Autoriteit Diergeneesmiddelen

APPENDIX 2

Veterinarians' Prescription Patterns and an Evaluation of the Associated Benchmarking Method

SDa expert panel

June 2025

Preface

In 2013, a framework was developed to assess antibiotic prescribing by veterinarians who, together with livestock farmers, are responsible for animal health and welfare on livestock farms. As part of this framework, the so-called Veterinary Benchmark Indicator (VBI) was introduced. Until 2021, the VBI represented the probability that livestock farms for which a particular veterinarian was responsible would be included in the action zone as a result of their antibiotic use.

The VBI-based benchmarking method was revised in 2021. The indicator has retained its name but is now calculated based on Defined Daily Doses Animal (DDDA), in line with the benchmarking method for livestock farms. In consultation with – and at the request of – stakeholders (i.e. livestock sectors and veterinarians), it was decided to exclude livestock farms with persistently high usage levels from VBI calculations, so they would not contribute to their veterinarian's VBI value. This agreement was made on the condition that for farms with persistently high usage levels, the veterinarian and farmer concerned develop and implement a joint approach aimed at reducing the farm's antibiotic usage level.

To present trends in veterinarians' prescription patterns, another indicator is used: the $DDDA_{VET}$. It is similar to the VBI, but with one important difference: livestock farms with persistently high usage levels are included in $DDDA_{VET}$ calculations. As a result, the $DDDA_{VET}$ value is a true reflection of veterinarians' prescription patterns.

This memorandum provides an evaluation of the current benchmarking method by the SDa expert panel and offers a recommendation for future benchmarking of veterinarians.

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Summary

In 2021, the SDa's benchmarking method for veterinarians was revised. Since then, the Veterinary Benchmark Indicator (VBI) is calculated based on Defined Daily Doses Animal (DDDA), in line with the benchmarking method for livestock farms. Livestock farms with persistently high usage levels are not included in VBI calculations, and therefore do not contribute to their veterinarian's VBI value. For farms with persistently high usage levels, the veterinarian and farmer concerned are to develop a joint approach aimed at reducing the farm's antibiotic usage level. This memorandum evaluates the current VBI-based benchmarking method by looking at veterinarians' prescription pattern trends and benchmarking results. It also compares the VBI and $DDDA_{VET}$ (Defined Daily Dose Animal Veterinarian) in terms of their suitability as indicators for veterinarians' prescription patterns.

Prescription pattern trends

The $DDDA_{VET}$ is used to assess and present prescription pattern trends. The $DDDA_{VET}$ value is a true reflection of veterinarians' prescription patterns, as all livestock farms – including those with persistently high usage levels – are included in $DDDA_{VET}$ calculations. For most production categories, the mean amount of antibiotics prescribed has decreased and prescription pattern differences between individual veterinarians have become smaller in recent years. The dairy cattle, non-dairy cattle, slower growing broiler breeds, sows and suckling piglets, and fattening pigs production categories are characterized by relatively little variation in veterinarians' prescription patterns. Prescription pattern differences between individual veterinarians are more pronounced with regard to conventional broiler breeds, weaner pigs, veal calves (all production categories), and turkeys. The VBI is not suitable for monitoring prescription pattern trends, as the VBI value is based on a variable set of livestock farms. After all, farms with persistently high usage levels are excluded from VBI calculations, and the excluded subset of farms varies from year to year and also depends on the benchmark threshold(s) applied in the years concerned.

Benchmarking of veterinarians: a comparison of VBI- and $DDDA_{VET}$-based benchmarking

The number of veterinarians with action zone prescription patterns differs notably depending on whether VBI or $DDDA_{VET}$ data are used. This discrepancy is due to livestock farms with persistently high usage levels being excluded from VBI calculations, whereas they are included in $DDDA_{VET}$ calculations. The VBI and $DDDA_{VET}$ calculation methods are otherwise identical. For some veterinarians, all farms with a particular production category have persistently high usage levels, meaning no VBI value can be calculated for the production category concerned. The subset of farms excluded from VBI calculations is highly sensitive to benchmark threshold changes. The introduction of a lower benchmark threshold may result in a lower VBI value, as a more stringent threshold could mean more farms are deemed to have persistently high usage levels and will not contribute to their veterinarian's VBI value.

Conclusions and recommendations

The SDa expert panel prefers the $DDDA_{VET}$ indicator both for benchmarking veterinarians and for monitoring prescription pattern trends. This indicator is relatively easy to interpret, as a veterinarian's $DDDA_{VET}$ value represents the number of days per year that the average animal in a population under the veterinarian's care was treated with antibiotics. It is important for veterinarians to not only be provided with their $DDDA_{VET}$ value, but also gain insight into which livestock farms have persistently high usage levels. If desired, a veterinarian's VBI value (calculated in the same way as the $DDDA_{VET}$ value but with the exclusion of farms with persistently high usage levels) could be presented alongside their $DDDA_{VET}$ value. This would immediately reveal the impact of farms with persistently high usage levels on the veterinarian's prescription pattern. In addition, the SDa expert panel recommends that a veterinarian's overview should also include the number of farms with persistently high usage levels with which the veterinarian has a registered one-to-one relationship, and a list of the farms concerned. Reducing the amounts of antibiotics used at livestock farms with persistently high usage levels should be a key priority. This requires a joint approach involving the farmers concerned and their veterinarians (and potentially other stakeholders, such as feed consultants).

