








Pathway towards an ideal and sustainable framework agreement for the public procurement of vaccines in Spain: a multi-criteria decision analysis

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ABSTRACT

Objective: To advance the development of an ideal and sustainable framework agreement for the public procurement of vaccines in Spain, and to agree on the desirable award criteria and their relative weight.

Methods: A multidisciplinary committee of seven health-care professionals and managers developed a partial multi-criteria decision analysis to determine the award criteria that should be considered and their specific weights for the public procurement of routine vaccines and seasonal influenza vaccines, considering their legal viability. A re-test of the results was carried out. The current situation was analyzed through 118 tender specifications and compared to the ideal framework.

Results: Price is the prevailing award criterion for the public procurement of both routine (weighting of 60% versus 40% for all other criteria) and influenza (36% versus 64%) vaccines. Ideally, 22 criteria should be considered for routine vaccines, grouped and weighted into five domains: efficacy (weighting of 29%), economic aspects (27%), vaccine characteristics (22%), presentation form and packaging (13%), and others (9%). Per criteria set, price was the most important criterion (22%), followed by effectiveness (9%), and composition/formulation (7%). Regarding influenza vaccines, 20 criteria were selected, grouped, and weighted: efficacy (29%), economic aspects (25%), vaccine characteristics (20%), presentation form and packaging (16%), and others (11%). Per criteria set, price was also the most relevant criterion (19%), followed by composition/formulation (8%), and effectiveness (8%).

Conclusions: Contrary to the current approach, technical award criteria should prevail over economic criteria in an ideal and sustainable framework agreement for the public procurement of vaccines.

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Introduction

Except for water purification, no other public health measure has contributed as much as vaccines to the decrease of morbidity and mortality in the human species.¹ Health-care authorities in most countries are very aware of this fact and have increased the number of available vaccines and vaccination programs.² Moreover, centralized public procurement is one of the instruments used to acquire vaccines more efficiently.³

Spain, while having a regionally decentralized health-care system, has operated with a centralized public procurement procedure at a national level since 2012. Regions may opt to adhere to this procedure through a Framework Agreement (FA).⁴ To date, three FAs have been signed to publicly acquire routine vaccines, in addition to those signed each year to purchase influenza vaccines.⁵

The FA sets maximum prices and establishes the foundations that regulate the call-off agreements for the public procurement of

vaccines included in the immunization schedule as well as for other vaccines. More specifically, the FA includes a list of the economic and technical award criteria that should be used. Subsequently, the autonomous communities adhering to this FA establish the weighting required for each criterion in order to convene the purchase procedure in that specific region.⁶ This procedure also includes technical specifications describing the necessary technical requirements of each vaccine for the allocation.

The goal of the FA is to optimize the purchase of vaccines, unify the system, and contain expenses.⁷ Nevertheless, the procedure faces many challenges that may be detrimental to the future sustainability of the purchase of vaccines, hence to public health. Although the weightings of award criteria are highly unrestricted, in practice price is usually the main criterion considered in the decision-making process. Moreover, some authors criticize that the FA does not give enough weight to vaccine

characteristics, vaccine health-care goals, and the situation of vaccine manufacturers. These same authors suggest the promotion of other criteria besides price.^{8,9}

Moreover, there are substantial regional differences regarding the award criteria and their weightings. These differences can generate problems associated with regional consistency and equity. In addition, the ambiguity of the standard often leads to discrepancies in the interpretation of the criteria. Therefore, more accurate definitions of the award criteria are deemed necessary. Furthermore, the new public sector contract law, which is applicable to any type of product, introduces new elements that may contribute to adjust the public procurement of vaccines.¹⁰ Accordingly, one of the existing challenges when purchasing vaccines in Spain is the incorporation of models with a greater focus on the value that these vaccines can bring to society from a holistic and sustainable point of view for the system as a whole.

Therefore, the purpose of this study was to determine the criteria that should be included in an FA and their relative weightings for the public procurement of vaccines in Spain, to compare the ideal FA to the current situation, and to identify areas in need of improvement. Ultimately, the present study aims to advance the development of an ideal and sustainable FA for the public procurement of vaccines in Spain, contributing to a more cohesive and transparent process, and favoring an efficient, equitable, and sustainable health-care system. For this purpose, the multi-criteria decision analysis (MCDA) tool was used. More general guidelines are also suggested to improve the current FA, specially focusing on the global sustainability of the system.

Methodology

The methodology is comprised of three stages. In the first stage, the current situation of the public procurement of vaccines in Spain was analyzed. In the second stage, an MCDA was performed to determine the ideal FA. Finally, in the third stage, the current FA was compared to the ideal FA, and potential areas for improvement were identified (Figure 1).

A differentiated approach was applied to routine and influenza vaccines approved by the Interterritorial Council of the Spanish National Health System, given their differential features and coverage rates. Analyses were carried out from a macro perspective for all vaccines in general, i.e., without analyzing the specific characteristics of each vaccine.

Stage 1: current situation

In order to analyze the current situation on the public procurement of vaccines in Spain, we mapped and extracted relevant information from the tender specifications for the public procurement of vaccines performed in Spain between January 2017 and July 2018. These tender specifications were related to the 2016 FA and other procedures not included in such FA. Specifically, the choice of award criteria and their relative weightings were analyzed and used as the basis for the development of the MCDA in the second stage.

