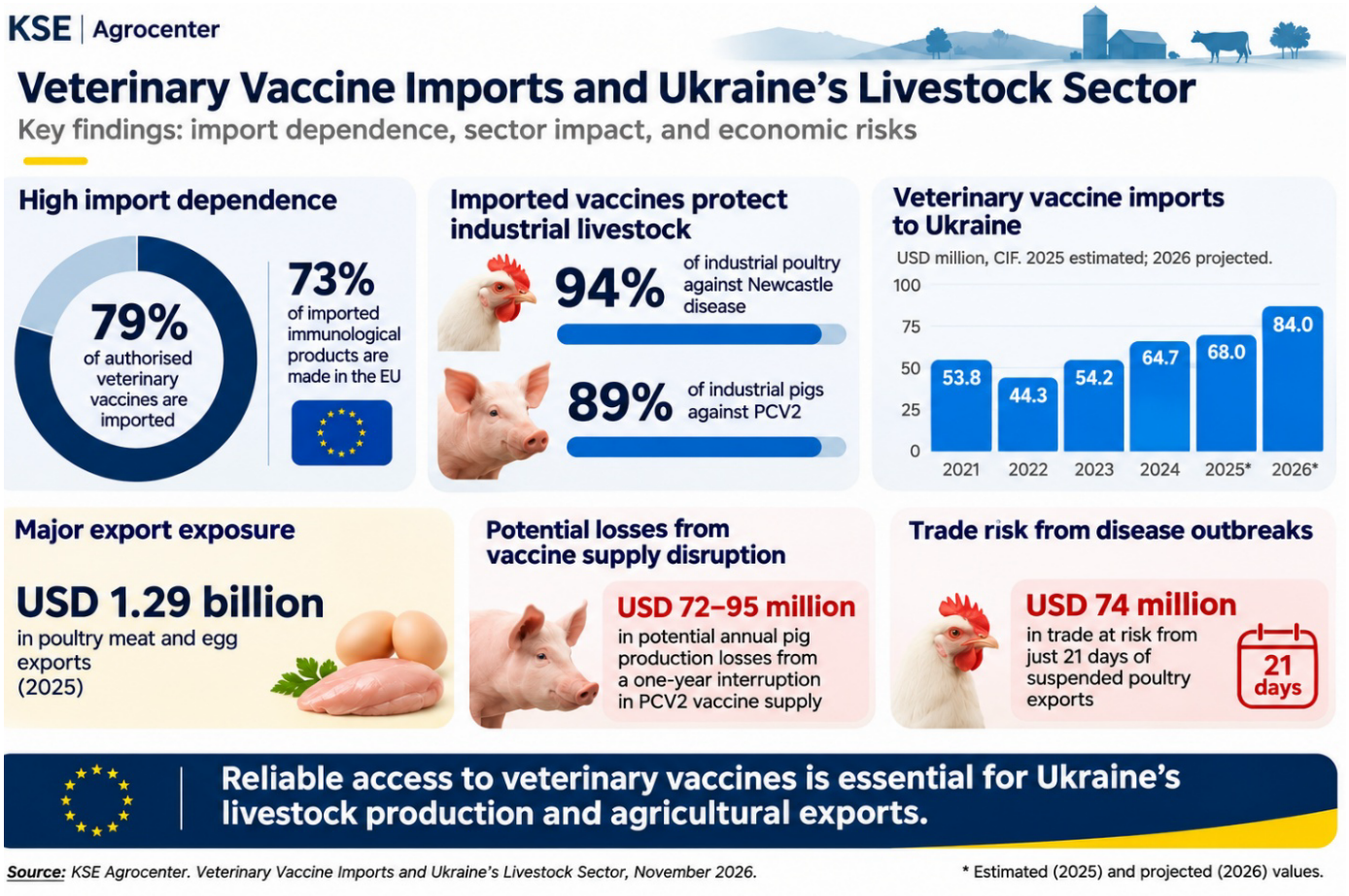
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VETERINARY VACCINE IMPORTS AND UKRAINE'S LIVESTOCK SECTOR: ECONOMIC DEPENDENCE ON THE EU

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SUMMARY AND HIGHLIGHTS OF THE REPORT

Ukraine's livestock sector depends heavily on imported veterinary vaccines, particularly in industrial poultry and pig production. Reliable vaccine supplies are essential for disease prevention, productivity, and agricultural exports.