Background

The SDa has been monitoring the amounts of antibiotics used at Dutch livestock farms since 2011. Benchmark thresholds have been established and developments in antibiotic use across livestock sectors are tracked over time.

In 2013, a framework was developed to assess antibiotic prescribing by veterinarians who, together with livestock farmers, are responsible for animal health and welfare on livestock farms. As part of this framework, the so-called Veterinary Benchmark Indicator (VBI) was introduced. The VBI originally represented the probability that livestock farms for which a particular veterinarian was responsible would be included in the action zone for livestock farms as a result of their antibiotic use.

In 2021, this benchmarking method was revised and since then, the VBI is calculated based on Defined Daily Doses Animal (DDDA). One of the main reasons for this revisions was to make it easier for veterinarians to gain insight into their own prescription pattern. Originally, a veterinarian's VBI value indicated the probability that a farm for which the veterinarian was responsible would be included in the action zone due to its antibiotic usage level. Following the revision of the benchmarking method, VBI values are easier to interpret. A veterinarian's VBI value now indicates the number of days that the average animal under the veterinarian's care was treated with antibiotics. It should be noted in this respect that livestock farms with persistently high usage levels (i.e. $DDDA_F$ values that have exceeded the farm's action threshold for two consecutive years) are not included in VBI calculations. For livestock farms with persistently high usage levels, veterinarians and livestock sectors are to develop and implement targeted measures in order to reduce the amounts of antibiotics used at these farms.

This memorandum provides an evaluation of the current benchmarking method by the SDa expert panel and offers a recommendation for future benchmarking of veterinarians.

Prescription pattern indicators

The SDa currently uses two indicators to describe veterinarians' prescription patterns: the $DDDA_{VET}$ and the VBI. The $DDDA_{VET}$ is used to provide insight into veterinarians' prescription pattern trends, and the VBI is used for benchmarking purposes. The calculation methods for both indicators are explained below.

$DDDA_{VET}$: the indicator for monitoring prescription pattern trends

To determine a veterinarian's $DDDA_{VET}$ value, the first step is to calculate, for the production category concerned, the total number of treated kilograms for which the veterinarian prescribed antibiotics during a particular year (the overall number of treated kilograms for all livestock farms that had a registered one-to-one relationship with this veterinarian in the year concerned). This number is then divided by the average number of kilograms of animal present based on all livestock farms that had a registered one-to-one relationship with this veterinarian. The $DDDA_{VET}$ is a weighted measure, with antibiotic use at larger livestock farms contributing more heavily to a veterinarian's $DDDA_{VET}$ value than antibiotic use at smaller farms. This indicator represents a veterinarian's prescription pattern in absolute terms and provides insight into prescription pattern differences between individual veterinarians.

VBI: the indicator for benchmarking veterinarians

VBI values are calculated in a similar way as $DDDA_{VET}$ values. The only difference between the two calculation methods is that VBI calculations do not include livestock farms with persistently high usage levels. Livestock farms are deemed to have persistently high usage levels if their $DDDA_F$ values have exceeded the SDa-defined action threshold for two consecutive years. The subset of farms excluded from VBI calculations varies from year to year and is strongly influenced by the benchmark threshold(s) applied in the years concerned. The definition of persistently high usage levels is explained in greater detail in a separate SDa publication.

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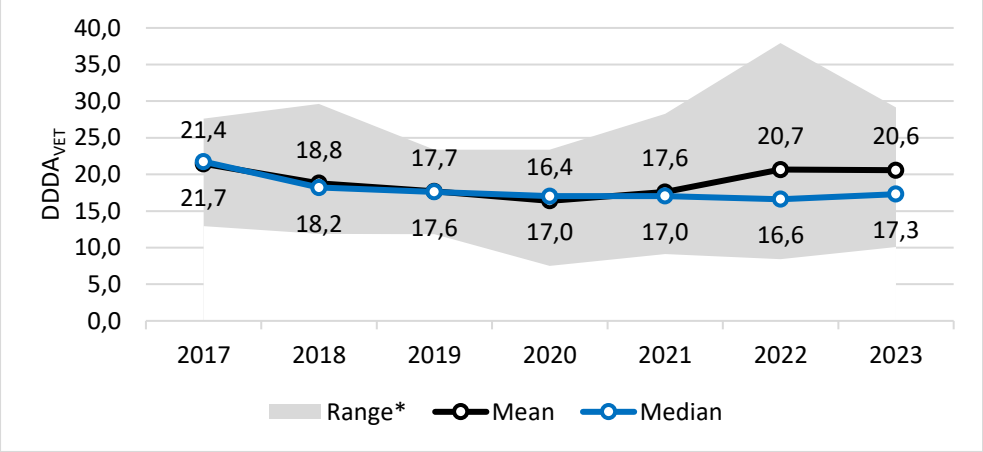
Results