A total of 118 tender specifications for the public procurement of vaccines were used for analysis. Of these, 50% were public and available for download (15 of them were downloaded from the State's procurements online platform,¹¹ and 44 from

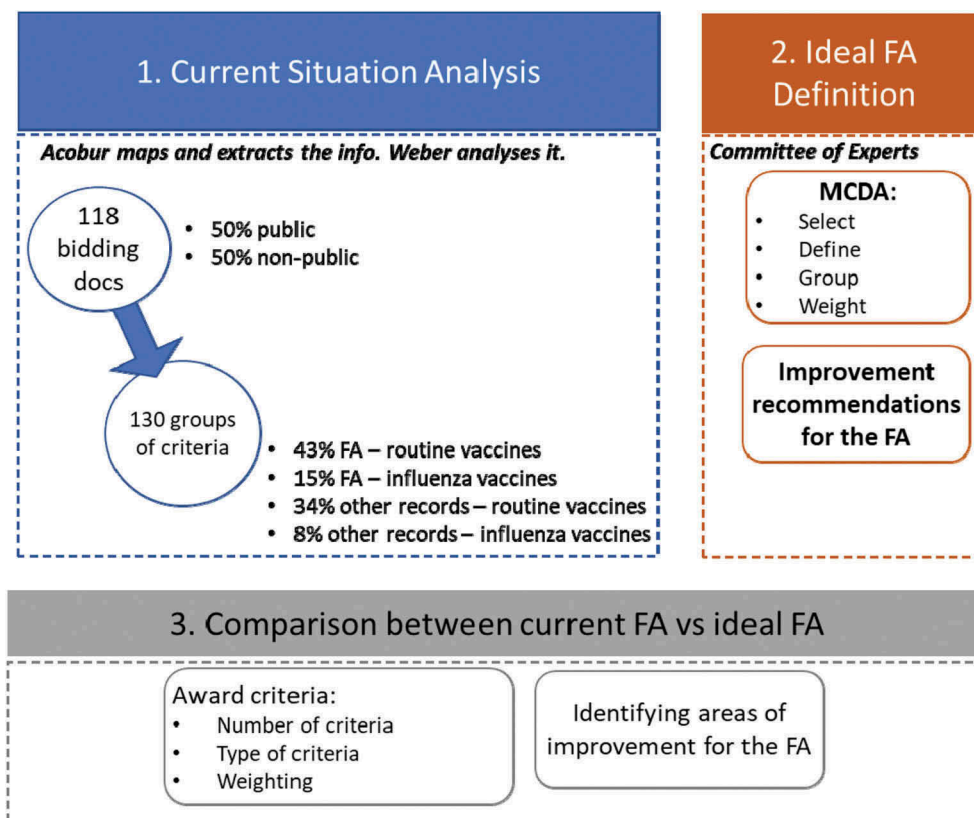


Figure 1. Diagram of the methodology used for the project.

the websites of autonomous communities¹²⁻²³), whereas the remaining 50% were provided by the governments of autonomous communities and pharma labs. Furthermore, these tender specifications were issued by the 17 Spanish autonomous communities (88% of the analyzed documents), the autonomous cities of Ceuta and Melilla (4 tender specifications or 3.4% of the analyzed documents), and different national public contracting authorities such as the Ministry of Health, Social Services and Equality, the Ministry of Defense, the Prison System, and the National Institute of Healthcare Management (8.5%) (Table 1). Madrid was the region with the largest number of tender specifications issued (11), followed by Catalonia (10), and Aragon and Asturias (9 documents each).

Stage 2: ideal situation

A partial MCDA was performed to determine the agreed upon, specific, and well-defined award criteria that should ideally be included in an FA for the public procurement of routine and influenza vaccines in Spain, including the specific weight each criterion should have in the final decision. This was carried out

by an advisory board which comprised seven experts on vaccines with different profiles, with experience in the clinical and/or management areas and representing different regions in Spain. Moreover, this committee was further advised by a health economist and a legal expert on public contracts.

The MCDA was performed in three steps:

- Step 1: The experts of the advisory board received online training on the MCDA methodology and were encouraged to think about the potential award criteria that should be considered for an ideal FA.
- Step 2: The award criteria for an ideal FA for routine and influenza vaccines were selected, grouped, defined, and weighted during a face-to-face meeting of the advisory board, held in April 2019. Experts were provided with a list of potential award criteria derived from the analysis of the current situation. The selected criteria had to meet certain conditions, such as being non-redundant, independent, complete, operational, and measurable.²⁴ Experts individually reflected on their particular choice of criteria, including the possibility of suggesting additional new

Table 1. Distribution of the analyzed 118 tender specifications by autonomous community or public authority.

Autonomous community / public authority	No. of tender specifications	%	FA		Other procedures	
			routine vaccines	Influenza vaccines	Routine	Influenza
Andalusia	6	5.08%			✓	✓
Aragon	9	7.63%	✓	✓	✓	
Asturias	9	7.63%	✓	✓	✓	✓
Balearic Islands	7	5.93%	✓	✓	✓	
C. of Valencia	3	2.54%			✓	✓
Canary Islands	5	4.24%	✓			✓
Cantabria	2	1.69%	✓	✓		
Castille and La Mancha	6	5.08%	✓	✓	✓	✓
Castille and Leon	7	5.93%	✓	✓	✓	✓
Catalonia	10	8.47%	✓		✓	✓
Ceuta	2	1.69%	✓	✓		
Extremadura	6	5.08%	✓	✓	✓	
Galicia	2	1.69%	✓	✓		
La Rioja	6	5.08%	✓	✓	✓	
Madrid	11	9.32%	✓	✓	✓	
Melilla	2	1.69%	✓			
Murcia	6	5.08%	✓	✓	✓	
Navarre	2	1.69%		✓	✓	
Basque Country	7	5.93%			✓	✓
MHSSE	2	1.69%	✓	✓		
PA	1	0.85%		✓		
INGESA	1	0.85%		✓		
Ministry of Defence	6	5.08%	✓	✓	✓	
TOTAL	118	100%				

FA: Framework Agreement; PA: Prison Administration; INGESA: National Institute of Healthcare Management. MHSSE: Ministry of Health, Social Services and Equality (actual Ministry of Health, Consumer Affairs and Social Services).