79% of authorised veterinary vaccines are imported, with EU manufacturers accounting for 73% of imported immunological products.

94% of industrial poultry and 89% of industrial pigs are protected against selected diseases by vaccines supplied by UVA member companies alone (lower-bound estimate).

USD 1.29 billion in poultry meat and egg exports is economically exposed to animal disease risks — 19 times Ukraine's annual veterinary vaccine import bill.

USD 72–95 million in potential annual pig production losses could result from a one-year interruption in PCV2 vaccine supply, exceeding the value of all annual veterinary vaccine imports.

Just 21 days of suspended poultry exports could put USD 74 million in trade at risk.

Economic loss estimates are illustrative scenarios, not forecasts.

Keywords: veterinary medicinal products; vaccines; Regulation (EU) 2019/6; EU accession; livestock; import dependency; Ukraine

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1. EU VACCINE IMPORTS AND THEIR IMPORTANCE FOR UKRAINE'S LIVESTOCK SECTOR

Animal diseases impose substantial economic costs on livestock production worldwide. According to the World Organisation for Animal Health (WOAH, 2014), morbidity and mortality associated with animal diseases account for losses equivalent to at least 20% of global livestock production. Vaccination is one of the principal instruments for preventing these losses, particularly in intensive livestock systems, where high animal densities increase the risk of disease transmission. In addition to protecting animal health and welfare, vaccination reduces the need for antimicrobial treatments (Roth, 2011). Evidence from field studies indicates that vaccination of food-producing animals can substantially reduce antibiotic consumption (Hoelzer et al., 2018), an increasingly important consideration as the European Union strengthens restrictions on the preventive use of antimicrobials.

For Ukraine, access to veterinary vaccines is particularly important given the ongoing structural transformation of its livestock sector. Production is increasingly concentrated in agricultural enterprises, particularly in poultry and pig farming, where vaccination is routinely integrated into production cycles (KSE Agrocenter, 2024–2025). In the first half of 2026, the pig herd held by agricultural enterprises increased by 7.8% year on year, while the household herd declined by 24.9% (UkrAgroConsult, 2026). As industrial production expands, the sector's dependence on reliable and timely supplies of veterinary vaccines becomes more pronounced.

At the same time, Ukraine is reforming its veterinary regulatory framework as part of its EU accession process. Following the granting of EU candidate status in June 2022 and the opening of accession negotiations in June 2024, Ukraine has been progressively aligning its legislation with the EU acquis. Law No. 1206-IX "On Veterinary Medicine", substantially amended by Law No. 4718-IX of 16 December 2025, entered into force on 1 March 2026. The legislation broadly follows Regulation (EU) 2019/6, which has governed veterinary medicinal products in the EU since 28 January 2022 (CMS, 2026).

In this study we examine import dependence of livestock industry on imported veterinary medicinal products. The analysis draws on four complementary sources: the national register of authorised veterinary medicinal products, international trade statistics, information collected from member companies of the Ukrainian Veterinary Alliance (UVA), and official livestock production statistics. The analysis is descriptive and focuses on the structure of vaccine supply, import trends, vaccination coverage, and the potential economic consequences of supply disruptions.

1.1. Ukraine's dependence on imported veterinary vaccines

The structure of Ukraine's veterinary medicinal products market reveals a substantial difference between pharmaceutical and immunological products in terms of import dependence.

According to the register maintained by the State Service of Ukraine on Food Safety and Consumer Protection (SSUFSCP), as of 13 September 2026, Ukraine had 2,113 registered products. For the purposes of this analysis, 353 disinfectants and biocides and one diagnostic kit were excluded because they do not qualify as veterinary medicinal products under Regulation (EU) 2019/6. The resulting dataset comprises 1,759 authorised VMPs, including 1,262 pharmaceutical and 497 immunological products.

The register was analysed according to the country of manufacture and the animal species for which each product was authorised. Products were classified as Ukrainian if at least one manufacturing site was located in Ukraine, as EU-produced if a manufacturing site was located in an EU Member State, and as originating

from other countries otherwise. Ten products had both Ukrainian and foreign manufacturing sites and were classified as Ukrainian. The analysis of food-producing animals covers poultry, pigs, cattle, sheep, and goats.

Imported products account for 51.3% of all authorised veterinary medicinal products (VMPs) in Ukraine. However, their importance differs considerably across product categories. While imported products represent 40.4% of pharmaceutical VMPs only, their share reaches 78.9% among immunological products (Table 1).

