2021

¹⁴ New PubMed platform requires the use of 4 or more characters for a wildcard search. The search string was adapted accordingly to meet this requirement.

Search string covers period: February – April 2021

Search	Query	Items found
#4	Search (#3) AND ("2021/01/31"[Date - Entrez]:"2021/04/30"[Date - Entrez])	102
#3	Search (#2 AND #1)	9,485
#2 ¹⁵	Search ((high pathogen*[tiab] OR highly pathogen*[tiab]) AND ("Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR "influenza virus A"[tiab] OR "influenza viruses A"[tiab] OR "influenza A"[tiab] OR "flu virus A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR AIV[tiab] OR AIVs[tiab])) OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR H5N1[tiab] OR H5N2[tiab] OR H5N3[tiab] OR H5N4[tiab] OR H5N5[tiab] OR H5N6[tiab] OR H5N7[tiab] OR H5N8[tiab] OR H5N9[tiab] OR H7N1[tiab] OR H7N2[tiab] OR H7N3[tiab] OR H7N4[tiab] OR H7N5[tiab] OR H7N6[tiab] OR H7N7[tiab] OR H7N8[tiab] OR H7N9[tiab] OR H9N1[tiab] OR H9N2[tiab] OR H9N3[tiab] OR H9N4[tiab] OR H9N5[tiab] OR H9N6[tiab] OR H9N7[tiab] OR H9N8[tiab] OR H9N9[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab])	11,926
#1	<i>Animals search string adapted from: Hooijmans CR, Tillema A, Leenaars M and Ritskes-Hoitinga M, 2010. Enhancing search efficiency by means of a search filter for finding all studies on animal experimentation in PubMed. Lab Anim, 44, 170-175. doi:10.1258/la.2010.009117</i> <i>As reported in the protocol</i>	7,346,975

Final number of results to be screened: 100 (after de-duplication with previous searches)

A.2.8. Avian influenza overview December 2020 – February 2021

Phenotypic characterisation of HPAI viruses circulating in the EU in domestic and wild birds in the reporting period

Date of the search: 01/02/2021

Search string covers period: August 2020 – January 2021

Search	Query	Items found
#4	Search #3 AND ("2020/08/15"[Date - Entrez] : "2021/01/31"[Date - Entrez])	231
#3	Search (#1 AND #2)	12,686
#2 ¹⁶	Search "Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR ((influenza*[tiab] OR flu[tiab]) AND ("virus A" OR "viruses A")) OR "influenza A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR LPAI [tiab] OR IPAIV[tiab] OR AIV[tiab] OR AIVs[tiab] OR H5N1[tiab] OR H5N2[tiab] OR H5N3[tiab] OR H5N4[tiab] OR H5N5[tiab] OR H5N6[tiab] OR H5N7[tiab] OR H5N8[tiab] OR H5N9[tiab] OR H7N1[tiab] OR H7N2[tiab] OR H7N3[tiab] OR H7N4[tiab] OR H7N5[tiab] OR H7N6[tiab] OR H7N7[tiab] OR H7N8[tiab] OR H7N9[tiab] OR H9N1[tiab] OR H9N2[tiab] OR H9N3[tiab] OR H9N4[tiab] OR H9N5[tiab] OR H9N6[tiab] OR H9N7[tiab] OR H9N8[tiab] OR H9N9[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab])	59,606
#1	Search "Birds"[Mesh] OR bird[tiab] OR birds[tiab] OR aves[tiab] OR "avian population"[tiab] OR "avian populations"[tiab] OR poultr*[tiab] OR fowl[tiab] OR	332,689

¹⁵ New PubMed platform requires the use of 4 or more characters for a wildcard search. The search string was adapted accordingly to meet this requirement.