Source: Prepared by the authors from the info provided by Acobur.

criteria. Subsequently, an open discussion was held in which each expert gave his or her opinion based on his or her experience and knowledge, in order to reach a consensus on whether or not to include each criterion. Moreover, the legal feasibility of each criterion was further taken into account based on the advice provided by Acobur Asesores. Thereafter, criteria were grouped into different domains and their definitions were agreed upon in order to avoid ambiguities and differing interpretations. Once experts reached a consensus on which criteria to include, the two sets of resulting criteria (for routine and influenza vaccines) were individually weighted by each expert using the 100 Point Allocation Method. First of all, 100 points were distributed among the different domains. Thereafter, 100 points were distributed among the criteria included in each domain. The weightings assigned by the experts were confidential and based on their knowledge, expertise, and understanding. The mean values are presented in this document.

- Step 3: An online validation stage was performed in order to revisit weightings and manage the uncertainty of the model. Additionally, other factors relevant to the ideal process of the public procurement of vaccines, such as pricing, the duration of the contracts, and the number of awardees, are described in the Discussion section of this article.

Stage 3: comparison between the current and ideal situation

The current FA was matched to the ideal FA by comparing criteria and weights, and potential areas for improvement were identified.

Results

Analysis of the current framework agreement

Since some tender specifications made distinctions based on vaccine batch type (with differentiated criteria and/or weightings), it was possible to extract and analyze 130 sets of criteria. Of these, 43% were FAs for routine vaccines (56 procedures), 15% were FAs for influenza vaccines (20 procedures), 35% were other procedures for routine vaccines (44 procedures), and the remaining 8% were other procedures for influenza vaccines (10 procedures).

Criteria set considered

Based on the analyzed tender specifications, a total of 32 award criteria (standardized and restructured by Weber) are being taken into account at the time of analysis for the public procurement of vaccines in Spain. However, there are remarkable differences between routine and influenza vaccines (Table 2).

The FA for routine vaccines currently considers 22 different award criteria. The most frequent criteria are price (included in 100% of the analyzed procedures), vaccine presentation to ease its application (57%), additional doses free of charge (55%), and percentage of free replacement vaccines after cold chain issues (54%). Moreover, the procedures for the purchase of routine vaccines which are not included in the FA consider 23 award criteria. Five of these are not included

in the FA (biosafety mechanism, delivery times, number of available presentation forms, global impact of the disease to be avoided, and cross-protection).

On the other hand, the current FA for influenza vaccines considers nine different award criteria. The most frequent criteria are the presentation to ease its application (included in 75% of the analyzed procedures), the protection mechanism embedded in the device (70%), and price (55%). Moreover, the procedures for the purchase of influenza vaccines which are not included in the FA consider 18 award criteria of which 12 are not included in the FA. From these, the most frequently used criteria are additional doses free of charge (included in 60% of the analyzed procedures), collaboration in the immunization programs (40%), and biosafety mechanism (30%).

Mean number of criteria per procedure

The mean number of criteria considered per tender specification varies from 2.7 in the FA for influenza vaccines to 5.5 in the FA for routine vaccines (Table 3). With regard to the procedures under the FA for influenza vaccines, the number of criteria varies from one (Galicia) to five (Aragon and Asturias), while for those procedures related to the FA for routine vaccines, the criteria range is wider and varies from one (Asturias, La Rioja, and Madrid only consider price) to 14 criteria (Canary Islands).

Criteria weighting

Regarding criteria weighting, there are also remarkable differences between autonomous communities, and also between routine and influenza vaccines. Overall, price weighs for 63% of the final decision for the purchase of the vaccine. However, this weight is generally higher for routine vaccines compared to influenza vaccines, and for procedures not included in the FA compared to those under it (Table 4).

With regard to the 22 analyzed procedures under the FA for routine vaccines, the weight of economic criteria is 70% (60% for price and 10% for additional doses free of charge). The remaining 30% is distributed among a wide range of technical criteria, namely vaccine composition (7%), presentation to ease its application (5%), percentage of free replacement vaccines after cold chain issues (2.8%), and post-administration immunogenicity (2.5%), among others. Outside the FA, the procedures of routine vaccines include 23 different award criteria, in which the weight of economic factors is 85% (79% for price and 6% for additional doses free of charge).

The FA for influenza vaccines takes nine different criteria into account and 90% of the final decision is based on three criteria: price (36%), the protection mechanism embedded in the device (28%), and presentation to ease its storage (26%). Outside the FA, the procedures for the purchase of influenza vaccines include 18 award criteria. Similarly, price is also the most important criterion (70%), followed by additional doses free of charge (7%), collaboration in the immunization programs (5%), and presentation to ease its storage (3.9%).

Results of the MCDA: the ideal framework agreement

The expert committee agreed on an ideal set of 19 award criteria for routine vaccines and a set of 17 award criteria

Table 2. Most common award criteria in the tender specifications (% of analyzed procedures, where each criterion was considered), by type of procedure.