This distinction reflects Ukraine's relatively stronger domestic production capacity for antibiotics, antiparasitic products, and other pharmaceutical veterinary medicines compared with vaccines. Consequently, disruptions to imports would have a disproportionately large effect on disease prevention rather than treatment.

Table 1. Authorised veterinary medicinal products by country of manufacture, 13 September 2026

Group	Total	Ukraine	EU-27	Other	Imported, %	EU-27, %
All VMPs	1,759	857	688	214	51.3	39.1
Pharmaceutical	1,262	752	403	107	40.4	31.9
Immunological	497	105	285	107	78.9	57.3
Vaccines, food-producing species	409	88	227	94	78.5	55.5
Vaccines, poultry	235	46	118	71	80.4	50.2
Vaccines, pigs	112	29	71	12	74.1	63.4
Vaccines, cattle	89	37	39	13	58.4	43.8

Note: Species totals overlap because products authorised for several species are counted in each relevant category. The register measures product authorisations rather than sales volumes or market shares.

Among vaccines authorised for food-producing animals, 321 of 409 products, or 78.5%, are imported. Ukrainian manufacturers account for only 88 authorisations, meaning that more than three imported vaccines are registered for every domestically manufactured product.

Dependence on imports is particularly pronounced in poultry and pig production. Imported vaccines account for 80.4% of poultry vaccine authorisations and 74.1% of those for pigs. The corresponding share for cattle is lower, at 58.4%, reflecting the availability of a relatively larger number of domestically manufactured products: 37 of the 89 authorised cattle vaccines are produced in Ukraine.

These differences are important because poultry and pig farming are the livestock activities most closely associated with industrial production systems and fixed vaccination schedules. The sectors most dependent on routine vaccination are therefore also those most reliant on imported products.

Domestic manufacturing cannot readily substitute for imported vaccines in the short term. The development and commercialisation of a new animal health product can take between five and 15 years (HealthforAnimals, n.d.), making rapid replacement of imported vaccines through domestic production unrealistic.

The European Union occupies a particularly important position in Ukraine's vaccine supply. Of the 392 imported immunological products authorised in Ukraine, 285, or 72.7%, are manufactured in the EU. Among

vaccines intended for food-producing species, EU-produced products account for 55.5% of all authorisations.

The most frequently represented foreign manufacturing countries are the United States, with 83 authorised immunological products, followed by Spain (65), the Netherlands (56), Czechia (53), and France (42).

1.2. Veterinary vaccine imports: recovery and growth during the war

The importance of imported vaccines is also reflected in Ukraine's international trade statistics. Veterinary vaccines are the only major category of veterinary medicinal products that can be separately identified in customs data, under HS 3002 30 and, from 2022, HS 3002 42. Pharmaceutical VMPs are classified under heading 3004 together with medicines for human use and therefore cannot be reliably distinguished in aggregate trade statistics.

The analysis uses Ukraine-reported import data from UN Comtrade for 2021–2024 and January–September 2025. These are complemented by mirror trade statistics from Eurostat Comext for EU-27 exports to Ukraine and from the US Census Bureau for US exports. Eurostat values were converted from euros to US dollars using annual European Central Bank exchange rates. Where detailed Dutch export data were confidential in 2021–2022, Ukraine-reported imports of Dutch origin were used instead.

Ukraine-reported import values were consistently around 1.3–1.4 times higher than corresponding mirror trade values during 2021–2024. This difference reflects, among other factors, the inclusion of direct shipments from third countries and the different valuation methods used in import and export statistics: imports are recorded on a CIF basis, while exports are generally reported on an FOB basis.

To estimate imports for 2025, three approaches were applied: linear extrapolation of the first nine months, seasonal extrapolation, and adjustment of mirror trade data using the observed ratio between Ukraine-reported imports and mirror statistics in 2023–2024. The projection for 2026 uses EU export data for January–July 2026 under two alternative assumptions for the remaining five months.