¹⁶ New PubMed platform requires the use of 4 or more characters for a wildcard search. The search string was adapted accordingly to meet this requirement.

fowls[tiab] OR chicken*[tiab] OR "gallus gallus"[tiab] OR "g gallus"[tiab] OR waterfowl*[tiab] OR duck[tiab] OR ducks[tiab] OR anatidae[tiab] OR mallard[tiab] OR mallards[tiab] OR swan[tiab] OR swans[tiab] OR "Anas platyrhynchos"[tiab] OR "A platyrhynchos"[tiab] OR geese[tiab] OR goose[tiab] OR anser[tiab] OR turkey[tiab] OR turkeys[tiab] OR meleagris[tiab] OR quail[tiab] OR quails[tiab] OR coturnix[tiab] OR partridge*[tiab] OR phasianidae[tiab] OR guineafowl*[tiab] OR numida*[tiab] OR ostrich*[tiab] OR struthio[tiab]

Final number of results to be screened: 226 (after de-duplication with previous results)

Phenotypic and genetic characterisation of HPAI viruses circulating on other continents in domestic or wild birds or mammals (excluding humans)

Date of the search 01/02/2021

Search string covers period: August 2020 – January 2021

Search	Query	Items found
#4	Search (#3) AND ("2020/08/15"[Date - Entrez] : "2021/01/31"[Date - Entrez])	213
#3	Search (#2 AND #1)	9,365
#2 ¹⁷	Search ((high pathogen*[tiab] OR highly pathogen*[tiab]) AND ("Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR "influenza virus A"[tiab] OR "influenza viruses A"[tiab] OR "influenza A"[tiab] OR "flu virus A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR AIV[tiab] OR AIVs[tiab])) OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR H5N1[tiab] OR H5N2[tiab] OR H5N3[tiab] OR H5N4[tiab] OR H5N5[tiab] OR H5N6[tiab] OR H5N7[tiab] OR H5N8[tiab] OR H5N9[tiab] OR H7N1[tiab] OR H7N2[tiab] OR H7N3[tiab] OR H7N4[tiab] OR H7N5[tiab] OR H7N6[tiab] OR H7N7[tiab] OR H7N8[tiab] OR H7N9[tiab] OR H9N1[tiab] OR H9N2[tiab] OR H9N3[tiab] OR H9N4[tiab] OR H9N5[tiab] OR H9N6[tiab] OR H9N7[tiab] OR H9N8[tiab] OR H9N9[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab])	11,784
#1	<i>Animals search string adapted from: Hooijmans CR, Tillema A, Leenaars M and Ritskes-Hoitinga M, 2010. Enhancing search efficiency by means of a search filter for finding all studies on animal experimentation in PubMed. Lab Anim, 44, 170-175. doi:10.1258/la.2010.009117</i> <i>As reported in the protocol</i>	7,276,952

Final number of results to be screened:208 (after de-duplication with previous searches)

A.2.9. Avian influenza overview May 2020 – August 2020

Phenotypic characterisation of HPAI viruses circulating in the EU in domestic and wild birds in the reporting period

Date of the search: 17/08/2020

Search	Query	Items found
#4	Search #3 AND ("2020/05/15"[Date - Entrez] : "2020/08/15"[Date - Entrez])	139
#3	Search (#1 AND #2)	12392
#2	Search "Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR ((influenza*[tiab] OR flu[tiab]) AND ("virus A" OR "viruses A")) OR "influenza A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR LPAI [tiab] OR IPAIV[tiab] OR	56676

¹⁷ New PubMed platform requires the use of 4 or more characters for a wildcard search. The search string was adapted accordingly to meet this requirement.

	AIV[tiab] OR AIVs[tiab] OR H5N*[tiab] OR H7N*[tiab] OR H9N*[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	
#1	Search "Birds"[Mesh] OR bird[tiab] OR birds[tiab] OR aves[tiab] OR "avian population"[tiab] OR "avian populations"[tiab] OR poultr*[tiab] OR fowl[tiab] OR fowls[tiab] OR chicken*[tiab] OR "gallus gallus"[tiab] OR "g gallus"[tiab] OR waterfowl*[tiab] OR duck[tiab] OR ducks[tiab] OR anatidae[tiab] OR mallard[tiab] OR mallards[tiab] OR swan[tiab] OR swans[tiab] OR "Anas platyrhynchos"[tiab] OR "A platyrhynchos"[tiab] OR geese[tiab] OR goose[tiab] OR anser[tiab] OR turkey[tiab] OR turkeys[tiab] OR meleagris[tiab] OR quail[tiab] OR quails[tiab] OR coturnix[tiab] OR partridge*[tiab] OR phasianidae[tiab] OR guineafowl*[tiab] OR numida*[tiab] OR ostrich*[tiab] OR struthio[tiab]	324481