	Routine Vaccines		Influenza vaccines	
	FA	Other procedures	FA	Other procedures
Price	100%	100%	55%	100%
Presentation to ease its application	57%	23%	10%	20%
Additional doses free of charge	55%	43%	0%	60%
Percentage of free replacement vaccines after cold chain issues	54%	23%	0%	10%
Vaccine composition (antigens)	45%	14%	0%	0%
Presentation to ease its storage	36%	25%	75%	60%
Percentage of expired vaccines replacement above the fixed minimum	36%	7%	0%	0%
Collaborations in training	27%	11%	0%	0%
Bar codes or self-adhesive labels	25%	11%	5%	0%
Stability at room temperature and above	25%	9%	0%	10%
Post-administration immunogenicity	23%	9%	15%	30%
Date of expiry/vaccine	13%	14%	0%	0%
Collaborations to increase coverage	13%	11%	0%	0%
Immunogenicity persistence	11%	9%	0%	10%
Cold chain	9%	7%	0%	0%
Collaborations in immunization programs	9%	11%	0%	40%
Protection mechanism embedded in the device (safety)	4%	14%	70%	50%
Compatibility among different vaccines	4%	0%	0%	0%
Interchangeability with other vaccines	4%	0%	0%	0%
Administration in both children and adults	2%	0%	10%	20%
Formulation and posology	2%	2%	0%	0%
Protective efficacy	2%	0%	0%	0%
Route of administration	0%	0%	1%	0%
Cross-protection	0%	2%	10%	0%
Global impact of the disease to be avoided	0%	2%	0%	0%
Number of available presentation forms	0%	2%	0%	10%
Biosafety mechanism	0%	14%	0%	30%
Order delivery times	0%	7%	0%	10%
Commitment on supplies	0%	0%	0%	20%
Supply planning to the immunization points of care	0%	0%	0%	10%
Differentiating technical aspects	0%	0%	0%	10%
Provided documentation	0%	0%	0%	10%

Source: Prepared by the authors from the data gathered by Acobur.

Table 3. Number of award criteria per analyzed procedure, by type of procedure.

	Mean number of criteria	Min. number of criteria	Max. number of criteria	Standard Dev. number of criteria
FA routine vaccines	5.52	1	14	3.23
FA influenza vaccines	2.65	1	5	1.23
Other procedures routine vaccines	3.70	1	12	3.25
Other procedures influenza vaccines	5.10	1	9	2.56
Total	4.43	1	14	3.14

Source: Prepared by the authors from the data provided by Acobur.

for influenza vaccines to be included in the ideal FA. In both cases, the criteria were grouped into the same five domains. Grouping and definition of each criterion are described in the table included in the supplementary material.

Price was the award criterion with the highest average weight for the public procurement of routine vaccines (29 points out of 100, or 29%), followed by effectiveness in the population (7.1%), additional doses free of charge (7.0%), and global impact on the population (6.7%). Moreover, price

showed the highest variation in assigned weight (SD: 9.7), followed by additional doses free of charge (SD: 4.3), and the global impact on the population (SD: 3.8). Similarly, for the public procurement of influenza vaccines, price was the award criterion with the highest average weight (27%), followed by vaccine composition and formulation (9%), the global impact on the population (7.4%), and effectiveness in the population (7.1%).

Thereafter, a re-test was performed given that experts agreed to add three criteria on collaborations to the ideal set. These had initially been excluded upon legal appraisal, but experts later agreed they should be considered award criteria as long as they were related to the object of the contract. These new criteria were included in the 'Other' domain. Thus, the final ideal set comprised 22 award criteria for routine vaccines and 20 criteria for influenza vaccines.

According to the weightings of the re-test, price continued to be the criterion with the highest relative weight for the public procurement of routine and influenza vaccines (22% and 19%, respectively), and showed the greatest variation (SD 0.088 and 0.083, respectively). Other important criteria in both cases were effectiveness in the population, vaccine composition and formulation, the global impact on the

Table 4. Award criteria mean weights included in the 130 groups of analyzed criteria, by type of procedure.

	FA routine vaccines (n = 22)	Other procedures routine vaccines (n = 23)	FA influenza vaccines (n = 9)	Other procedures influenza vaccines (n = 18)	Global total (n = 32)
Price	59.8%	79.0%	35.8%	70.3%	63.4%
Additional doses free of charge	10.1%	5.7%		7.4%	6.9%
Vaccine composition (antigens)	7.0%	1.3%		0.0%	3.4%
Formulation and posology	0.1%	0.5%		0.0%	0.2%
Route of administration			0.9%	0.0%	0.1%
Administration in both children and adults	0.4%		0.5%	0.6%	0.3%
Compatibility among different vaccines	0.1%				0.1%
Interchangeability with other vaccines	0.5%				0.2%
Post-administration immunogenicity	2.5%	0.2%	5.8%	0.8%	2.1%
Immunogenicity persistence	0.4%	0.2%		0.2%	0.2%
Cross-immunogenicity		0.02%	1.5%		0.2%
Protective efficacy	0.3%				0.1%
Global impact of the disease to be avoided		0.02%			0.0%
Presentation to ease its storage	2.1%	1.3%	26.4%	3.9%	5.7%
Presentation to ease its application	5.0%	2.1%	0.6%	0.6%	3.0%
Number of available presentations		0.1%		0.2%	0.1%
Bar codes or self-adhesive labels	0.9%	0.5%	0.5%		0.6%
Biosafety mechanism		4.0%		2.5%	1.5%
Protection mechanism embedded in the device (safety)	0.1%	0.5%	28.3%	3.7%	4.8%
Stability at room temperature and above	1.2%	0.5%		0.02%	0.7%
Cold chain	0.3%	0.1%			0.2%
Order delivery times		0.3%		0.1%	0.1%
Commitment on supplies				2.2%	0.2%
Supply planning to immunization points of care				1.0%	0.1%
Date of expiry/vaccine	0.6%	0.5%			0.4%
Percentage of free replacement vaccines after cold chain issues	2.8%	0.9%		0.1%	1.5%
Percentage of expired vaccines replacement above the fixed minimum	1.8%	0.3%			0.9%
Differentiating technical aspects				1.6%	0.1%
Provided documentation				0.3%	0.0%
Collaborations in immunization programs	0.3%	0.3%		4.7%	0.6%
Collaborations in training	2.3%	1.7%			1.6%
Collaborations to increase coverage	1.3%	0.1%			0.6%

Source: Prepared by the authors from the data gathered by Acobur.

population, the protective efficacy, and additional doses free of charge (Figures 2 and 3).