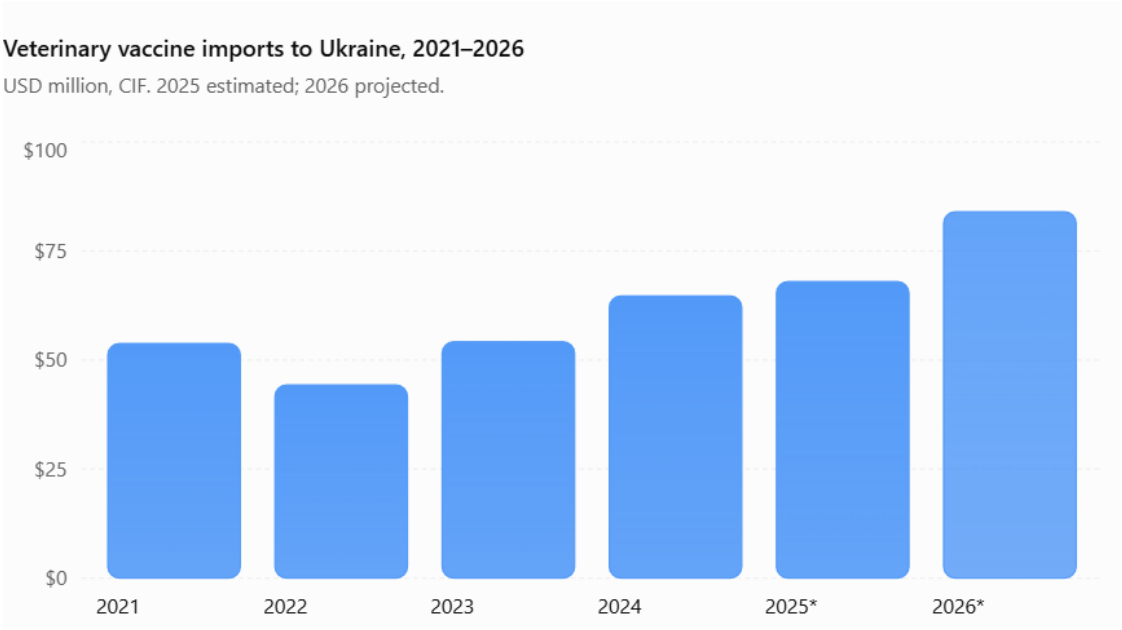
The resulting series shows a relatively rapid recovery of Ukraine's vaccine imports following the initial disruption caused by russia's full-scale invasion.

In 2021, Ukraine imported veterinary vaccines worth USD 53.8 million. The value declined to USD 44.3 million in 2022, most likely reflecting the occupation of territories, destruction of livestock facilities, and disruptions to logistics and production rather than a structural reduction in the need for vaccination.

Imports subsequently recovered, reaching USD 54.2 million in 2023 and USD 64.7 million in 2024. By 2024, their value was approximately 20% higher than before the full-scale invasion.

For 2025, vaccine imports are estimated at approximately USD 68 million, within a range of USD 65–71 million. The projection for 2026 reaches USD 84 million, with a range of USD 79–89 million. If realised, this would represent an increase of approximately 55% compared with 2021.

Figure 1. UN Comtrade, Ukraine-reported imports (2021–2024); 2025 estimate and 2026 projection based on Eurostat Comext and US Census mirror data. *Estimated or projected values



Although part of the increase in import value may reflect changes in prices, the sustained recovery is consistent with the growing role of industrial livestock production and the associated demand for veterinary vaccines. Increasing import values may also translate into larger numbers of batches requiring regulatory control.

The geographical structure of imports has remained relatively stable. The EU accounts for approximately 60% of the value of Ukraine's veterinary vaccine imports, the United States for around 25%, and other countries for the remaining 15%. This suggests that Ukraine's dependence on EU and US vaccine manufacturers predates the full-scale invasion.

An important feature of these trade flows is the role of EU distribution networks. Ukrainian import statistics record annual imports of US-origin vaccines worth approximately USD 11–17 million, while direct US exports to Ukraine amount to only USD 1–3 million. This difference indicates that most US-manufactured vaccines reach Ukraine through EU distribution hubs.

1.3. The role of imported vaccines in industrial livestock production

The importance of imported vaccines for Ukraine's livestock sector extends beyond the number of authorised products or the value of imports. Their actual use in industrial production provides a more direct indication of the sector's dependence on uninterrupted vaccine supplies.

To assess this dependence, the analysis uses information provided by member companies of the Ukrainian Veterinary Alliance for 2025. The companies reported the quantities of selected vaccines sold, the number of imported batches of veterinary medicinal products, and the number of foreign manufacturing sites supplying these products. Information was collected under the data-processing arrangements established by the UVA Statute and is presented only in aggregate form.

