



The Conflict in Ukraine and Animal Health

Setting the scene

Disruption of supply chains, animal health services and surveillance will impact early detection, prevention and control of high impact animal and zoonotic diseases. The risks of disease spread in Ukraine and neighbouring countries is high and needs to be re-evaluated to apply coordinated and targeted, risk based control measures.

In Ukraine, the war has caused disruption to the normal animal health surveillance and control, resulting in delayed recognition of and response to important animal diseases. Large numbers of abandoned livestock and pet animals might contribute to transmission and spread of the disease. Porous borders, uncontrolled movement of animals, or undisposed carcasses of animals left after bombardments or diseases, encroachment and destruction of wildlife habitats, displacement of wild and domestic animals and increased interface between human, wildlife and domestic animals can lead to increase in the likelihood of spillover of pathogens especially those associated with transboundary animal diseases, zoonoses and wildlife related diseases. Russian military invasion of Ukraine has massively disrupted the livestock sector of the country including animal health services and animal production in commercial, smallholder and backyard sectors. The immediate impacts are below.

1. *Disruption to basic services and supply chains*

- Approximately 200000 troops are traveling through major transport corridors in the eastern part of the country. This includes movements on major roads and rail corridors, which has resulted in disruption to road and rail transport.
- Large areas of the country have been affected by prolonged combat, shelling and bombing leading to unprecedented destruction of residential buildings, civic infrastructure, farms, elevators and roads. Missile attacks and airstrikes at the major Ukrainian cities continue all over the country.
- Estimated ¼ of the population have been internally displaced, with over 4 million people leaving the country as refugees, this reflects the huge loss of manpower in the country to conduct livestock rearing and providing the basic animal health services.
- Usual supply chains for feeds, veterinary medications and product transportation have been massively impacted. The impacts on supply chains are likely to be long term due to damage to transport infrastructure.
- Personnel of the government agencies in the occupied areas have been displaced and cannot perform their normal duties including providing animal health services, and conducting surveillance and disease control.
- Since 24 of February 2022, the capacities for early detection and response to animal health emergencies in large parts of the country is severely compromised.

2. *Increase in disease risk factors*

- Likely unintentional introduction of high impact pathogens with devastating implications for animal health and production due to unprecedentedly large **geographical** origin of the invading army detachments.
- Abandoned livestock, cats and dogs in the areas affected by military activities leading to increased contact with other feral and domestic animals, and with humans
- Increased slaughter and uncontrolled trade in pork, particularly in the areas on the left bank of Dnipro river, and areas affected by conflict and development of informal and unregulated value chains.
- Breaches in farm biosecurity, and increased contact of poultry in backyard sector with natural reservoirs in the rural areas throughout the country, but especially in its southern regions.
- Problems with maintaining sufficient biosecurity levels at backyard and commercial poultry and livestock farms, due to disrupted water, electricity and provision supplies.
- Access of stray and wild animals to partially destroyed farms, leading to increased opportunity for spillover and transmission of diseases
- Large-scale mortalities or escape of farmed animals (livestock and poultry) including poor feeding and husbandry practices, challenges with maintaining proper health status or incineration of dead animals.

3. Increase in risk of animal diseases

The most significant disease risks pertain to African swine fever (ASF), highly pathogenic avian influenza (HPAI), rabies and leptospirosis as well as food borne zoonotic diseases (i.e brucellosis, salmonellosis). However, the unprecedented scale of destruction, movement of troops and other war-associated disasters are likely in a medium to long-term perspective to produce animal and human health threats that are currently hard to predict.

African swine fever is a transboundary viral disease affecting both domestic and wild pigs. Prior to the war Ukraine progressed with ASF control moving from endemic equilibrium to sporadic cases through enhanced biosecurity management in pig sector and along value chains, risk based surveillance and quick detection and outbreak control. Due to disruption of supply chains, slaughter of animals in the backyard sector in response to increased consumer demand, and the emergence of informal pork value chains and unregulated markets, the risk of ASF remains high in the areas affected by the war. This is particularly relevant to the regions in the south and east of the country. This may provoke a spike in ASF incidence and spread of disease due to uncontrolled movement of people and of pig products.

Highly pathogenic avian influenza is transboundary viral zoonotic disease affecting poultry, wild birds, mammals, and humans. The disease seasonally re-emerges in Europe. February- April is the period of the northward returning migration of wild-birds, and high-risk seasons for its introduction from the natural reservoirs. With the disruption of surveillance in wild bird and poultry interface areas, the disease spillover and may quickly spread in the country.

The risk of Rabies, which is a vaccine-preventable, zoonotic, viral disease affecting current public health, is even more worrisome. Even prior to the war the rabies epidemic situation in animals was deteriorating. Practically in all cases, the source of infection was wild animals with risk of establishment foci for transmission between domestic animals. In 2018, 1704 cases of rabies were detected with 58% of domestic animals and 42 % in wild

animals. Among domestic animals 28 % were cats, 25% - dogs and 8% among cattle. Among rabies cases in wild animals, 32% were in foxes. With the increase in numbers of stray and abandoned animals, there is a high risk of these animals being exposed to wild animals, and being infected. There is a need to develop a national strategy for rabies control in the new reality and account for new risk factors that emerged due to war.