This section presents prescription pattern trends and benchmarking results. Prescription pattern trends are presented using $DDDA_{VET}$ data, as $DDDA_{VET}$ values represent veterinarians' prescription patterns based on all livestock farms, including those with persistently high usage levels. VBI values, by contrast, represent veterinarians' prescription patterns based on a particular set of livestock farms, that is, those without persistently high usage levels. As the subset of farms excluded from VBI calculations (i.e. those with persistently high usage levels) varies from year to year, the VBI is not particularly suitable for monitoring prescription pattern trends.
As mentioned above, this section also includes benchmarking results. Although veterinarians are currently benchmarked using the VBI, $DDDA_{VET}$-based benchmarking results are also provided in this section, in order to show how the exclusion of farms with persistently high usage levels from VBI calculations affects the benchmarking results.

Prescription pattern trends by livestock sector

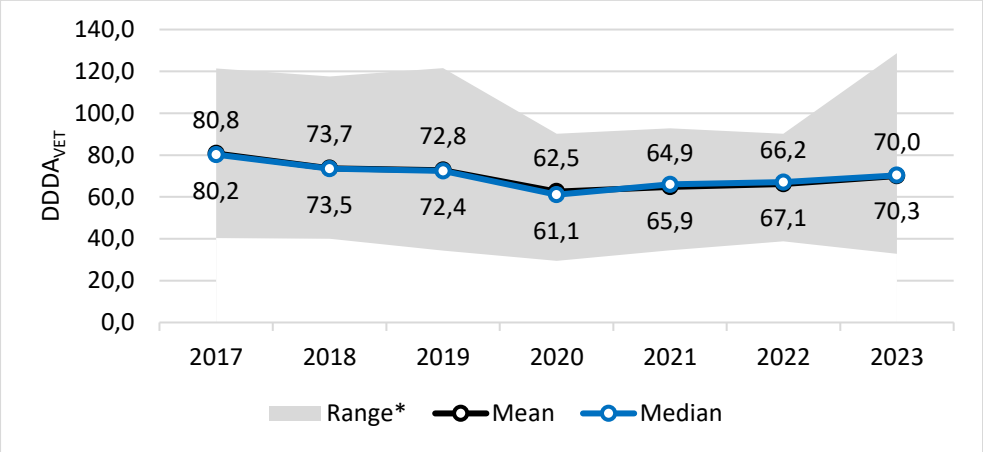
There are considerable prescription pattern differences between individual veterinarians in the **veal farming sector**, and the overall amount of antibiotics prescribed in this sector shows no distinct downward trend over time. While the **white veal calves** and **starter stage rosé veal calves** production categories have seen a decline in mean and median $DDDA_{VET}$ values over the years, $DDDA_{VET}$ differences between veterinarians have increased (see Figures A2-1 and A2-2). The amounts of antibiotics prescribed for **fattening stage rosé veal calves** trended upward from 2017 to 2022. While this trend appears to have stabilized in 2023, no substantial reduction has been achieved, and veterinarians' $DDDA_{VET}$ values show substantial variation.

Figure A2-1. Long-term $DDDA_{VET}$ trends for veterinarians of white veal calves



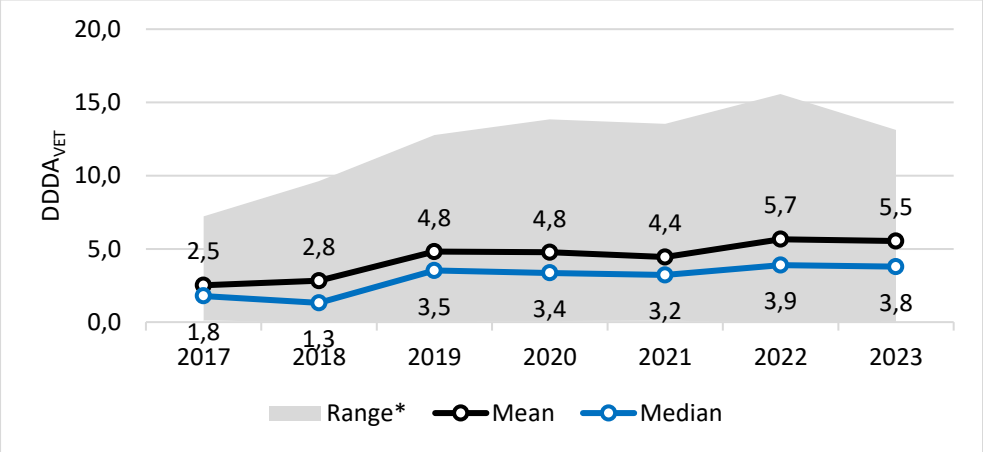
* $DDDA_{VET}$ ranges represent the middle 90% of veterinarians, with the lower limit corresponding to the 5th percentile and the upper limit corresponding to the 95th percentile.