Final number of results to be screened: 138 (after de-duplication with previous results)

Phenotypic and genetic characterisation of HPAI viruses circulating on other continents in domestic or wild birds or mammals (excluding humans)

Date of the search 17/08/2020

Search	Query	Items found
#4	Search (#3) AND ("2020/02/15"[Date - Entrez] : "2020/08/15"[Date - Entrez])	123
#3	Search (#2 AND #1)	9124
#2	Search ((high pathogen*[tiab] OR highly pathogen*[tiab]) AND ("Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab]))) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR "influenza virus A"[tiab] OR "influenza viruses A"[tiab] OR "influenza A"[tiab] OR "flu virus A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR AIV[tiab] OR AIVs[tiab])) OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR H5N*[tiab] OR H7N*[tiab] OR H9N*[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	11508
#1	<i>Animals search string adapted from: Hooijmans CR, Tillema A, Leenaars M and Ritskes-Hoitinga M, 2010. Enhancing search efficiency by means of a search filter for finding all studies on animal experimentation in PubMed. Lab Anim, 44, 170-175. doi:10.1258/la.2010.009117</i> <i>As reported in the protocol</i>	7153384

Final number of results to be screened:121 (after de-duplication with previous searches)

A.2.10. Avian influenza overview February – May 2020

Phenotypic characterisation of HPAI viruses circulating in the EU in domestic and wild birds in the reporting period

Date of the search: 15/05/2020

Search	Query	Items found
#4	Search #3 AND ("2020/02/15"[Date - Entrez] : "2020/05/15"[Date - Entrez])	144
#3	Search (#1 AND #2)	12221
#2	Search "Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR ((influenza*[tiab] OR flu[tiab]) AND ("virus A" OR "viruses A")) OR "influenza A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR LPAI [tiab] OR IPAIV[tiab] OR	55883

	AIV[tiab] OR AIVs[tiab] OR H5N*[tiab] OR H7N*[tiab] OR H9N*[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	
#1	Search "Birds"[Mesh] OR bird[tiab] OR birds[tiab] OR aves[tiab] OR "avian population"[tiab] OR "avian populations"[tiab] OR poultr*[tiab] OR fowl[tiab] OR fowls[tiab] OR chicken*[tiab] OR "gallus gallus"[tiab] OR "g gallus"[tiab] OR waterfowl*[tiab] OR duck[tiab] OR ducks[tiab] OR anatidae[tiab] OR mallard[tiab] OR mallards[tiab] OR swan[tiab] OR swans[tiab] OR "Anas platyrhynchos"[tiab] OR "A platyrhynchos"[tiab] OR geese[tiab] OR goose[tiab] OR anser[tiab] OR turkey[tiab] OR turkeys[tiab] OR meleagris[tiab] OR quail[tiab] OR quails[tiab] OR coturnix[tiab] OR partridge*[tiab] OR phasianidae[tiab] OR guineafowl*[tiab] OR numida*[tiab] OR ostrich*[tiab] OR struthio[tiab]	320706

Final number of results to be screened: 140 (after de-duplication with previous searches)

Phenotypic and genetic characterisation of HPAI viruses circulating on other continents in domestic or wild birds or mammals (excluding humans)

