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Evidence-informed framework for prioritising veterinary vaccines

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Abstract: National Veterinary Services require transparent and defensible approaches for deciding which vaccines to prioritise. Existing decision support frameworks, however, were developed for different decision contexts and do not necessarily capture the full extent of veterinary biological, production system, trade, economic and implementation considerations. A scoping review of peer-reviewed and grey literature on vaccine prioritisation and decision support tools was conducted, supplemented by a targeted reviewer-driven methodological evidence update undertaken during manuscript revision and by structured expert consultation. Existing prioritisation methodologies were compared, among them multi-criteria decision analysis, the analytic hierarchy process (AHP), the GRADE Evidence to Decision framework, the Full Value of Vaccine Assessment and economic evaluation frameworks. This research was synthesised to develop the Veterinary Vaccine Evidence-Informed Decision-making (V-EVID) framework, comprising five domains and 38 scored indicators covering vaccine characteristics, efficacy and safety, pathogen and One Health impact, full economic and societal value, and governance and implementation. Each indicator is scored on a five-point scale and accompanied by an evidence confidence flag (high, moderate or low). Domain weighting may be context-specific via the AHP or equal at 20% per domain as a transparent default. A 13-criterion rapid assessment set is provided for settings in which time, data availability or analytical capacity is insufficient for a full 38-indicator assessment. V-EVID is intended to structure and make explicit the evidence and judgement underlying veterinary vaccine prioritisation rather than to replace expert deliberation. Its scoring architecture, interpretive bands and rapid assessment set remain provisional and require prospective evaluation using real-world veterinary decisions.

See abstracts in French and Spanish.

Keywords: Analytic hierarchy process, Decision analysis, Evidence-informed decision-making, Vaccine prioritisation, Veterinary vaccines.

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Introduction

Vaccination is an important and often economically valuable intervention available to Veterinary Services for controlling infectious diseases, protecting animal welfare, sustaining livestock production and mitigating zoonotic threats [1,2]. The *Vaccines in action* thematic issue of the *Scientific and Technical Review* of the World Organisation for Animal Health (WOAH) highlights the role of vaccines as strategic instruments contributing to food security, public health, biodiversity conservation, antimicrobial stewardship and economic resilience [3]. Nevertheless, deciding which vaccine candidates to adopt, procure or include in national campaigns is rarely straightforward. National authorities must balance competing epidemiological priorities against constrained budgets, logistical limitations such as cold-chain maintenance in pastoral systems, and the trade implications of WOAH-listed diseases [4-6].

Over the past two decades, a range of decision science and evidence-to-decision approaches has been developed to support vaccine and health policy prioritisation. These include multi-criteria decision analysis, the analytic hierarchy process (AHP), the World Health Organization (WHO)'s Country-led Assessment for Prioritisation on Immunisation (CAPACITI) tool, SMART Vaccines 2.0, the GRADE Evidence to Decision framework (GRADE EtD), the Full Value of Vaccine Assessment (FVVA) and animal health burden and value assessment approaches [7-12]. These tools supply useful pieces: clear criteria, evidence appraisal, stakeholder input, economics and ranking. However, each was built for a different setting, and none, on its own, covers the full mix of biology, production systems, trade, delivery and animal welfare that veterinary vaccine prioritisation requires.

These tools cannot simply be copied into veterinary use, because animal vaccine choices require explicit attention to antigenic match, differentiating infected from vaccinated animals (DIVA) capability, multi-species use, field delivery and production-system features [2,4,5,11,13-15]. Vaccination decisions in animal health also interact with disease status recognition, international trade and market access requirements under WOAH standards [2,4]. In addition, veterinary vaccine development and quality control systems increasingly incorporate the principles of replacement, reduction and refinement, known as the 3Rs, particularly where animal-based potency or batch-release procedures are concerned [16,17].

To address this gap, the authors built the Veterinary Vaccine Evidence-Informed Decision-making (V-EVID) framework from published vaccinology work, international technical standards and structured expert input. It is aligned with WOAH documents (*Terrestrial Code*, *Terrestrial Manual*) and the WOAH PREVENT Forum [2,18]. The design has two layers: evidence-based scoring of indicators, then separate, context-specific weighting of domains. This approach keeps facts and policy choices separate.

Materials and methods

A scoping review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) guidelines [19].