Figure A2-2. Long-term $DDDA_{VET}$ trends for veterinarians of starter stage rosé veal calves



* $DDDA_{VET}$ ranges represent the middle 90% of veterinarians, with the lower limit corresponding to the 5th percentile and the upper limit corresponding to the 95th percentile.

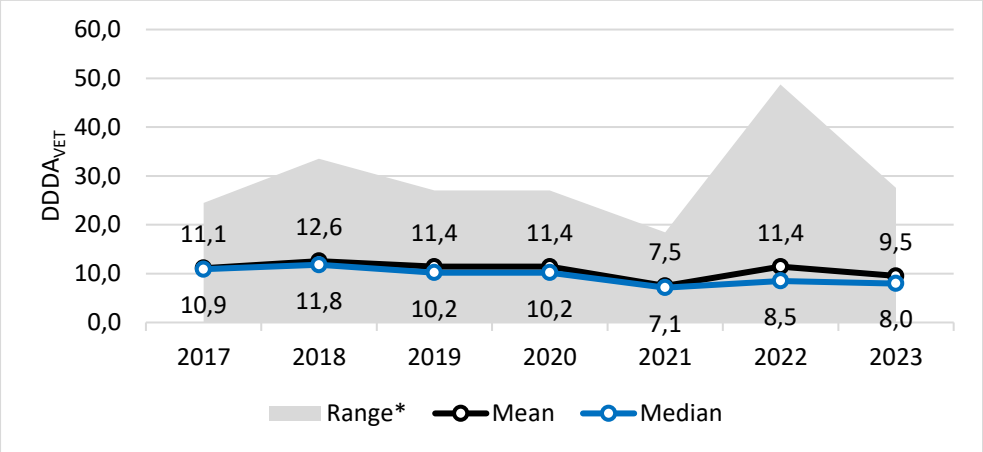
Figure A2-3. Long-term $DDDA_{VET}$ trends for veterinarians of fattening stage rosé veal calves



* $DDDA_{VET}$ ranges represent the middle 90% of veterinarians, with the lower limit corresponding to the 5th percentile and the upper limit corresponding to the 95th percentile.

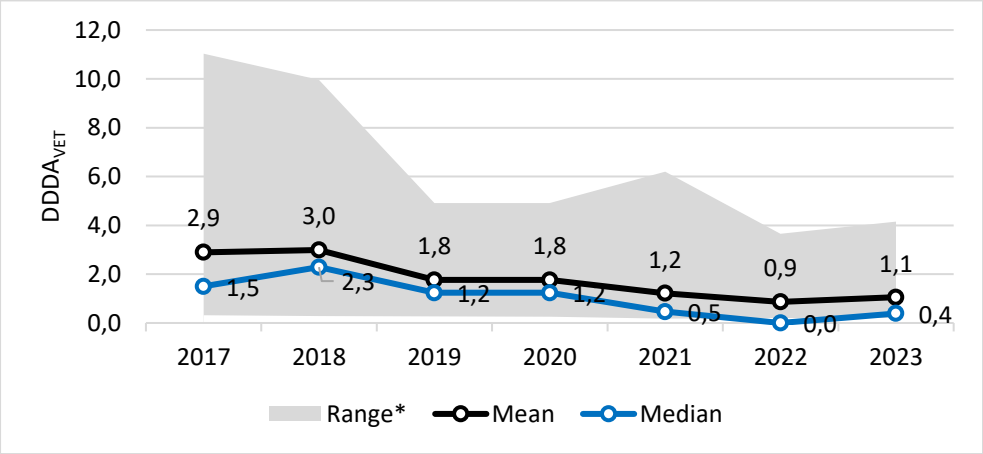
In the **broiler farming sector**, the amount of antibiotics prescribed differs considerably between the two types of breeds. The mean $DDDA_{VET}$ value for veterinarians of **conventional broiler breeds** had increased in 2022, but this was followed by a decline in 2023. 2023 also saw less pronounced $DDDA_{VET}$ differences between individual veterinarians (Figure A2-4). However, the $DDDA_{VET}$ data show no substantial long-term improvement over the 2017-2023 period, consistent with the $DDDA_F$ data for broiler farms with conventional breeds. With regard to veterinarians of **slower growing broiler breeds**, $DDDA_{VET}$ differences between individual veterinarians have become smaller, and the mean $DDDA_{VET}$ value has declined considerably over the years and is currently at a low and acceptable level (Figure A2-5).

Figure A2-4. Long-term DDDA$_{VET}$ trends for veterinarians of conventional broiler breeds



* DDDA$_{VET}$ ranges represent the middle 90% of veterinarians, with the lower limit corresponding to the 5th percentile and the upper limit corresponding to the 95th percentile.