Per domain, the final decision should ideally adhere to the following scheme. For routine vaccines: efficacy (29%), economic aspects (27%), vaccine characteristics (22%), presentation form and packaging (13%), and others (9%) (Figure 4). For influenza vaccines: efficacy (29%), economic aspects (25%), vaccine characteristics (20%), presentation form and packaging (16%), and others (11%) (Figure 5).

Furthermore, the largest differences in the relative weights between influenza vaccines and routine vaccines were observed for order delivery periods (5% vs. 2.6%), routes of administration (4.4% vs. 2.4%), and collaboration in activities to increase coverage (2.3% and 1.4%).

Comparison between the current framework agreement and the ideal framework agreement

For routine vaccines, the main difference between the current and the ideal FA is the relative weight of the economic aspects (price + additional doses free of charge). Nowadays, this accounts for 70% of the final decision and should decrease to

27% according to the ideal FA (Figure 6). Similarly, the relative weight of the price criterion would decrease almost two-thirds, from 60% to 22%. Moreover, the criterion of additional doses free of charge would move from the second to the sixth position, and its relative weight would be reduced in half, from 10% to 5% (Figure 4). Furthermore, while having the same number of award criteria, the current FA for routine vaccines accounts for only 50% of the ideal criteria. The 11 remaining criteria have either been reformulated or come from the FA for influenza or from other procedures on routine vaccines. Finally, the expert committee suggested including a new criterion on 'the effectiveness in the population' (Figure 2).

The context for influenza vaccines would be very different compared to that for routine vaccines. In this case, the ideal weight of the economic aspects would also decrease compared to the current situation, but to a lesser extent, from 36% to 25%. Moreover, price would still be the item with the highest relative weight (19%), though much lower than in the current situation (36%) (Figure 3). The largest difference compared to the current scenario would come from the number of criteria that should be considered. The committee believed that the range should be increased and move from the current set of 9 award criteria to an

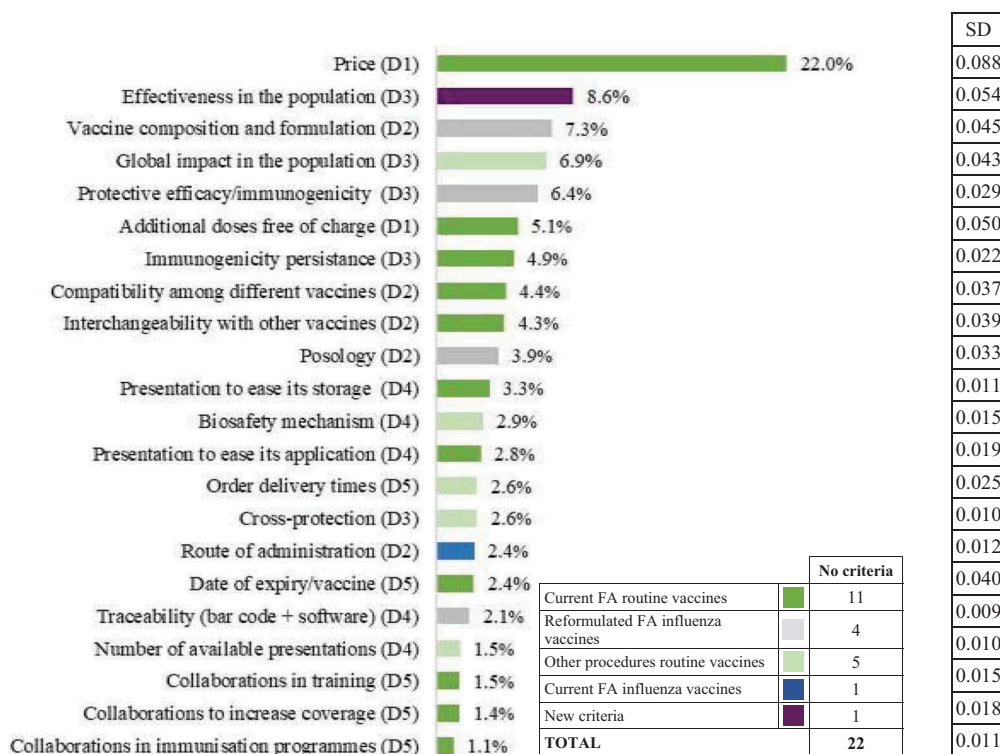


Figure 2. Ideal weighting of the selected criteria for routine vaccines, by type of criterion.

Note: Results of the ideal FA show the second scenario of the re-test (with the three criteria on collaborations). D1: Domain 1 (economic aspects). D2: Domain 2 (vaccine characteristics). D3: Domain 3 (efficacy). D4: Domain 4 (presentation form and packaging). D5: Domain 5 (others).Source: Prepared by the authors.