Evidence synthesis design

The main evidence came from a scoping review of PubMed, Scopus, Web of Science and grey literature from January 2010 to March 2026. During revision, the authors added a targeted 2026 update (Phase 2) to cover points raised by reviewers, including indicator wording, evidence confidence flags, weighting, implementation and related ideas. That update was not a second systematic review. It was only used to check and tighten the framework already built from the original scoping review.

Search strategy

The original scoping review combined Medical Subject Headings terms and free-text keywords for multi-criteria decision analysis, the AHP, GRADE EtD, the FVVA, economic evaluation, vaccine hesitancy, National Immunisation Technical Advisory Groups [20] and digital decision support platforms (SMART Vaccines, PriorityVax). Named-framework searches were run separately for CAPACITI [7] and FVVA [10]. Grey literature was searched without time restriction across the official repositories of WOAH, the Food and Agriculture Organization of the United Nations (FAO), the European Commission for the Control of Foot-and-Mouth Disease (EuFMD), WHO, the Veterinary International Conference on Harmonisation (VICH) [21] and the Global Burden of Animal Diseases (GBADs) [12].

During manuscript revision, additional targeted searches were conducted on Google and Google Scholar and supplemented by backward and forward citation tracking of key methodological and vaccine prioritisation publications. Searches focused on framework and indicator development, weighting and aggregation, uncertainty and evidence quality, validation and reproducibility, implementation and governance, existing vaccine prioritisation frameworks, and veterinary and One Health transferability. The full search syntax is available from the corresponding authors on request.

Eligibility criteria and screening

Eligible records for the original scoping review included peer-reviewed research articles, systematic and scoping reviews, health technology assessments and technical reports from international organisations including WOAH, FAO, EuFMD, WHO and VICH that described quantitative or semi-quantitative vaccine evaluation methodologies transferable to animal health [2,4,5]. Records were excluded if they focused exclusively on preclinical laboratory assays without linkage to vaccine selection or on human-specific clinical management without transferability to animal health, or if they were editorials, conference abstracts lacking methodology, opinion pieces or non-English publications without accessible translation. Studies addressing governance or implementation issues without a decision support or prioritisation framework were excluded; studies addressing governance or implementation within a prioritisation framework were retained.

For the targeted update, records were considered if they provided methodological, conceptual or operational support for components of the V-EVID framework. Preference was given to key methodological papers, international technical guidance and framework development literature.

References were managed in EndNote 2025. Title and abstract screening was conducted using EndNote and Rayyan, an artificial intelligence-assisted systematic review platform. Duplicate detection was performed using the integrated deduplication features of EndNote and Rayyan. The original review provided the core evidence base for framework development. During manuscript revision, additional targeted references were manually screened and incorporated if they provided direct methodological, conceptual or operational support for specific framework components. The targeted update was not intended to estimate the volume of the literature or to produce a separate PRISMA-ScR review (Fig. 1).

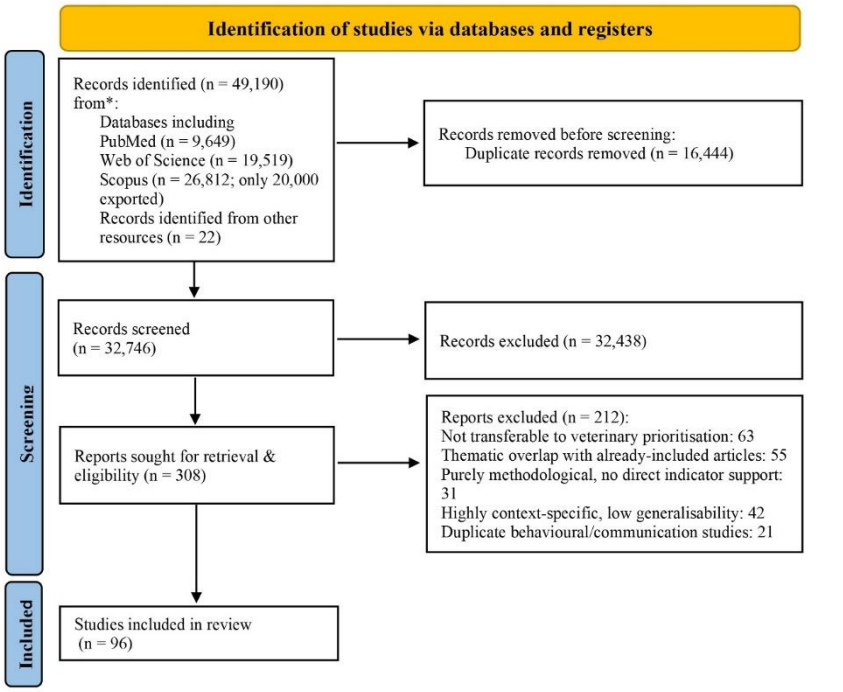

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Figure 1. PRISMA-ScR flow diagram for the original scoping review (Phase 1)

The diagram, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) guidelines, describes identification, screening, eligibility and inclusion of records (January 2010 – March 2026).