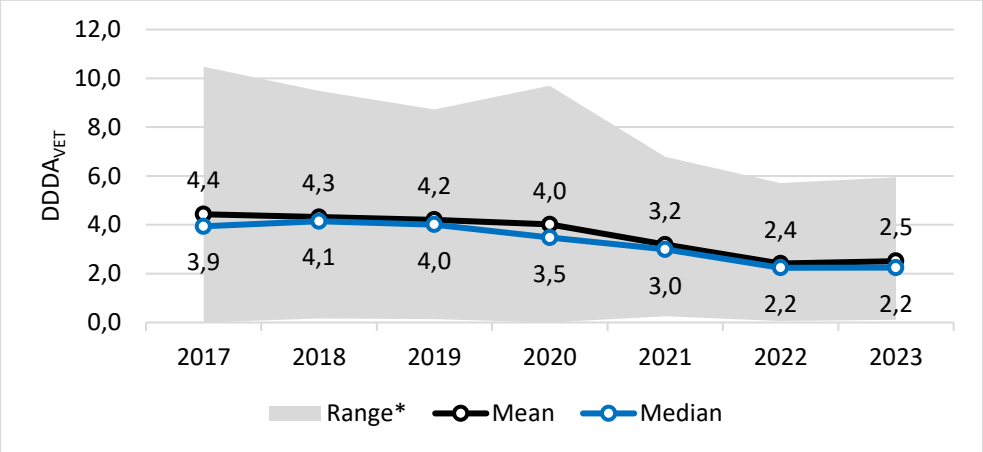
Figure A2-5. Long-term DDDA$_{VET}$ trends for veterinarians of slower growing broiler breeds



* DDDA$_{VET}$ ranges represent the middle 90% of veterinarians, with the lower limit corresponding to the 5th percentile and the upper limit corresponding to the 95th percentile.

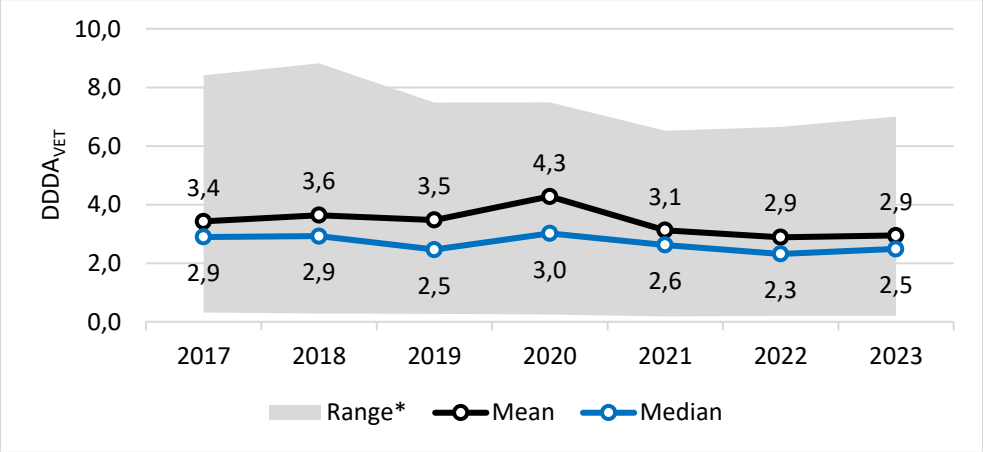
In the **pig farming sector**, the fattening pigs production category and the sows and suckling piglets production category show limited DDDA$_{VET}$ differences between individual veterinarians. In 2023, the mean amount of antibiotics prescribed remained below 3 DDDA$_{VET}$ for both production categories. Mean and median DDDA$_{VET}$ values for veterinarians of **fattening pigs** showed a downward trend between 2019 and 2022, and stabilized in 2023 (Figure A2-6). DDDA$_{VET}$ data pertaining to the **sows and suckling piglets** production category have remained relatively stable throughout the 2017-2023 period (Figure A2-7).
In 2023, veterinarians' mean DDDA$_{VET}$ value for the **weaner pigs** production category amounted to 13.3. It has been relatively stable since 2021, following a 31.5% decline between 2020 and 2021 (Figure A2-8). This production category still shows considerable DDDA$_{VET}$ differences between individual veterinarians.