Date of the search 15/05/2020

Search	Query	Items found
#4	Search (#3) AND ("2020/02/15"[Date - Entrez] : "2020/05/15"[Date - Entrez])	120
#3	Search (#2 AND #1)	8595
#2	Search ((high pathogen*[tiab] OR highly pathogen*[tiab]) AND ("Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab]))) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR "influenza virus A"[tiab] OR "influenza viruses A"[tiab] OR "influenza A"[tiab] OR "flu virus A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR AIV[tiab] OR AIVs[tiab])) OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR H5N*[tiab] OR H7N*[tiab] OR H9N*[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	11336
#1	<i>Animals search string adapted from: Hooijmans CR, Tillema A, Leenaars M and Ritskes-Hoitinga M, 2010. Enhancing search efficiency by means of a search filter for finding all studies on animal experimentation in PubMed. Lab Anim, 44, 170-175. doi:10.1258/la.2010.009117</i> <i>As reported in the protocol</i>	7034735

Final number of results to be screened: 118 (after de-duplication with previous searches)

A.2.11. Avian influenza overview November 2019 – February 2020

Phenotypic characterisation of HPAI viruses circulating in the EU in domestic and wild birds in the reporting period

Date of the search: 17/02/2020

Search	Query	Items found
#4	Search #3 AND ("2019/11/15"[Date - Entrez]:"2020/02/15"[Date - Entrez])	124
#3	Search (#1 AND #2)	12020
#2	Search "Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR ((influenza*[tiab] OR flu[tiab]) AND ("virus A" OR "viruses A")) OR "influenza A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab]	55058

	OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR LPAI [tiab] OR IPAIV[tiab] OR AIV[tiab] OR AIVs[tiab] OR H5N*[tiab] OR H7N*[tiab] OR H9N*[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	
#1	Search "Birds"[Mesh] OR bird[tiab] OR birds[tiab] OR aves[tiab] OR "avian population"[tiab] OR "avian populations"[tiab] OR poultr*[tiab] OR fowl[tiab] OR fowls[tiab] OR chicken*[tiab] OR "gallus gallus"[tiab] OR "g gallus"[tiab] OR waterfowl*[tiab] OR duck[tiab] OR ducks[tiab] OR anatidae[tiab] OR mallard[tiab] OR mallards[tiab] OR swan[tiab] OR swans[tiab] OR "Anas platyrhynchos"[tiab] OR "A platyrhynchos"[tiab] OR geese[tiab] OR goose[tiab] OR anser[tiab] OR turkey[tiab] OR turkeys[tiab] OR meleagris[tiab] OR quail[tiab] OR quails[tiab] OR coturnix[tiab] OR partridge*[tiab] OR phasianidae[tiab] OR guineafowl*[tiab] OR numida*[tiab] OR ostrich*[tiab] OR struthio[tiab]	317339

Final number of results to be screened: 123 (after de-duplication with previous searches)

Phenotypic and genetic characterisation of HPAI viruses circulating on other continents in domestic or wild birds or mammals (excluding humans)

Date of the search 17/02/2020

Search	Query	Items found
#4	Search (#3) AND ("2019/11/15"[Date - Entrez]:"2020/02/15"[Date - Entrez])	110
#3	Search (#2 AND #1)	8808
#2	Search ((high pathogen*[tiab] OR highly pathogen*[tiab]) AND ("Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab]))) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR "influenza virus A"[tiab] OR "influenza viruses A"[tiab] OR "influenza A"[tiab] OR "flu virus A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR AIV[tiab] OR AIVs[tiab])) OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR H5N*[tiab] OR H7N*[tiab] OR H9N*[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	11120
#1	<i>Animals search string adapted from: Hooijmans CR, Tillema A, Leenaars M and Ritskes-Hoitinga M, 2010. Enhancing search efficiency by means of a search filter for finding all studies on animal experimentation in PubMed. Lab Anim, 44, 170-175. doi:10.1258/la.2010.009117</i> <i>As reported in the protocol</i>	7027032

Final number of results to be screened:109 (after de-duplication with previous searches)

A.2.12. Avian influenza overview August – November 2019

Phenotypic characterisation of HPAI viruses circulating in the EU in domestic and wild birds in the reporting period

Date of the search: 15/11/2019

Search	Query	Items found
#4	Search #3 AND ("2019/08/15"[Date - Entrez]:"2019/11/15"[Date - Entrez])	138
#3	Search (#1 AND #2)	11879
#2	Search "Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR ((influenza*[tiab] OR flu[tiab]) AND ("virus A" OR "viruses A")) OR	54454