Framework development and refinement

Candidate criteria came from the 96 included studies plus relevant international technical documents. Overlapping items were dropped and the rest grouped into five conceptual domains. A 15-member expert group (covering vaccinology, epidemiology, animal health economics, regulation and field services) reviewed the criteria for measurability, practical use and consistency with WOAH standards. There was no formal Delphi process. The panel only refined indicators and built consensus; members did not score any vaccines. The final framework has 38 scored indicators. From these, a 13-criterion rapid set was taken such that all 5 domains remain represented.

Full indicator lists and scoring rubrics are provided in the supplementary Excel workbook, sheet 'Indicator Architecture' (see Supplementary material).

Decision unit and scoring mechanics

This framework evaluates a specific veterinary vaccine or vaccine product for adoption, procurement or priority setting in a defined disease, host and geographic setting.

Each indicator is scored 1–5 (very low/inadequate to very high/excellent) using the descriptors provided in the supplementary Excel workbook, sheet 'Indicator Architecture' (Supplementary material). The anchors are evidence-informed and adaptable to context; they are not fixed, universally validated cut-offs. Where official guidance or the evidence base already gives disease- or product-specific numbers, those can inform the score, but only as illustrative anchors, not as mandatory thresholds.

Every score also carries an evidence confidence flag (high, moderate or low). The flag records how strong the supporting evidence is; it does not change the numeric score. Indicators that do not apply are marked N/A and dropped from that domain's average. When evidence is incomplete, assessors record a plausible score range and check whether the ranking still holds under alternative scores. The aim is to make uncertainty visible, not to claim the framework itself has been formally validated.

Scoring and policy weighting are kept separate. A domain score is simply the average of its applicable indicators. If no local weights are set, the five domains are treated equally (20% each). Where local expertise exists, decision-makers may assign context-specific weights (for example, with AHP) and should document the method and run sensitivity analysis. This article itself does not include an AHP exercise; AHP is only offered as an option for local use.

When time, data or capacity is limited, a 13-criterion rapid version (simplified V-EVID, or sV-EVID) can be used instead. It also uses equal weights and simple averages. Paired criteria take the mean of their two 1–5 ratings; if one part does not apply, the remaining rating is used as-is.

Full scoring rules, formulas, pairing rules and a worked foot and mouth disease (FMD) example are in the supplementary Excel workbook, sheets 'Indicator Architecture', 'Aggregation & Sensitivity' and 'Product Comparison (FMD)' (Supplementary material).

Results

The V-EVID framework is structured into five conceptual domains, distributed as nine indicators in Domain A, eight in Domain B, eight in Domain C, four in Domain D and nine in Domain E. The two-tier architecture and the relationship between the full framework and the rapid assessment set are illustrated in Figure 2. Table I provides an overview of the complete indicator architecture.

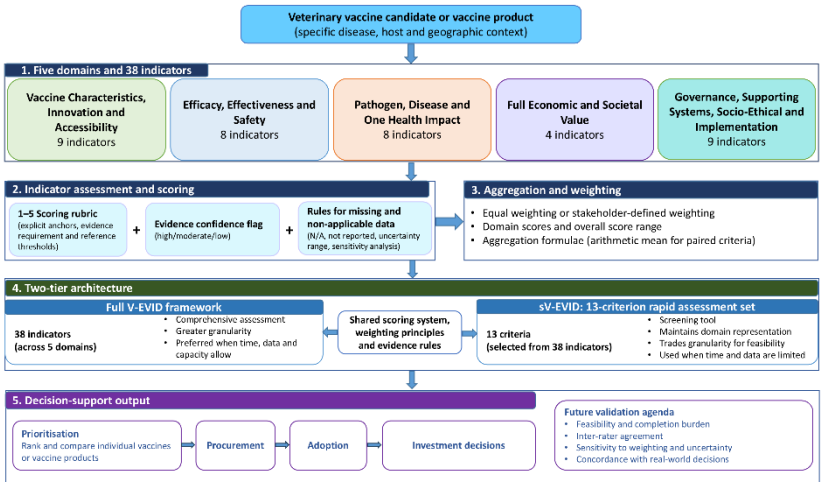

Figure 2. Architecture of the Veterinary Vaccine Evidence-Informed Decision-making (V-EVID) framework