Figure A2-6. Long-term $DDDA_{VET}$ trends for veterinarians of fattening pigs



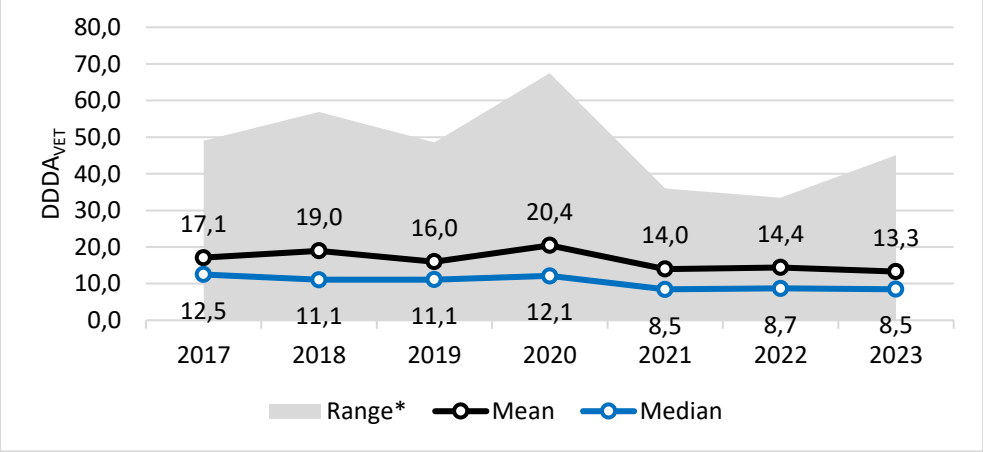
* $DDDA_{VET}$ ranges represent the middle 90% of veterinarians, with the lower limit corresponding to the 5th percentile and the upper limit corresponding to the 95th percentile.

Figure A2-7. Long-term $DDDA_{VET}$ trends for veterinarians of sows and suckling piglets



* $DDDA_{VET}$ ranges represent the middle 90% of veterinarians, with the lower limit corresponding to the 5th percentile and the upper limit corresponding to the 95th percentile.

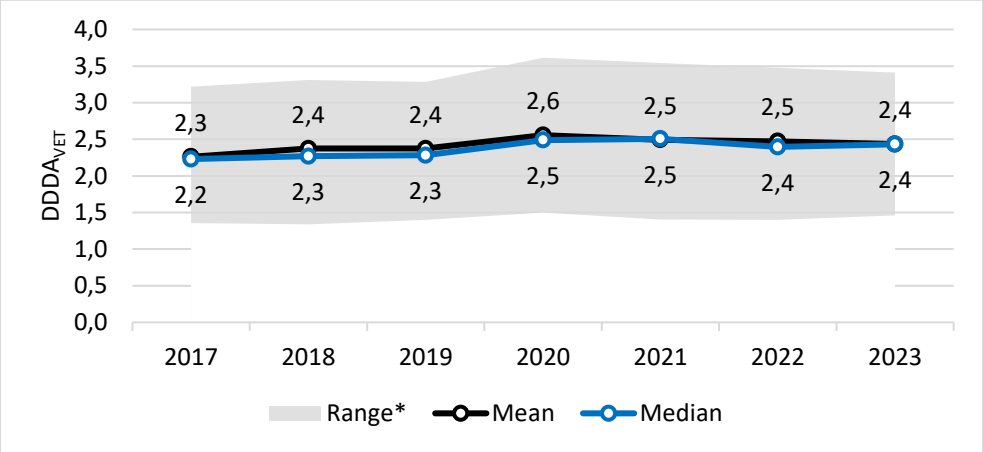
Figure A2-8. Long-term $DDDA_{VET}$ trends for veterinarians of weaner pigs



* $DDDA_{VET}$ ranges represent the middle 90% of veterinarians, with the lower limit corresponding to the 5th percentile and the upper limit corresponding to the 95th percentile.

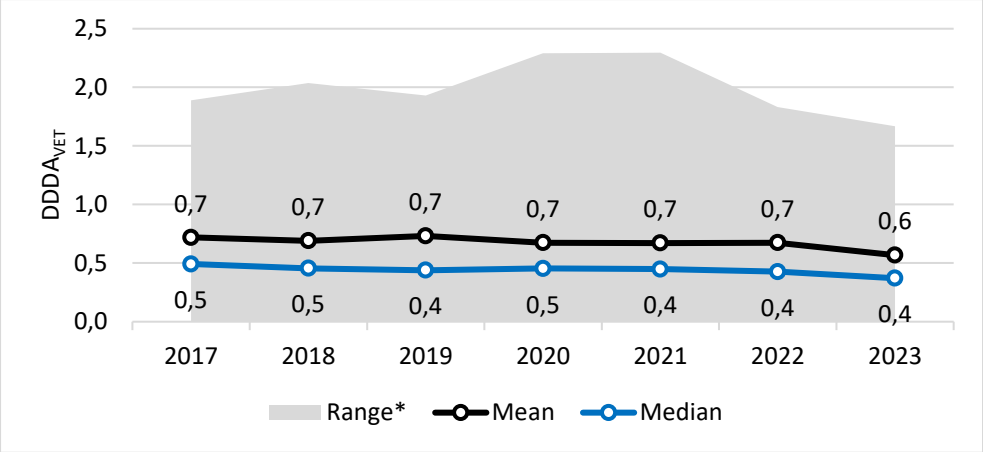
In the **cattle farming sector**, veterinarians' mean $DDDA_{VET}$ values for the **dairy cattle** and **non-dairy cattle** production categories are low. The low mean $DDDA_{VET}$ values are accompanied by limited inter-veterinarian variation (Figures A2-9 and A2-10).