Vaccination coverage was assessed using one representative disease for each major livestock species: Newcastle disease for poultry, porcine circovirus type 2 (PCV2) for pigs, and bovine respiratory disease (BRD) for cattle. These diseases were selected because vaccination against them is commonly incorporated into industrial livestock production.

The number of animals protected was estimated by dividing the number of doses sold by the number of doses required per animal according to the manufacturer's instructions. This figure was then compared with the corresponding industrial livestock population.

For laying hens and cattle, the denominator was the number of animals held by agricultural enterprises as of 1 January 2026. For broilers and pigs, the analysis used the number of animals slaughtered by agricultural enterprises during 2025, since several production cycles may occur within a year. Poultry vaccine doses were allocated first to laying hens and subsequently to broilers.

Household production was excluded because animal numbers are less reliably recorded and imported vaccines are less frequently used in this segment. Moreover, the analysis covers only one disease per species and vaccines supplied by UVA member companies. The results therefore provide a lower-bound indication of the dependence of industrial livestock production on imported vaccines rather than a comprehensive measure of all vaccination activities.

The findings demonstrate particularly high coverage in poultry and pig production (Table 2).

Table 2. Coverage of industrial livestock with UVA member-company vaccines, 2025

Species (disease)	Doses, 2025	Animals protected	Industrial population	Coverage, %
Laying hens (Newcastle disease)	3,168,950,500 (poultry total)	1,056,316,833 (poultry total)	28,631,500[1]	100
Broilers (Newcastle disease)	—	—	1,099,188,700[2]	93.5
Pigs (PCV2)	3,927,850	3,927,850	4,418,100[2]	88.9
Cattle (BRD)	2,061,545	515,386	955,100[1]	54.0

[1] Animals held by agricultural enterprises on 1 January 2026. [2] Animals slaughtered by agricultural enterprises during 2025. Sources: Ministry of Economy and Environment of Ukraine; UVA member companies. Poultry doses and animals protected are reported as combined totals.

In poultry production, vaccines supplied by UVA member companies protected approximately 1.06 billion birds against Newcastle disease in 2025. This corresponds to full coverage of industrial laying hens and 93.5% of broilers slaughtered by agricultural enterprises. Taken together, the protected population represents approximately 94% of industrial poultry.

The high level of coverage illustrates the importance of imported vaccines for the functioning of Ukraine's industrial poultry sector. Vaccination against Newcastle disease is a routine preventive measure, and interruptions in supply could affect a substantial share of production.

A similar pattern is observed in pig farming. In 2025, UVA member companies supplied approximately 3.93 million doses of PCV2 vaccines, sufficient to protect the same number of pigs. Relative to the 4.42 million pigs slaughtered by agricultural enterprises, this corresponds to vaccination coverage of 88.9%.

Thus, almost nine out of ten pigs produced by industrial farms were protected against PCV2 using vaccines supplied by UVA member companies. This reflects the integration of vaccination into routine production practices rather than occasional responses to disease outbreaks.

For cattle, estimated coverage against bovine respiratory disease was lower, at 54.0%. Approximately 515,000 animals were protected, compared with an industrial cattle population of 955,100. This figure should be interpreted with caution because the denominator includes the entire cattle herd, whereas BRD vaccination programmes often target particular age groups. In addition, cattle producers have access to a relatively larger range of domestically manufactured vaccines.

These results underline the importance of maintaining reliable access to imported vaccines, especially for poultry and pigs. A disruption affecting even one routinely used vaccine could leave a substantial proportion of industrial animals without protection against an economically significant disease.

The findings are also relevant to Ukraine's alignment with EU rules on antimicrobial use. Regulation (EU) 2019/6 restricts the preventive use of antimicrobials under Article 107, and Ukraine is adopting a similar regulatory approach. As livestock producers become more constrained in their ability to rely on preventive antimicrobial treatments, vaccination and biosecurity assume greater importance in disease management.

1.4. Economic importance of vaccine supply for livestock production and exports

The economic significance of veterinary vaccine imports becomes particularly apparent when compared with the value of livestock production and exports that depend on effective disease prevention.

Ukraine's poultry sector provides a clear example. Industrial poultry production accounts for the overwhelming majority of the country's poultry meat and egg exports, and vaccination is an integral part of these production systems.