	"influenza A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR LPAI [tiab] OR IPAIV[tiab] OR AIV[tiab] OR AIVs[tiab] OR H5N*[tiab] OR H7N*[tiab] OR H9N*[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	
#1	Search "Birds"[Mesh] OR bird[tiab] OR birds[tiab] OR aves[tiab] OR "avian population"[tiab] OR "avian populations"[tiab] OR poultr*[tiab] OR fowl[tiab] OR fowls[tiab] OR chicken*[tiab] OR "gallus gallus"[tiab] OR "g gallus"[tiab] OR waterfowl*[tiab] OR duck[tiab] OR ducks[tiab] OR anatidae[tiab] OR mallard[tiab] OR mallards[tiab] OR swan[tiab] OR swans[tiab] OR "Anas platyrhynchos"[tiab] OR "A platyrhynchos"[tiab] OR geese[tiab] OR goose[tiab] OR anser[tiab] OR turkey[tiab] OR turkeys[tiab] OR meleagris[tiab] OR quail[tiab] OR quails[tiab] OR coturnix[tiab] OR partridge*[tiab] OR phasianidae[tiab] OR guineafowl*[tiab] OR numida*[tiab] OR ostrich*[tiab] OR struthio[tiab]	314057

Final number of results to be screened: 135 (after de-duplication with previous searches)

Phenotypic and genetic characterisation of HPAI viruses circulating on other continents in domestic or wild birds or mammals (excluding humans)

Date of the search 15/11/2019

Search	Query	Items found
#4	Search (#3) AND ("2019/08/15"[Date - Entrez]:"2019/11/15"[Date - Entrez])	118
#3	Search (#2 AND #1)	8690
#2	Search ((high pathogen*[tiab] OR highly pathogen*[tiab]) AND ("Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab]))) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR "influenza virus A"[tiab] OR "influenza viruses A"[tiab] OR "influenza A"[tiab] OR "flu virus A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR AIV[tiab] OR AIVs[tiab])) OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR H5N*[tiab] OR H7N*[tiab] OR H9N*[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	10983
#1	<i>Animals search string adapted from: Hooijmans CR, Tillema A, Leenaars M and Ritskes-Hoitinga M, 2010. Enhancing search efficiency by means of a search filter for finding all studies on animal experimentation in PubMed. Lab Anim, 44, 170-175. doi:10.1258/la.2010.009117</i> <i>As reported in the protocol</i>	6965105

Final number of results to be screened: 115 (after de-duplication with previous searches)

A.2.13. Avian influenza overview February – August 2019

Phenotypic characterisation of HPAI viruses circulating in the EU in domestic and wild birds in the reporting period

Date of the search: 19/08/2019

Search	Query	Items found
#4	Search #3 AND ("2019/02/01"[Date - Entrez] : "2019/08/15"[Date - Entrez])	307
#3	Search (#1 AND #2)	11722
#2	Search "Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR ((influenza*[tiab] OR flu[tiab]) AND ("virus A" OR "viruses A")) OR "influenza A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab]	53790

	OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR LPAI [tiab] OR IPAIV[tiab] OR AIV[tiab] OR AIVs[tiab] OR H5N*[tiab] OR H7N*[tiab] OR H9N*[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	
#1	Search "Birds"[Mesh] OR bird[tiab] OR birds[tiab] OR aves[tiab] OR "avian population"[tiab] OR "avian populations"[tiab] OR poultr*[tiab] OR fowl[tiab] OR fowls[tiab] OR chicken*[tiab] OR "gallus gallus"[tiab] OR "g gallus"[tiab] OR waterfowl*[tiab] OR duck[tiab] OR ducks[tiab] OR anatidae[tiab] OR mallard[tiab] OR mallards[tiab] OR swan[tiab] OR swans[tiab] OR "Anas platyrhynchos"[tiab] OR "A platyrhynchos"[tiab] OR geese[tiab] OR goose[tiab] OR anser[tiab] OR turkey[tiab] OR turkeys[tiab] OR meleagris[tiab] OR quail[tiab] OR quails[tiab] OR coturnix[tiab] OR partridge*[tiab] OR phasianidae[tiab] OR guineafowl*[tiab] OR numida*[tiab] OR ostrich*[tiab] OR struthio[tiab]	311016