The framework comprises 5 domains (A–E) and 38 scored indicators (A = 9; B = 8; C = 8; D = 4; E = 9). The rapid assessment set (sV-EVID) is a 13-criterion subset derived from the full framework, using equal weighting and simple averaging.

Table I. Veterinary Vaccine Evidence-Informed Decision-making (V-EVID) framework architecture: 5 domains and 38 scored indicators

Domain	Indicators
A. Vaccine Characteristics, Innovation and Accessibility (9)	A1 Strain matching and antigenic fit; A2 Potency and purity; A3 Cold-chain and thermostability requirements; A4 Shelf life; A5 Presentation and usability; A6 Adjuvant safety; A7 Platform characteristics and DIVA capability; A8 Local adaptation and multi-species suitability; A9 Environmental sustainability
B. Efficacy, Effectiveness and Safety (8)	B1 Direct protective efficacy (composite)*; B2 Population-level protection and transmission reduction; B3 Duration of immunity; B4 Target-animal safety; B5 Antimicrobial-resistance reduction potential; B6 Zoonotic protection; B7 Adverse-event profile and pharmacovigilance readiness; B8 Schedule practicality and correlates of protection
C. Pathogen, Disease and One Health Impact (8)	C1 Disease incidence, severity and burden; C2 Zoonotic potential; C3 Transmission and epidemic potential; C4 Direct production and economic impact; C5 Trade and market-access implications; C6 Climate resilience and changing epidemiology; C7 Outbreak preparedness and emerging-threat readiness; C8 Broader One Health value
D. Full Economic and Societal Value (4)	D1 Cost per fully immunised animal; D2 Cost–benefit ratio (FVVA); D3 Budget impact, return on investment and financing feasibility; D4 Comparison with alternative interventions and cost of inaction
E. Governance, Supporting Systems, Socio-Ethical and Implementation (9)	E1 Manufacturing capacity, quality systems and relevant 3Rs compliance; E2 Regulatory and institutional pathway maturity; E3 Post-vaccination monitoring and DIVA infrastructure; E4 Public–private partnership and procurement arrangements; E5 Digital and data-enabled decision support; E6 Equitable access and pro-poor delivery; E7 Governance, transparency and conflict-of-interest management; E8 Social acceptance and vaccine hesitancy management; E9 Implementation feasibility and system capacity

3Rs: replacement, reduction and refinement
DIVA: differentiating infected from vaccinated animals
FVVA: Full Value of Vaccine Assessment

* B1 is a composite indicator. For the rapid assessment set, it is decomposed into B1a (controlled efficacy) and B1b (field effectiveness). B1a and B1b are not counted separately in the full 38-indicator framework.

Level 1 scoring is done by trained assessors using published studies, regulatory assessments (WOAH, VICH and others), surveillance data and programme records. When hard numbers exist, scores are tied to those figures or technical benchmarks. If evidence is thin or mainly contextual, assessors may use structured judgement, but that judgement must be written down separately from the evidence itself. Each of the 38 indicators gets a 1–5 score plus an evidence confidence flag. The framework does not remove expert judgement; it keeps the supporting evidence distinct from the interpretation of that evidence.

Level 2 weighting depends on context. Each domain score is the simple average of its scored indicators. The overall V-EVID score is the weighted sum of the five domain scores. Equal 20% weights are the default. Local AHP weighting is allowed if an expert panel is convened.

Level 3 prioritisation uses provisional bands (Table II): 4.0 and above = higher priority; 3.0–3.9 = intermediate/conditional; below 3.0 = lower priority. These bands are only interpretive categories, not regulatory or procurement cut-offs.

Table II. Provisional interpretive bands and suggested interpretation

V-EVID score	Interpretive band	Suggested interpretation
≥ 4.0	Higher priority	Strong overall profile; suitable for further consideration as a priority option
3.0–3.9	Intermediate/conditional	Intermediate profile; additional contextual assessment or targeted evidence may be warranted
< 3.0	Lower priority	Lower overall profile; additional evidence or risk mitigation may be needed before prioritisation

V-EVID: Veterinary Vaccine Evidence-Informed Decision-making

These bands are provisional interpretive categories developed during framework refinement; they should not be interpreted as regulatory or procurement thresholds and require empirical calibration.