In 2025, Ukraine exported poultry meat worth USD 1,088 million and eggs in shell worth USD 205 million, according to customs statistics of the Ministry of Agrarian Policy and Food of Ukraine (HS 0207 and HS 0407). Poultry meat exports increased by approximately 14% compared with 2024, when their value was USD 957 million.

Combined poultry meat and egg exports reached approximately USD 1.29 billion in 2025.

This value was around 19 times higher than the estimated USD 68 million spent on imports of veterinary vaccines for all animal species in the same year. Expressed differently, the total value of veterinary vaccine imports was equivalent to only about 5% of Ukraine's poultry meat and egg export earnings.

The comparison illustrates the economic importance of vaccines as an input supporting much larger production and export activities. Although vaccines represent a relatively small expenditure compared with livestock output, interruptions in their supply could expose a substantially greater amount of economic value to disease-related risks.

Export performance remained relatively strong in 2026. During January–September, Ukraine exported poultry meat worth USD 773 million and eggs worth USD 185 million. Together, these exports exceeded their value in the corresponding period of 2025 by 1.4%.

The importance of vaccination extends beyond the prevention of direct production losses. Animal disease outbreaks can also result in restrictions on international trade, even when outbreaks are geographically limited.

An illustrative example occurred in Brazil in July 2024, when a Newcastle disease outbreak on a single broiler farm led to a 21-day suspension of poultry exports. China, Mexico, Argentina, and Peru imposed restrictions affecting imports from the country as a whole (UkrAgroConsult, 2024).

For Ukraine, similar restrictions could have substantial economic consequences given the value of its poultry exports. Maintaining vaccination coverage is therefore relevant not only to animal health and production efficiency but also to the continuity of market access.

1.5. Potential economic consequences of vaccine supply disruptions

To illustrate the possible economic consequences of interruptions in vaccine supply, the analysis considers hypothetical shortages of selected vaccines used in industrial livestock production.

The calculations focus on three representative diseases: Newcastle disease in poultry, PCV2 in pigs, and bovine respiratory disease in cattle. The assessment draws on published evidence concerning the consequences of these diseases and, where sufficient information is available, estimates the value of livestock output potentially lost due to interrupted vaccination.

The scenarios assume that vaccines supplied by UVA member companies become unavailable for three, six, or 12 months. These periods correspond to 25%, 50%, and 100% of the annual animal cohort remaining unvaccinated against the selected disease.

The calculations are illustrative rather than forecasts of actual losses. They assume a direct relationship between the duration of vaccine unavailability and the share of animals not vaccinated, without modelling potential substitution between vaccine suppliers, changes in farm management, or other adaptive responses.

Published studies provide estimates of disease-related production losses, although the type and quality of available evidence differ across species (Table 3).

Table 3. Losses without vaccination reported in the literature

Disease	Parameter	Value	Setting	Source
Newcastle disease (velogenic)	Morbidity and mortality	Up to 100%	Unvaccinated, fully susceptible chickens	Spickler (2016)
Newcastle disease	Egg production	Sharp decline; misshapen and thin-shelled eggs	Laying hens	Spickler (2016)
PCV2	Additional mortality without vaccination	+4.4 percentage points in finishing; +5.4 percentage points from nursery to finishing	Meta-analysis of field trials	Kristensen et al. (2011)
PCV2	Average daily weight gain lost	41.5 g/day in finishing; 33.6 g/day from nursery to finishing	Meta-analysis of field trials	Kristensen et al. (2011)
BRD	Incidence before weaning	22.8% of calves	California dairy calves	Dubrovsky et al. (2020)

BRD	Share of preweaning deaths	19%	California dairy calves	Dubrovsky et al. (2020)
BRD	Cost per case	USD 42.15 per treatment; USD 395.49 per calf death	California dairy calves	Dubrovsky et al. (2020)
BRD	Survival to 24 months	1.53 times higher odds for healthy calves	Pennsylvania Holstein heifers	Closs & Dechow (2017)
BRD	Mortality and average daily gain	1.12% mortality; up to 0.98 kg/day lower gain in repeatedly treated cattle	US beef feedlots	Johnson & Pendell (2017)

1.5.1 Potential losses in industrial pig production

The most detailed quantitative assessment concerns the potential interruption of PCV2 vaccination in industrial pig farming.