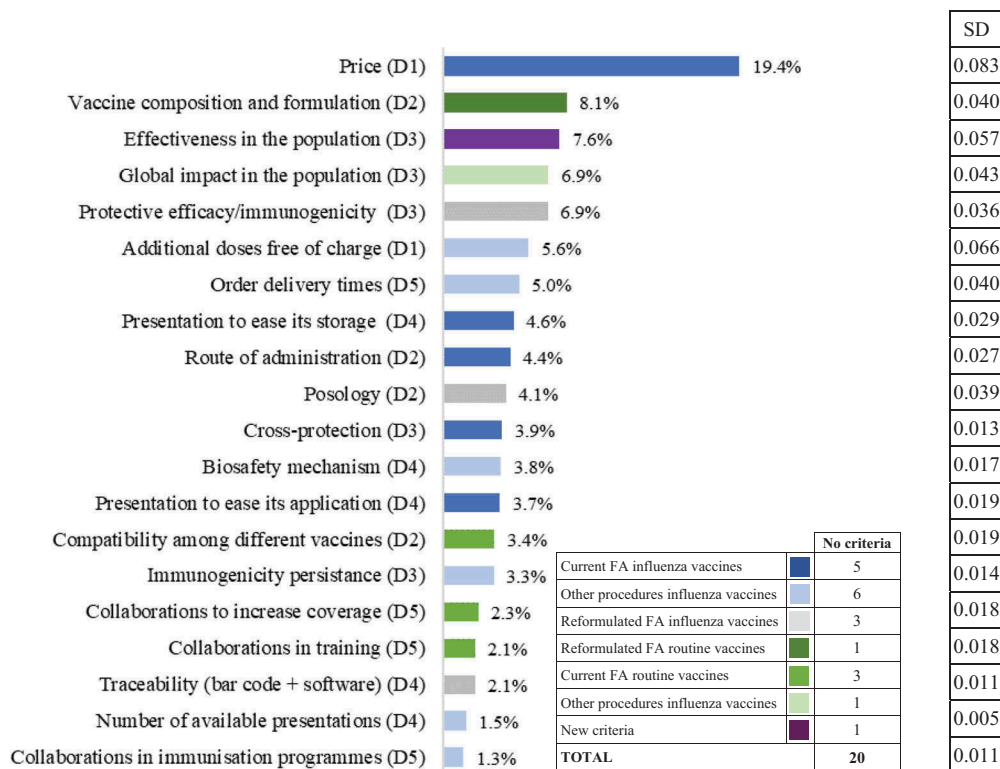


Figure 3. Ideal weighting of the selected criteria for influenza vaccines, by type of criterion.

Note: Results of the ideal FA show the second scenario of the re-test (with the three criteria on collaborations). D1: Domain 1 (economic aspects). D2: Domain 2 (vaccine characteristics). D3: Domain 3 (efficacy). D4: Domain 4 (presentation form and packaging). D5: Domain 5 (others).Source: Prepared by the authors.

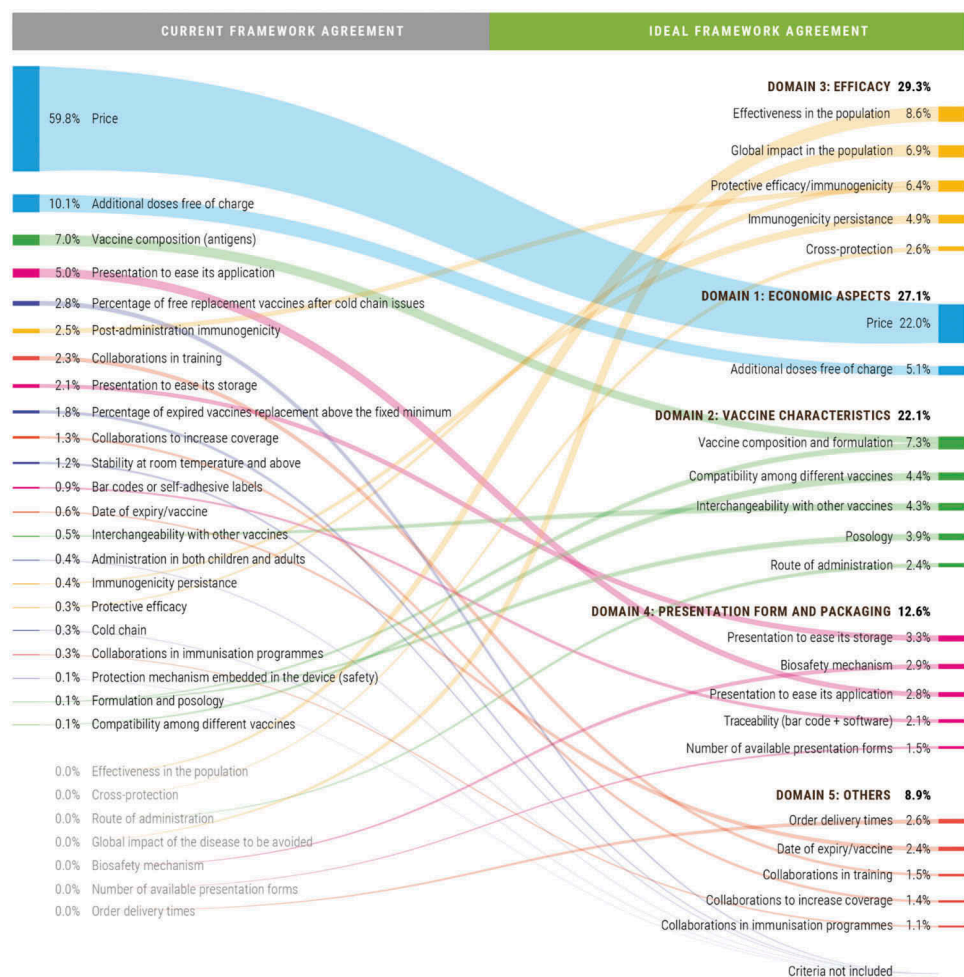


Figure 4. Comparison between the actual FA and the ideal FA, routine vaccines. Source: Prepared by the authors.

ideal set of 20 award criteria. Of these, five are already being applied in the current FA for influenza vaccines, three are being applied though needing some reformulation, six are being applied on other procedures for influenza vaccines, five are being applied in for routine vaccines, and one should be created (effectiveness in the population) (Figure 3).