Leptospirosis is a zoonotic bacterial disease with epidemic potential especially after floods, heavy rainfalls. Leptospirosis has its primary reservoir in rats but also humans, wildlife and domestic animals, like cattle, pigs and dogs can be a reservoir. Both wild and domestic animals can spread the disease, most commonly rodents, whose natural habitats may be disturbed due to the shelling and unsanitary conditions.

Ukraine is currently free from Foot and mouth disease (FMD), Lumpy skin disease (LSD) and other exotic diseases but due to the porous borders, large movements of troops, lack of border controls and inspections by veterinary services, there is a high risk of introduction and spread of exotic transboundary animal diseases to Ukraine and its neighbors.

4. Increased risk from zoonotic diseases

Ukraine spans a large diversity of zonal environments as well as agro-ecological environments which provide persistence and stability of natural reservoirs of many zoonotic diseases. Uncontrolled movement of animals, or their undisposed carcasses, as well as encroachment and destruction of wildlife habitats can lead spillover of pathogens at human, wildlife and domestic animal interfaces. There are several routes of migratory birds crossing Ukraine territory, which are carriers of pathogens and vectors (ticks) of many dangerous infectious diseases e.g. West Nile Fever (WNV), Crimean-Congo Hemorrhagic Fever (CCHF), HPAI and others. Presently all territory of Ukraine with exception of several arid areas suffers from sporadic cases of leptospirosis and tularemia. Depending on the weather conditions in the coming months and given humanitarian catastrophe in or around large cities like Mariupol, Chernihiv, Sumy, Kharkiv and their satellite settlements re-emergence and upsurge of many other zoonotic diseases is likely. This is strongly aggravated by the poor hygiene conditions, limited capacity to diagnose infections and control their sources.

Active and passive surveillance, lab diagnostics and control measures of endemic and emerging infectious diseases are currently severely undermined due to security situation and availability of resources and personnel.

The large number of abandoned pet animals and lack of vaccination and surveillance might result in the emergence of rabies in urban and rural areas and produce multiple spillovers to humans. The lack of capacities for rodents control, floods caused by bombardment of dam and water reservoirs e.g. due to bombardment of hydroelectric power stations might result in spread of leptospirosis and other water and food borne zoonosis

The national COVID-19 mitigation measures are affected by the crisis, the lack of SARS-CoV-2 detection in humans and exposed animals in some areas, reduced vaccination coverage, reduced hygiene in the affected areas and refugees camps can lead to spillover events, emergence and spread of new variants and further increase risk of disease spread globally.

Recommendations for Ukraine

- Establish a multi-disciplinary panel of national and international experts to further work on risk evaluation and monitoring of the situation jointly with the government of Ukraine

- Setting up system of collecting information on the problems and issues related to animal production and health in Ukraine capable of addressing burning issues and plan a strategic consolidated response to the problems that might emerge on a medium to long term perspective
 - Stabilize and strengthen surveillance systems including veterinary staff and consumables – sampling and diagnostics kits, personal protective equipment and lab consumables.
 - the targeted, risk based surveillance for specific diseases needs to be re-evaluated and re-enforced
 - the implications of additional resources needed for risk based surveillance need to be assessed
 - the arrangement of samples shipment and testing in neighboring EU laboratories
 - the coordination needed with humanitarian agencies to monitor pet animals and livestock for diseases
- Enhance disease reporting and detection through implementation of realistic and feasible surveillance methods applicable to the current war crisis (i.e community-based surveillance).
- Provision of vaccines against rabies and equipment such as syringes, cold chain boxes for the implementation of vaccination of pet animals and livestock in high risk areas
- Provision of equipment and disinfectants for cleaning and disinfection
- Risk communication campaign for to generic population, military forces, farmers, veterinarians, foresters and other targeted audience on risk of emergence of spread of transboundary diseases including zoonosis – rabies, leptospirosis

Recommendations for neighbouring countries

- Evaluate the risk of introduction and spread of diseases in to the neighboring countries, following guidance from the EU (Poland, Slovakia, Hungary, Romania and the Republic of Moldova) for surveillance, prevention and control of high risk TADs.
- Vaccination of all dogs and cats against rabies entering neighbouring countries of EU and Moldova from Ukraine.
- Activate early warning system applying the One Health approach with multi-sectoral and multi-disciplinary coordination including farmers, veterinarians, public health specialists, foresters, hunters, game keepers, ornithologists and other wild life experts.
- Risk communication to generic population, farmers, veterinarians, foresters and other targeted audience on risk of emergence of spread of transboundary diseases including zoonosis.