PCV2 infection is associated with increased mortality and reduced growth performance. A meta-analysis of field trials by Kristensen et al. (2011) found that, compared with vaccinated pigs, unvaccinated animals experienced mortality rates that were 5.4 percentage points higher over the nursery-to-finishing period and average daily weight gain that was 33.6 grams lower. These findings provide a basis for estimating the potential production losses associated with a shortage of PCV2 vaccines.

The calculation assumes that pigs spend 150 days between weaning and slaughter. At an average reduction in daily weight gain of 33.6 grams, each surviving unvaccinated pig would therefore lose approximately 5.0 kg of live weight.

Additional mortality is calculated using the 5.4-percentage-point difference reported in the meta-analysis. Each additional pig death is valued as the loss of one animal at an assumed slaughter live weight of 115 kg.

Lost live weight is valued using slaughter-pig purchase prices of UAH 70–93 per kilogram, reflecting the range reported in Ukraine during summer and December 2025 (Ekonomichna Pravda, 2025; Interfax-Ukraine, 2025). Monetary values are converted to US dollars at an assumed exchange rate of UAH 42 per USD.

The calculation measures gross output foregone. It does not deduct feed costs saved when animals die before slaughter or account for other changes in production costs.

Under a three-month interruption in the supply of PCV2 vaccines from UVA member companies, approximately 982,000 industrial pigs would remain unvaccinated. Applying the mortality and growth effects from the meta-analysis results in approximately 53,000 additional deaths and a total loss of 10,780 tonnes of live weight.

The corresponding value of gross output foregone is estimated at UAH 0.75–1.00 billion, equivalent to USD 18–24 million.

A six-month interruption would double these losses, while a full-year interruption would affect approximately 3.93 million pigs and result in an estimated 43,119 tonnes of live weight lost.

Table 4. Gross output foregone in industrial pig production if UVA member-company PCV2 vaccines are unavailable

Disruption	Pigs not vaccinated	Additional deaths	Live weight lost, tonnes	Value, UAH billion	Value, USD million
3 months	981,963	53,026	10,780	0.75–1.00	18–24
6 months	1,963,925	106,052	21,560	1.51–2.01	36–48
12 months	3,927,850	212,104	43,119	3.02–4.01	72–95

Under the full-year scenario, the estimated value of pig output foregone reaches USD 72–95 million. This exceeds the estimated value of all veterinary vaccine imports into Ukraine in 2025, approximately USD 68 million.

The comparison demonstrates that the potential production losses associated with a shortage of one routinely used vaccine in one livestock species could exceed the country's total annual expenditure on imported veterinary vaccines.

The estimate should nevertheless be interpreted within the limitations of the underlying assumptions. Its scope is narrow because it excludes losses associated with other diseases, poultry and cattle production, and additional treatment costs. At the same time, the assumed effects on mortality and growth are derived from field trials conducted during the early years of PCV2 vaccination, and their magnitude may differ under current Ukrainian production conditions.

1.5.2 Potential consequences for poultry production and exports

For poultry, the available evidence supports an assessment of potential disease severity and export exposure rather than a direct estimate of expected production losses.

Newcastle disease can cause severe morbidity and mortality in susceptible poultry populations. In its highly virulent form, mortality among unvaccinated birds may reach 100% (Spickler, 2016). In laying hens, infection can also cause sharp declines in egg production and deterioration in egg quality.

However, the economic consequences of interrupted vaccination depend on whether an outbreak occurs, its severity, and the effectiveness of other preventive measures. Because the probability of an outbreak in an unvaccinated flock cannot be reliably established from the available data, the analysis does not assign an expected production loss to a hypothetical vaccine shortage.

Instead, the potential economic exposure is illustrated using Ukraine's poultry export earnings.

In 2025, poultry meat and egg exports generated approximately USD 1.29 billion, equivalent to an average of about USD 108 million per month.

A 21-day export suspension, comparable in duration to the restrictions imposed following Brazil's Newcastle disease outbreak in 2024, would therefore place approximately USD 74 million in export value at risk.

This figure represents potential trade exposure rather than a forecast of permanent export losses. Actual losses would depend on the duration and geographical scope of restrictions, the ability to redirect products to alternative markets, and the extent to which postponed exports could subsequently be recovered.

Nevertheless, the comparison demonstrates the economic significance of maintaining disease prevention in export-oriented poultry production. Even a relatively short interruption in market access could affect trade flows whose value exceeds Ukraine's annual expenditure on imported veterinary vaccines.