Discussion

The MCDA methodology is increasingly being used for the prioritization of health-care resources. This methodology allows an explicit assessment of different value items in the assessed interventions, encourages the transparency and the coherence of the process, and favors a multidisciplinary dialogue.^{25,26} In the field of vaccines, the purchase process plays a crucial role in which specific technical knowledge is required to guarantee a timely, efficient, and high-quality supply. The goal of this study was to contribute to ease and standardize the decision-making process for the public procurement of vaccines in Spain, and ultimately to move toward models of vaccine purchase that may contribute to improve the efficiency, cohesion, and sustainability of the National Healthcare System. Our project is aligned with some of the improvement actions proposed by WHO to benefit from the power of vaccines.²⁷

To our knowledge, this is the first MCDA that has focused on the award criteria that should ideally be used to determine the awardee in the public procurement of vaccines. Previous MCDAs in the field of vaccines have focused on the introduction of new vaccines.²⁸⁻³³ Nevertheless, the WHO's reference manual on the procurement of vaccines for public-sector programs should also be taken into account. According to this manual, the weights of the four value attributes for the public procurement of measles vaccines are financial criteria (35 points), technical criteria (35 points), contractual criteria (15 points), and commercial criteria (15 points).³⁴ Some of the lessons learned from procurement procedures in other countries refer to follow a predefined evaluation procedure involving key stakeholders using unbiased evaluation system; to create a contract with defined mandatory terms as well as decisions on any flexible terms proposed during the bidding process; and to monitor the ability of both contractual parties to meet the terms of the agreed contract and monitor the performance of the vaccine through appropriate regulatory and programmatic reporting channels.³⁵ Including stakeholder-centered criteria in decision procedures would significantly increase their transparency and accountability, support international capacity building to improve health, and reduce societal costs and inequity resulting from suboptimal health decision-making.²⁸

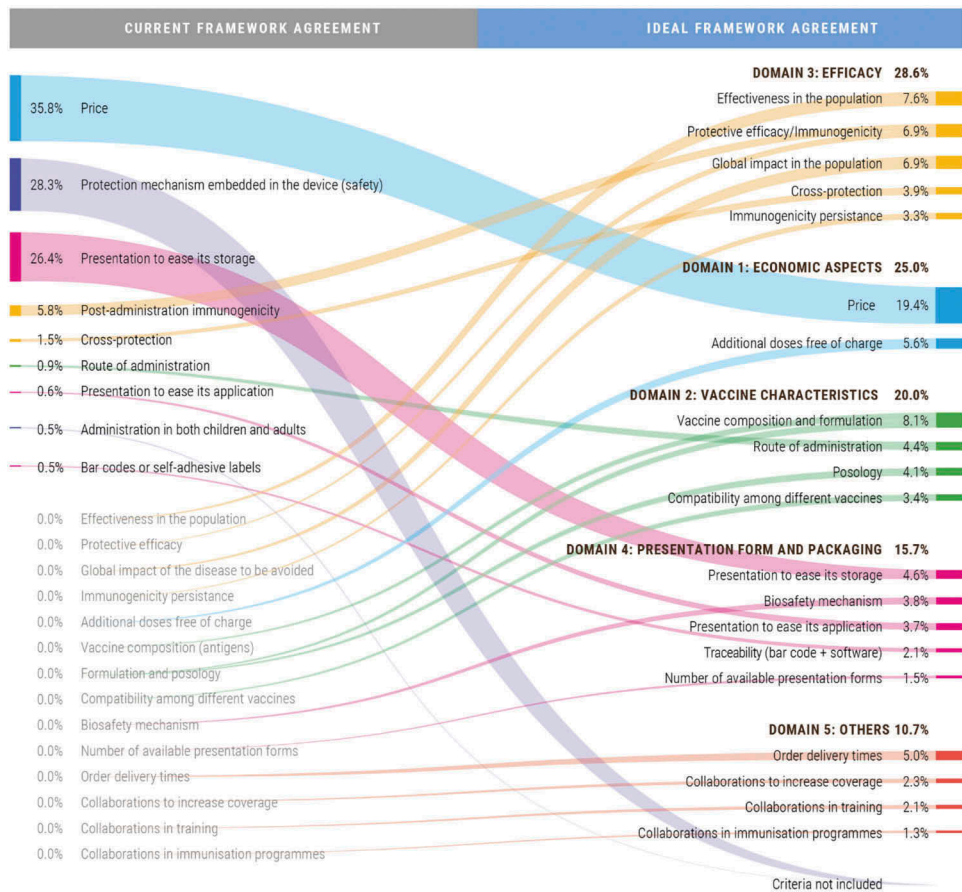


Figure 5. Comparison between the actual FA and the ideal FA, influenza vaccines. Source: Prepared by the authors.

Overall, the present study has revealed that the current FA is far from the ideal FA for the public procurement of vaccines in Spain. This has not only been shown in terms of the set of award criteria to be considered but also in terms of the relative weights these criteria should have in the final decision. In addition, the present study showed that the ideal framework for the purchase of routine vaccines is different from that of influenza vaccines.

More specifically, the first conclusion that can be drawn from this study is that the ideal FA should back away from purely economic criteria and move toward relevant technical criteria. The latter entails including the actual effectiveness of the vaccine. Furthermore, the weighting that the economic criteria currently have on the final decision is excessive compared to the technical criteria. Accordingly, for the purchase of routine vaccines, the current weight of the economic criteria should decrease from 70% to an ideal 27%, and decision-makers should give more weight to technical aspects related to vaccine characteristics, efficacy, presentation, and delivery process. Similarly, for the purchase of influenza vaccines, the current weighting of economic aspects should decrease from 36% to an ideal 25%. When interpreting the results, the fact that the FA specifications for routine and influenza vaccines are different should be considered. For routine vaccines, the FA states that price should be included as an award criterion in the subsequent call-off agreements. By contrast, the FA for influenza vaccines states that price should not be included, yet several contracting authorities included price as an award criterion.