Rapid assessment set (sV-EVID)

For settings in which time, data availability or analytical capacity is insufficient for full 38-indicator assessment, V-EVID provides a 13-criterion rapid assessment set. Criteria were selected using four explicit criteria: i) decision relevance, ii) coverage of all five domains, iii) feasibility of obtaining evidence in resource-limited or emergency settings and iv) low redundancy with other selected indicators. The 13-item set was designed to preserve representation of all 5 domains rather than to reproduce their numerical proportions. The final 13 criteria are:

1. Platform characteristics and DIVA capability (A7)
2. Manufacturing capacity and quality systems (E1)
3. Equitable access and pro-poor delivery (E6)
4. Direct and population-level protection (B1a+B2, paired)
5. Field effectiveness and duration of immunity (B1b+B3, paired)
6. Adverse-event profile and pharmacovigilance readiness (B7)
7. Disease burden (C1)
8. Zoonotic potential and zoonotic protection, where applicable (C2+B6, paired)
9. Trade and market-access implications (C5)
10. FVVA/cost–benefit (D2)
11. Budget impact and financing feasibility (D3)
12. Regulatory and institutional readiness with governance transparency (E2+E7, paired)
13. Implementation feasibility and social acceptance (E9+E8, paired)

Five criteria are paired (criteria 4, 5, 8, 12 and 13). Paired criteria are scored as the arithmetic mean of their two constituent five-point ratings; if one component is not applicable, the score of the remaining component is retained directly. The final sV-EVID score is the arithmetic mean of the 13 criterion scores.

For the rapid assessment set, B1 is decomposed into two subcomponents: B1a (controlled efficacy) contributes to rapid criterion 4 (B1a+B2), and B1b (field effectiveness) contributes to rapid criterion 5 (B1b+B3). B1a and B1b are not counted separately in the full 38-indicator framework, where B1 is scored as a single composite indicator.

A worked example applying the full 38-indicator framework to two EuFMD Prequalification of Vaccines (PQv)-listed FMD vaccines (BIOAFTOGEN and DECIVAC FMD DOE), using their public summary reports together with published cost–benefit evaluations for economic scoring of Domain D, is provided in the supplementary Excel workbook, sheets 'Product Comparison (FMD)' and 'Aggregation & Sensitivity' (Supplementary material). The worked example illustrates application of the framework using real EuFMD PQv-listed products; it is not a comparative clinical, regulatory or procurement assessment of the two products. The selection rationale for the 13 criteria, including the reasons for excluding other candidates such as cold-chain dependence, preparedness, cost per immunised animal and alternative-intervention comparison, is documented in the supplementary Excel workbook, sheet 'Indicator Architecture' (Supplementary material).

Discussion

The V-EVID framework addresses a recognised gap in veterinary public health by providing an evidence-informed and context-adaptive decision framework designed to support animal health decision-makers [4,6]. Existing frameworks were developed primarily for other decision contexts and therefore do not, by themselves, cover the full scope of veterinary biological, trade, production system, implementation and animal welfare considerations incorporated in V-EVID.

Further, existing vaccine prioritisation approaches provide important methodological components, but they were developed for different decision contexts and do not necessarily address all the considerations encountered by veterinary decision-makers. A structured comparison of V-EVID with CAPACITI, SMART Vaccines 2.0, FVVA, GRADE EtD and GBADs is provided in the supplementary Excel workbook, sheet 'Tool Comparison Matrix' (Supplementary material).

CAPACITI, SMART Vaccines 2.0 and GRADE EtD provide structured approaches for evidence synthesis, prioritisation and decision-making [7-9]. At the same time, FVVA and the GBADs framework contribute economic and disease burden perspectives [10,12]. V-EVID does not seek to replace these approaches. Rather, it integrates complementary elements into a single veterinary vaccine prioritisation architecture.

Evidence and interpretation are kept separate: each of the 38 indicators receives both a score and an evidence confidence flag, and scoring is separated from weighting. The overall V-EVID score is the weighted sum of the five domain scores, with equal 20% weights as the default; a local panel may apply context-specific AHP weights. Level 3 interprets the aggregated score using the provisional bands in Table II, which are a reading aid rather than regulatory or procurement cut-offs.