Final number of results to be screened: 284 (after de-duplication with previous searches)

Phenotypic and genetic characterisation of HPAI viruses circulating on other continents in domestic or wild birds or mammals (excluding humans)

Date of the search 19/08/2019

Search	Query	Items found
#4	Search (#3) AND ("2019/02/01"[Date - Entrez] : "2019/08/15"[Date - Entrez])	259
#3	Search (#2 AND #1)	8561
#2	Search ((high pathogen*[tiab] OR highly pathogen*[tiab]) AND ("Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab]))) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR "influenza virus A"[tiab] OR "influenza viruses A"[tiab] OR "influenza A"[tiab] OR "flu virus A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR AIV[tiab] OR AIVs[tiab])) OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR H5N*[tiab] OR H7N*[tiab] OR H9N*[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	10834
#1	<i>Animals search string adapted from: Hooijmans CR, Tillema A, Leenaars M and Ritskes-Hoitinga M, 2010. Enhancing search efficiency by means of a search filter for finding all studies on animal experimentation in PubMed. Lab Anim, 44, 170-175. doi:10.1258/la.2010.009117</i> <i>As reported in the protocol</i>	6909627

Final number of results to be screened: 238 (after de-duplication with previous searches)

A.2.14. Avian influenza overview November 2018 – February 2019

Phenotypic characterisation of HPAI viruses circulating in the EU in domestic and wild birds in the reporting period

Date of the search: 18/02/2019

Search	Query	Items found
#4	Search #3 AND ("2018/11/15"[Date - Entrez] : "2019/02/15"[Date - Entrez])	117
#3	Search (#1 AND #2)	11408
#2	Search "Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR ((influenza*[tiab] OR flu[tiab]) AND ("virus A" OR "viruses A")) OR "influenza A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR LPAI [tiab] OR IPAIV[tiab] OR AIV[tiab] OR AIVs[tiab] OR H5N*[tiab] OR H7N*[tiab] OR H9N*[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	52522
#1	Search "Birds"[Mesh] OR bird[tiab] OR birds[tiab] OR aves[tiab] OR "avian population"[tiab] OR "avian populations"[tiab] OR poultr*[tiab] OR fowl[tiab] OR fowls[tiab] OR chicken*[tiab] OR "gallus gallus"[tiab] OR "g gallus"[tiab] OR waterfowl*[tiab] OR duck[tiab] OR ducks[tiab] OR anatidae[tiab] OR mallard[tiab] OR mallards[tiab] OR swan[tiab] OR swans[tiab] OR "Anas platyrhynchos"[tiab] OR "A platyrhynchos"[tiab] OR geese[tiab] OR goose[tiab] OR anser[tiab] OR turkey[tiab] OR turkeys[tiab] OR meleagris[tiab] OR quail[tiab] OR quails[tiab] OR coturnix[tiab] OR partridge*[tiab] OR phasianidae[tiab] OR guineafowl*[tiab] OR numida*[tiab] OR ostrich*[tiab] OR struthio[tiab]	304322

Final number of results to be screened: 116 (after de-duplication with previous searches)

Phenotypic and genetic characterisation of HPAI viruses circulating on other continents in domestic or wild birds or mammals (excluding humans)

Date of the search 18/02/2019

Search	Query	Items found
#4	Search (#3) AND ("2018/11/15"[Date - Entrez] : "2019/02/15"[Date - Entrez])	108
#3	Search (#2 AND #1)	8299
#2	Search ((high pathogen*[tiab] OR highly pathogen*[tiab]) AND ("Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR "influenza virus A"[tiab] OR "influenza viruses A"[tiab] OR "influenza A"[tiab] OR "flu virus A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR AIV[tiab] OR AIVs[tiab])) OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR H5N*[tiab] OR H7N*[tiab] OR H9N*[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	10511
#1	<i>Animals search string adapted from: Hooijmans CR, Tillema A, Leenaars M and Ritskes-Hoitinga M, 2010. Enhancing search efficiency by means of a search filter for finding all studies on animal experimentation in PubMed. Lab Anim, 44, 170-175. doi:10.1258/la.2010.009117</i> <i>As reported in the protocol</i>	6790084