1.5.3 Implications for cattle production

Bovine respiratory disease is another economically important condition for which vaccination is used in industrial livestock systems.

Published studies document its effects on calf health, survival, treatment costs, and subsequent productivity. Dubrovsky et al. (2020), for example, reported a preweaning BRD incidence of 22.8% in California dairy calves, with the disease accounting for 19% of preweaning deaths. The study estimated treatment costs at USD 42.15 per case and the cost of calf mortality at USD 395.49 per animal.

Other studies have identified longer-term consequences. Closs and Dechow (2017) found that healthy Holstein heifers had 1.53 times higher odds of surviving to 24 months than calves affected by pneumonia. Johnson and Pendell (2017) documented mortality and reduced weight gain associated with BRD in US beef feedlots.

These findings illustrate the potential economic importance of preventing respiratory disease in cattle. However, because the available estimates are derived from US dairy and feedlot production systems, they cannot be directly transferred to Ukraine without accounting for differences in herd structure, production technologies, prices, and disease management practices.

For this reason, the analysis does not calculate monetary losses from a hypothetical shortage of BRD vaccines in Ukraine.

2. DISCUSSION

2.1. Implications for livestock production and eu market access

The consequences of vaccine supply disruptions extend beyond the veterinary pharmaceutical market. Vaccination is an essential component of industrial livestock production, particularly in poultry and pig farming, where disease prevention is integrated into production schedules and biosecurity systems.

The economic scenarios presented in Section 1 illustrate the scale of potential exposure. Although these estimates are hypothetical and do not represent forecasts of actual losses, they demonstrate that the economic value potentially affected by vaccine shortages can substantially exceed the cost of the vaccines themselves.

This dependence is becoming more important as Ukraine aligns its livestock production practices with EU requirements concerning antimicrobial use. Regulation (EU) 2019/6 restricts the preventive use of antimicrobials (Article 107). Furthermore, since 3 September 2026, animal products exported to the EU have been subject to requirements prohibiting the use of antimicrobials for growth promotion and certain antimicrobials reserved for human medicine (Article 118; Delegated Regulation (EU) 2023/905; AGRINFO).

Compliance with these requirements increases the importance of preventive animal health management, including vaccination and biosecurity. Ensuring reliable access to vaccines is therefore relevant not only to livestock productivity but also to Ukraine's ability to meet EU market requirements.

Disease developments in neighbouring countries reinforce these concerns. Poland reported approximately 20 poultry outbreaks of Newcastle disease in December 2025, while Hungary recorded its first outbreaks in decades in September 2026 (Defra, 2026). These developments illustrate the continuing disease risks faced by poultry producers in the region.

Against this background, delays in vaccine availability could increase the vulnerability of livestock production systems and complicate disease prevention. For export-oriented producers, the consequences may include not only reduced productivity but also potential restrictions on access to foreign markets following disease outbreaks.

Regulatory harmonisation should therefore be assessed not only in terms of formal legislative alignment, but also in terms of its practical effects on the competitiveness and resilience of Ukraine's livestock sector. Requirements introduced as part of EU integration should support, rather than inadvertently undermine, the sector's capacity to comply with EU production and animal health standards.

2.2. Limitations of the analysis

Several limitations should be considered when interpreting the findings.

First, the national register records product authorisations rather than actual sales volumes or market shares. Consequently, the distribution of authorised products by country of manufacture does not necessarily reflect the relative quantities supplied to Ukrainian livestock producers.

Second, international trade statistics allow veterinary vaccines to be identified separately but do not distinguish pharmaceutical veterinary medicinal products from medicines intended for human use. In addition, the 2025 import value is estimated and the 2026 value is projected rather than observed for the full year.

Third, the company survey covers only members of the Ukrainian Veterinary Alliance. The estimated vaccination coverage therefore does not represent the entire Ukrainian market. The vaccination analysis is also limited to one representative disease per livestock species and industrial production systems.

Fourth, the economic loss calculations are illustrative and depend on assumptions concerning disease-related mortality, growth performance, production periods, slaughter weights, prices, and exchange rates. The underlying disease effects are drawn from international studies and may not fully reflect current Ukrainian production conditions. Losses in cattle production are not quantified, while the poultry assessment measures potential export exposure rather than expected economic losses.

These limitations do not invalidate the observed dependence of Ukraine's livestock sector on imported vaccines, but they should be taken into account when interpreting the scale of potential economic losses.

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