V-EVID is a conceptual baseline and remains empirically unvalidated. The interpretive bands are provisional and require empirical calibration. The 13-criterion rapid assessment set trades granularity for feasibility and should be validated before routine use. Equal weighting is a normative default, not a claim of scientific neutrality; where AHP is used, weights must be documented and sensitivity-tested. The framework is designed to structure expert judgement, not replace it. Future validation should examine i) feasibility and completion burden, ii) inter-rater agreement, iii) sensitivity to weighting and uncertain evidence and iv) concordance with real-world prioritisation decisions. These are validation needs, not established properties.

Conclusion

This article presents a hybrid evidence-informed framework for veterinary vaccine prioritisation that combines structured evidence appraisal with context-specific policy weighting. By integrating veterinary biological, epidemiological, economic, trade and implementation considerations, V-EVID is intended to make the basis for prioritisation more transparent and adaptable. The 13-criterion sV-EVID provides a pragmatic screening option where time or data are limited. V-EVID should not yet be considered a validated decision instrument; prospective evaluation using real-world veterinary prioritisation decisions is needed to assess feasibility, inter-rater agreement, sensitivity to weighting and uncertainty, and concordance with policy choices.

Disclaimer

The views expressed in this article are those of the authors and do not necessarily reflect those of the Agricultural Research, Education and Extension Organization (AREEO). The authors declare no conflict of interest.

Supplementary material

The V-EVID framework and worked example are available as a supplementary dataset: https://doi.org/10.17632/6kc5n23hc5.1.

Cadre fondé sur des données probantes pour établir les priorités en matière de vaccins vétérinaires

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Résumé

Les Services vétérinaires nationaux ont besoin d'approches transparentes et défendables pour déterminer quels vaccins doivent être prioritaires. Toutefois, les cadres d'aide à la décision existants ont été élaborés pour d'autres contextes décisionnels et ne prennent pas nécessairement en compte l'ensemble des considérations relatives aux produits biologiques vétérinaires, aux systèmes de production, au commerce, à l'économie et à la mise en œuvre. Une revue exploratoire de la littérature évaluée par les pairs et de la littérature grise portant sur l'établissement des priorités en matière de vaccins et les outils d'aide à la décision a été réalisée. Elle a été complétée par une mise à jour ciblée des données méthodologiques probantes, menée à la demande des évaluateurs pendant la révision du manuscrit, ainsi que par une consultation structurée d'experts. Les méthodologies existantes d'établissement des priorités ont été comparées, notamment l'analyse décisionnelle multicritères, le processus de hiérarchie analytique (AHP), le cadre GRADE pour un passage des preuves aux décisions, l'évaluation de la valeur globale des vaccins et les cadres d'évaluation économique. Ces travaux de recherche ont été synthétisés afin d'élaborer le cadre de prise de décision éclairée par les données probantes sur les vaccins vétérinaires (V-EVID), qui comprend cinq domaines et 38 indicateurs notés couvrant les caractéristiques des vaccins, leur efficacité et leur innocuité, leur impact sur les agents pathogènes et dans le cadre de l'approche « Une seule santé », leur valeur économique et sociétale globale, ainsi que la gouvernance et la mise en œuvre. Chaque indicateur est noté sur une échelle de cinq points et accompagné d'un indicateur du niveau de confiance dans les données probantes (élevé, modéré ou faible). La pondération des domaines peut être adaptée au contexte au moyen de l'AHP, ou fixée à parts égales à 20 % par domaine, à titre de valeur par défaut, pour plus de transparence. Un ensemble d'évaluation rapide fondé sur 13 critères est proposé pour les contextes où le temps, la disponibilité des données ou les capacités analytiques ne permettent pas de réaliser une évaluation complète des 38 indicateurs. V-EVID vise à structurer et à expliciter les données probantes et le jugement qui sous-tendent l'établissement des priorités en matière de vaccins vétérinaires, plutôt qu'à remplacer la délibération des experts. Son architecture de notation, ses catégories d'interprétation et son ensemble d'évaluation rapide restent provisoires et doivent faire l'objet d'une évaluation prospective à partir de décisions vétérinaires prises en conditions réelles.

Mots-clés

Analyse décisionnelle, Établissement des priorités en matière de vaccins, Prise de décision éclairée par les données probantes, Processus de hiérarchie analytique, Vaccins vétérinaires.