Figure A2-9. Long-term $DDDA_{VET}$ trends for veterinarians of dairy cattle



* $DDDA_{VET}$ ranges represent the middle 90% of veterinarians, with the lower limit corresponding to the 5th percentile and the upper limit corresponding to the 95th percentile.

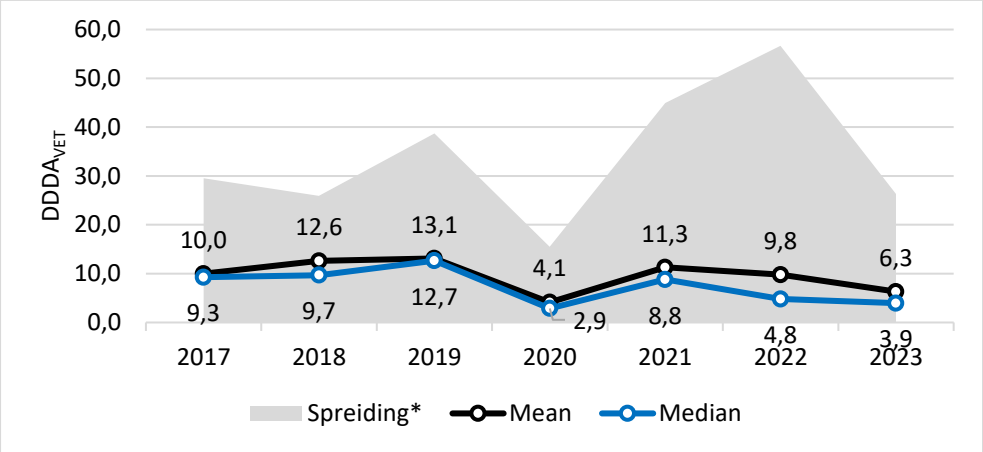
Figure A2-10. Long-term $DDDA_{VET}$ trends for veterinarians of non-dairy cattle



* $DDDA_{VET}$ ranges represent the middle 90% of veterinarians, with the lower limit corresponding to the 5th percentile and the upper limit corresponding to the 95th percentile.

Only a few veterinarians are active in the **turkey farming sector**. Although prescription pattern differences between individual veterinarians decreased in 2023, they remain substantial (Figure A2-11).

Figure A2-11. Long-term $DDDA_{VET}$ trends for veterinarians of turkeys



* $DDDA_{VET}$ ranges represent the middle 90% of veterinarians, with the lower limit corresponding to the 5th percentile and the upper limit corresponding to the 95th percentile.

Benchmarking

In 2021, the SDa started using the DDDA-based VBI as its indicator for benchmarking veterinarians. The results obtained using this VBI-based benchmarking method are presented below, after which they are compared with the results of an alternative, $DDDA_{VET}$-based benchmarking method. As noted earlier, livestock farms with persistently high usage levels are excluded from VBI calculations, whereas they are included when calculating $DDDA_{VET}$ values. As the two indicators are otherwise identical, this comparison will show how the exclusion of farms with persistently high usage levels affects veterinarians' benchmarking results.