Another crucial area for the improvement of the current FA is the set of criteria to be considered for the contract award. Accordingly, the present study concluded that a wider range of relevant criteria – up to 20 – should be considered when selecting the awardees. Moreover, while the number of relevant criteria for the purchase of routine vaccines would not vary, the elements themselves would have to change. On the one hand, award criteria should not overlap with the technical specifications included in the technical tender specification. Accordingly, the cold chain, the commitment to supply, or the plan for providing to the immunization points would not be part of the ideal set of criteria. On the other hand, it would be advisable to include other factors that are currently being applied by some autonomous communities outside the current FA. Accordingly, the ideal FA should include criteria such as timeframes for order delivery, global impact on the population, or available presentation forms. Moreover, effectiveness in the population or traceability by an integrated software have been identified as highly recommended criteria to be included in the ideal FA.

Nevertheless, criteria should be accurately defined to ensure these are not subject to interpretation. Moreover, these criteria must be concise, objectively assessed, agreed upon, and clearly bound to the object of the contract in order to avoid its legal recourse. This is especially relevant for those criteria related to collaborations in training or collaborations to increase vaccine coverage.

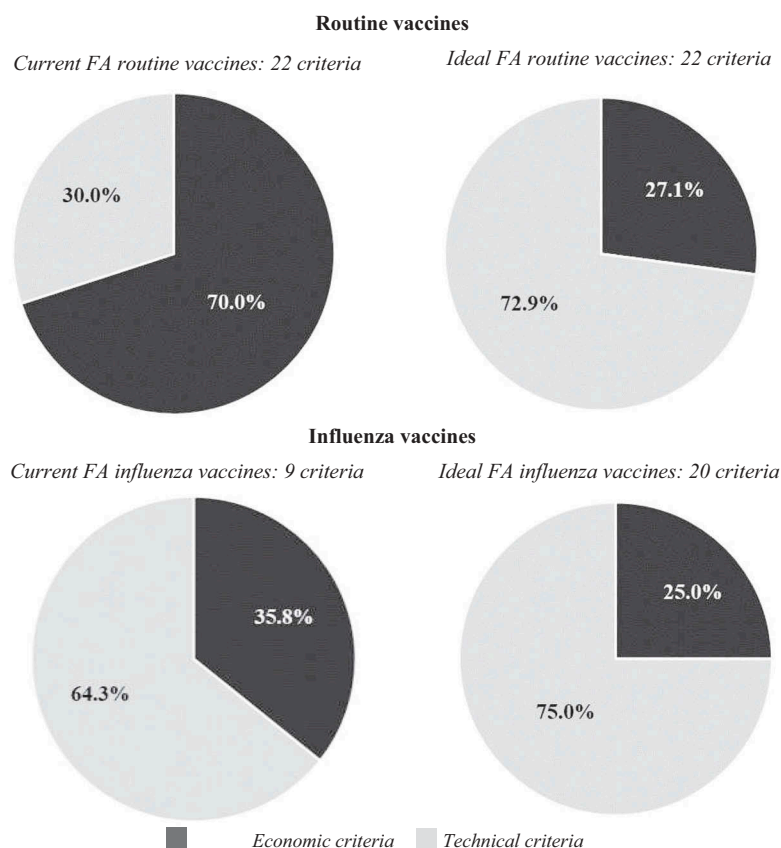


Figure 6. Comparison between the current and the ideal FAs for routine and influenza vaccines: Mean weighting of the economic vs. technical award criteria.

Notes: Results of the ideal FA show the second scenario of the re-test (with the three criteria on collaborations). During the test for routine vaccines, the economic aspects weight 36%, and for the first scenario of the re-test they have a weight of 32.9%. Although for both situations, the same total number of criteria is used (22 criteria), many of them are different criteria. During the test for influenza vaccines, the economic aspects weight 33.6%, and for the first scenario of the re-test, they have a weight of 26.4%.

Source: Prepared by the authors.

The ideal FA should also pay special attention to more general considerations. Firstly, any process that could be detrimental to the procurement of vaccines should be avoided; for example, having price as the only award criterion accepted by the contracting authorities or fixing a price well below the market price or second-round price would compromise vaccine supply. Secondly, having only one awardee with a contract duration of 3 or more years could also compromise vaccine supply given the occurrence of problems in their production chain. Furthermore, this would lead to a less competitive and attractive market for other pharma labs to enter. Thirdly, a lack of budget and contract planning, in addition to the short timeframe available from bidding until doses are needed, generate uncertainty regarding production capacity and potential shortages. Therefore, procurement procedures should be planned beforehand taking into account the internal stages of the procedure and the terms needed by the industry to give an answer to the object of the contract. Fourthly, in order to avoid price-based decisions and favor sustainability, each call-off agreement should include a minimum and a maximum number of technical criteria depending on the vaccine (an average of five). Finally, the new Law of Public Procurement should be taken into account as it allows for more flexible and innovative FAs moving toward procurement of services and not only supplies; for example, through risk-sharing contract models.¹⁰

The present study has some limitations. First of all, the analysis of the current FA was based on the available tender specifications only. Nevertheless, the information gathered for analysis featured a large amount of public and nonpublic information provided by procurement authorities and tenderers. Secondly, the ideal approach was subjectively addressed, and results depend entirely on the preferences, experiences, and judgments of the advisory board. However, the advisory board comprised experts on vaccines both at national and regional levels from both clinical and management areas. In addition, the present MCDA was partial and did not address the scoring phase of a specific vaccine. Thus, the present MCDA just created a general, *ad hoc* framework to be used as a basis for the future assessment of specific products.

In conclusion, in order to move toward a more efficient, equitable, and sustainable model for the public procurement of vaccines, the present study suggests standardizing the current common purchase model in Spain. Furthermore, the ideal model would improve transparency, find a balance between the weights assigned to technical and economic aspects, and introduce flexibility to allow for innovation. In turn, these improvements would guarantee vaccine supply at a competitive price. Future studies should delve into this matter so that the health-care system as a whole could be better prepared to face the technical, logistic, economic, political, and social challenges ahead.

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