Final number of results to be screened: 108

A.2.15. Avian influenza overview August – November 2018

Phenotypic characterisation of HPAI viruses circulating in the EU in domestic and wild birds in the reporting period

Date of the search: 16/11/2018

Search	Query	Items found
#4	Search #3 AND ("2018/08/15"[Date - Entrez] : "2018/11/15"[Date - Entrez])	131
#3	Search (#1 AND #2)	11 273
#2	Search "Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR ((influenza*[tiab] OR flu[tiab]) AND ("virus A" OR "viruses A")) OR "influenza A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR LPAI [tiab] OR IPAIV[tiab] OR AIV[tiab] OR AIVs[tiab] OR H5N*[tiab] OR H7N*[tiab] OR H9N*[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	51 907
#1	Search "Birds"[Mesh] OR bird[tiab] OR birds[tiab] OR aves[tiab] OR "avian population"[tiab] OR "avian populations"[tiab] OR poultr*[tiab] OR fowl[tiab] OR fowls[tiab] OR chicken*[tiab] OR "gallus gallus"[tiab] OR "g gallus"[tiab] OR waterfowl*[tiab] OR duck[tiab] OR ducks[tiab] OR anatidae[tiab] OR mallard[tiab] OR mallards[tiab] OR swan[tiab] OR swans[tiab] OR "Anas platyrhynchos"[tiab] OR "A platyrhynchos"[tiab] OR geese[tiab] OR goose[tiab] OR anser[tiab] OR turkey[tiab] OR turkeys[tiab] OR meleagris[tiab] OR quail[tiab] OR quails[tiab] OR coturnix[tiab] OR partridge*[tiab] OR phasianidae[tiab] OR guineafowl*[tiab] OR numida*[tiab] OR ostrich*[tiab] OR struthio[tiab]	301 405

Final number of results to be screened: 131

Phenotypic and genetic characterisation of HPAI viruses circulating on other continents in domestic or wild birds or mammals (excluding humans)

Date of the search: 16/11/2018

Search	Query	Items found
#4	Search (#3) AND ("2018/08/15"[Date - Entrez] : "2018/11/15"[Date - Entrez])	123
#3	Search (#2 AND #1)	8 178
#2	Search ((high pathogen*[tiab] OR highly pathogen*[tiab]) AND ("Influenza in Birds"[Mesh] OR "Influenzavirus A"[Mesh] OR (avian[tiab] AND (influenza*[tiab]OR flu[tiab])) OR "influenza in bird"[tiab] OR "influenza in birds"[tiab] OR "bird flu"[tiab] OR "birds flu"[tiab] OR bird influenza*[tiab] OR "birds influenza"[tiab] OR "influenza virus A"[tiab] OR "influenza viruses A"[tiab] OR "influenza A"[tiab] OR "flu virus A"[tiab] OR "flu A"[tiab] OR "influenzavirus A"[tiab] OR "fluvirus A"[tiab] OR AIV[tiab] OR AIVs[tiab])) OR HPAI[tiab] OR HPAIV[tiab] OR HPAIVs[tiab] OR H5N*[tiab] OR H7N*[tiab] OR H9N*[tiab] OR AH5N*[tiab] OR AH7N*[tiab] OR AH9N*[tiab]	10 352
#1	<i>Animals search string adapted from: Hoojijmans CR, Tillema A, Leenaars M and Ritskes-Hoitinga M, 2010. Enhancing search efficiency by means of a search filter for finding all studies on animal experimentation in PubMed. Lab Anim, 44, 170-175. doi:10.1258/la.2010.009117</i> <i>As reported in the protocol</i>	6 729 856

Final number of results to be screened: 122