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Marco para priorizar las vacunas veterinarias basado en la evidencia

Z. Baradaran-Seyed & M. Dadar

Resumen

Los Servicios Veterinarios nacionales necesitan enfoques transparentes y defendibles para decidir qué vacunas priorizar. Sin embargo, los marcos existentes de apoyo a la toma de decisiones se desarrollaron para contextos decisorios diferentes y no necesariamente abarcan plenamente las consideraciones veterinarias biológicas, de los sistemas de producción, comerciales, económicas y de implementación. Se llevó a cabo una revisión exploratoria de la bibliografía revisada por pares y de la literatura gris sobre la priorización de vacunas y las herramientas de apoyo a la toma de decisiones, complementada con una actualización metodológica específica de la evidencia, impulsada por los revisores durante la revisión del manuscrito, y con consultas estructuradas a expertos. Se compararon las metodologías de priorización existentes, entre ellas el análisis de decisiones multicriterio, el proceso de jerarquía analítica (PHA), el marco GRADE de evidencia para la toma de decisiones, la evaluación del valor total de las vacunas y los marcos de evaluación económica. Esta investigación se sintetizó para elaborar el marco de toma de decisiones informada por la evidencia sobre vacunas veterinarias (V-EVID), que comprende cinco dominios y 38 indicadores puntuados que abarcan las características de las vacunas, la eficacia y la seguridad, el impacto de los patógenos y de «Una sola salud», el valor económico y social total, y la gobernanza y la implementación. Cada indicador se puntúa en una escala de cinco puntos y va acompañado de una indicación del grado de confianza en la evidencia (alto, moderado o bajo). La ponderación de los dominios puede adaptarse al contexto mediante el PHA o asignar el mismo peso a cada dominio (20%) como opción predeterminada transparente. Se proporciona un conjunto de evaluación rápida de 13 criterios para los contextos en los que el tiempo, la disponibilidad de datos o la capacidad analítica no bastan para realizar una evaluación completa de los 38 indicadores. El marco V-EVID tiene por objeto estructurar y explicitar la evidencia y el juicio en que se basa la priorización de las vacunas veterinarias, en lugar de sustituir la deliberación de expertos. Su estructura de puntuación, sus categorías interpretativas y su conjunto de evaluación rápida siguen siendo provisionales y requieren una evaluación prospectiva basada en decisiones veterinarias del mundo real.

Palabras clave

Análisis de decisiones, Priorización de vacunas, Proceso de jerarquía analítica, Toma de decisiones informada por la evidencia, Vacunas veterinarias.

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References

[1] World Organisation for Animal Health (WOAH). Investing in animal health to secure everyone's future. Paris (France): WOAH; 2026. 3 p. Available at: https://www.woah.org/app/uploads/2026/05/gs93-2026-res-35-tech-technical-item-en.pdf (accessed on 24 September 2026).

[2] World Organisation for Animal Health (WOAH). Terrestrial animal health code. 34th ed. Paris (France): WOAH; 2026. Available at: https://www.woah.org/en/what-we-do/standards/codes-and-manuals (accessed on 24 September 2026).

[3] Cordeiro B, Fourès F. Foreword – Vaccines in action: building more resilient animal health systems through innovation and cooperation. Sci. Tech. Rev. 2026;45:3761. https://doi.org/10.20506/str.45.3761

[4] World Organisation for Animal Health (WOAH). Practical guidelines for national procurement of veterinary vaccines. Paris (France): WOAH; 2024. 24 p. https://doi.org/10.20506/woah.3437

[5] The European Commission for the Control of Foot-and-Mouth Disease (EuFMD): the PQv list. Rome (Italy): Food and Agriculture Organization of the United Nations; 2026. Available at: https://www.fao.org/eufmd/global-situation/vaccine-prequalification/pqvlist/en (accessed on 12 September 2026).

[6] Thomas LF, Bellet C, Rushton J. Using economic and social data to improve veterinary vaccine development: learning lessons from human vaccinology. Vaccine. 2019;37(30):3974-80. https://doi.org/10.1016/j.vaccine.2018.10.044

[7] Botwright S, Giersing BK, Meltzer MI, Kahn A-L, Jit M, El Omeiri N, *et al.* The CAPACITI decision-support tool for national immunization programs. Value Health. 2021;24(8):1150-7. https://doi.org/10.1016/j.jval.2021.04.1273

[8] McCormick BJJ, Waiswa P, Nalwadda C, Sewankambo NK, Knobler SL. SMART Vaccines 2.0 decision-support platform: a tool to facilitate and promote priority setting for sustainable vaccination in resource-limited settings. BMJ Glob. Health. 2020;5(11):e003587. https://doi.org/10.1136/bmjgh-2020-003587

[9] Alonso-Coello P, Schünemann HJ, Moberg J, Brignardello-Petersen R, Akl EA, Davoli M, *et al.* GRADE Evidence to Decision (EtD) frameworks: a systematic and transparent approach to making well-informed healthcare choices. 1: Introduction. BMJ. 2016;353:i2016. https://doi.org/10.1136/bmj.i2016

[10] Hutubessy R, Lauer JA, Giersing B, Sim SY, Jit M, Kaslow D, *et al.* The Full Value of Vaccine Assessments (FVVA): a framework for assessing and communicating the value of vaccines for investment and introduction decision-making. BMC Med. 2023;21(1):229. https://doi.org/10.1186/s12916-023-02929-0

[11] Francis MJ. A veterinary vaccine development process map to assist in the development of new vaccines. Vaccine. 2020;38(29):4512-5. https://doi.org/10.1016/j.vaccine.2020.05.007

[12] Global Burden of Animal Diseases (GBADs). GBADs technical guide v1.1. Liverpool (United Kingdom): GBADs Secretariat; 2026. Available at: https://animalhealthmetrics.org/gbads-technical-guide-v1-1 (accessed on 24 September 2026).

[13] Tizard IR. Vaccines for veterinarians. 1st ed. St. Louis (United States of America): Elsevier; 2021. 336 p.

[14] Lyons NA, Afzal M, Toirov F, Irshad A, Bartels CJM, Rushton J. Economic considerations for advancement through the Progressive Control Pathway: cost–benefit analysis of an FMD disease-free zone in Punjab Province, Pakistan. Front. Vet. Sci. 2021;8:703473. https://doi.org/10.3389/fvets.2021.703473

[15] Ferrari G, Paton D, Duffy S, Bartels C, Knight-Jones T. Foot and mouth disease vaccination and post-vaccination monitoring: guidelines. Rome (Italy): Food and Agriculture Organization of the United Nations; 2016. 111 p. Co-published by the World Organisation for Animal Health. Available at: https://doc.woah.org/dyn/portal/index.xhtml?page=alo&alold=40364 (accessed on 24 September 2026).
[16] Abousenna MS, Shafik NG, El Sawy SEA, Mohamed AAEM, Khafagy HA, Ibrahim EE-S, *et al.* Comprehensive evaluation of an emergency monovalent SAT1 foot-and-mouth disease vaccine: antigen quality, product consistency, and protective efficacy. PLoS One. 2026;21(7):e0353701. https://doi.org/10.1371/journal.pone.0353701
[17] Hoefnagel MHN, Stickings P, Smith D, Jungbäck C, Van Molle W, Tesolin L. Rational arguments for regulatory acceptance of consistency testing: benefits of non-animal testing over *in vivo* release testing of vaccines. Expert Rev. Vaccines. 2023;22(1):369-77. https://doi.org/10.1080/14760584.2023.2198601
[18] World Organisation for Animal Health (WOAH). PREVENT Forum: public-private collaboration for stronger prevention through vaccination. Paris (France): WOAH; 2026. 7 p. Available at: https://www.woah.org/en/document/prevent-forum-public-private-collaboration-for-stronger-prevention-through-vaccination (accessed on 24 September 2026).
[19] Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, *et al.* PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. Ann. Intern. Med. 2018;169(7):467-73. https://doi.org/10.7326/M18-0850
[20] Hadler SC, Shefer AM, Cavallaro KF, Ebama M, Tencza C, Kennedy ED, *et al.* Supporting National Immunization Technical Advisory Groups (NITAGs) in development of evidence-based vaccine recommendations and NITAG assessments – new tools and approaches. Vaccine. 2024;42(Suppl. 4):125610. https://doi.org/10.1016/j.vaccine.2024.01.035
[21] International Cooperation on Harmonisation of Technical Requirements for Registration of Veterinary Medicinal Products (VICH). VICH guidelines. Brussels (Belgium): VICH Secretariat; 2026. Available at: https://vichsec.org/guidelines (accessed on 24 September 2026).