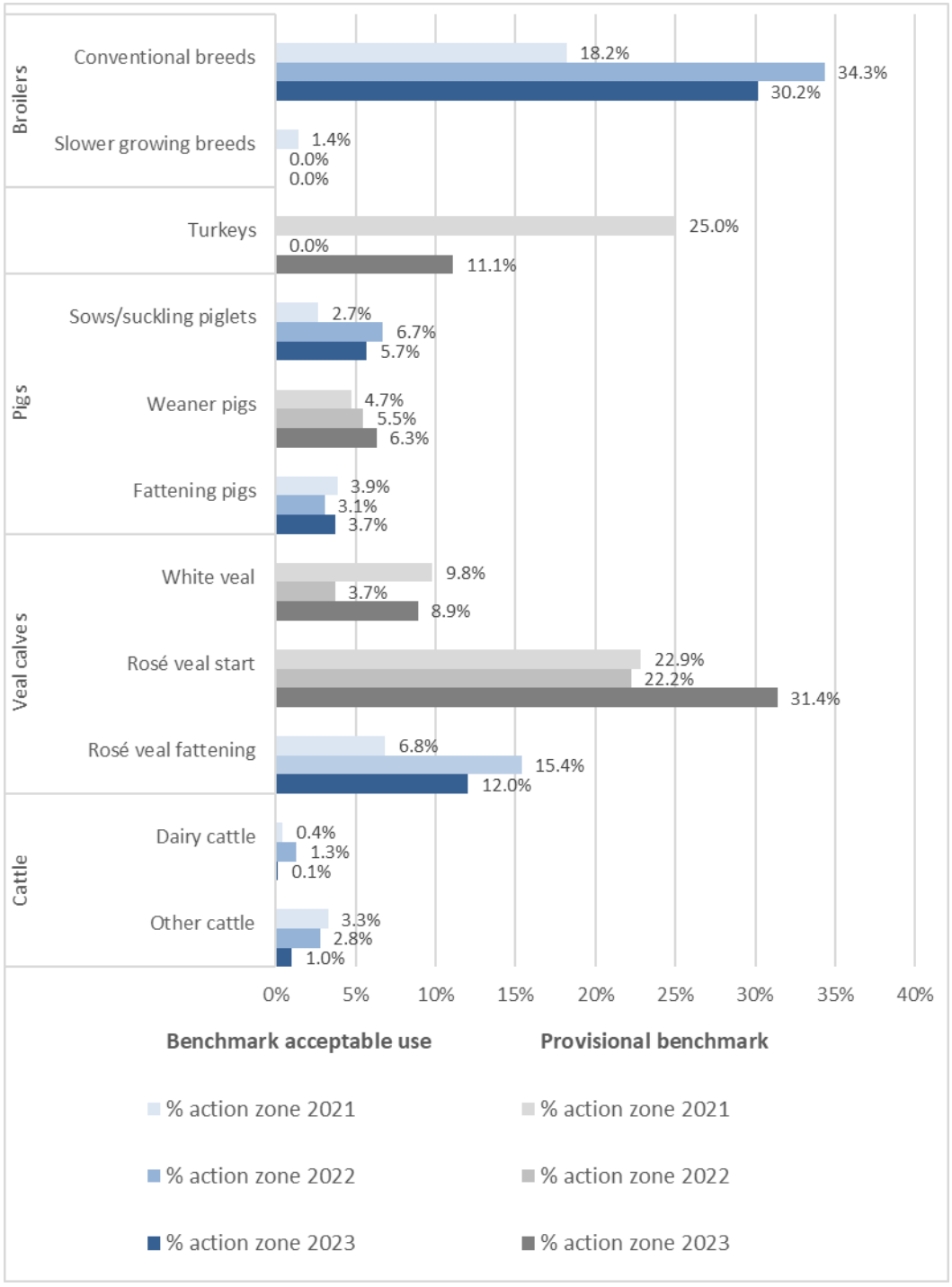
VBI-based benchmarking results for the years 2021-2023

Figure A2-12 shows veterinarians' VBI-based benchmarking results for the 2021-2023 period, with benchmarking zones according to SDa-defined action thresholds. Across all production categories, the majority of veterinarians were included in the target zone. For two production categories – conventional broiler breeds and starter stage rosé veal calves – a relatively large proportion of veterinarians (over 20%) were included in the action zone based on their 2023 VBI values.

Production categories with sector-negotiated transitional benchmark thresholds

Under the broiler and turkey farming sectors' quality assurance systems, veterinarians are currently still benchmarked by means of transitional benchmark thresholds, which the sectors concerned have negotiated with the Ministry of Agriculture, Fisheries, Food Security and Nature. Transitional benchmark thresholds are used to gradually phase in the more stringent SDa-defined action threshold. For the conventional broiler breeds production category in particular, this SDa-defined action threshold should be regarded as a distant goal for farmers to work toward. For veterinarians of conventional broiler breeds and for veterinarians of turkeys, the proportion exceeding the transitional action threshold is smaller (7% and 0%, respectively) than the proportion that exceeded the SDa-defined action threshold. It should be noted that the broiler farming sector has agreed that in due time, after the transitional period has ended, it will start using the same benchmark threshold for conventional and slower growing broiler breeds.

Figure A2-12. Proportions of veterinarians with action-zone prescription patterns for the years 2021-2023, according to the VBI-based benchmarking method and SDa-defined benchmark thresholds, by production category. Production categories with benchmark thresholds representing acceptable use are indicated by blue bars; production categories with provisional benchmark thresholds are indicated by gray bars



A comparison of VBI- and $DDDA_{VET}$-based benchmarking results

For several production categories, the exclusion of farms with persistently high usage levels has a substantial impact on veterinarians' benchmarking results (Figure A2-13). As demonstrated by Figure A2-13, differences between the VBI- and $DDDA_{VET}$-based benchmarking results for 2023 are most pronounced for the conventional broiler breeds, starter stage rosé veal calves, and fattening stage rosé veal calves production categories. This is due to the relatively large number of farms with these production categories that had persistently high usage levels in 2023, since these farms were excluded from the VBI calculations but did contribute to the $DDDA_{VET}$ values.

For some production categories, the veterinarians' mean $DDDA_{VET}$ value is considerably higher than their mean VBI value (Table 1). At least one veterinarian per production category had only worked with farms with persistently high usage levels in 2023, and could therefore not be provided with a VBI value for the production category concerned. This is why the $DDDA_{VET}$ and VBI columns in Table 1 differ in the listed number of veterinarians. Table 1 also shows how many farms with persistently high usage levels were excluded from the VBI calculations.

Figure A2-13. Proportions of veterinarians with action-zone prescription patterns for 2023, according to both the VBI-based (red) and the DDDA$_{VET}$-based (dark red) benchmarking methods, by production category. Livestock farms with persistently high usage levels were excluded from VBI calculations. The results are based on SDa-defined benchmark thresholds

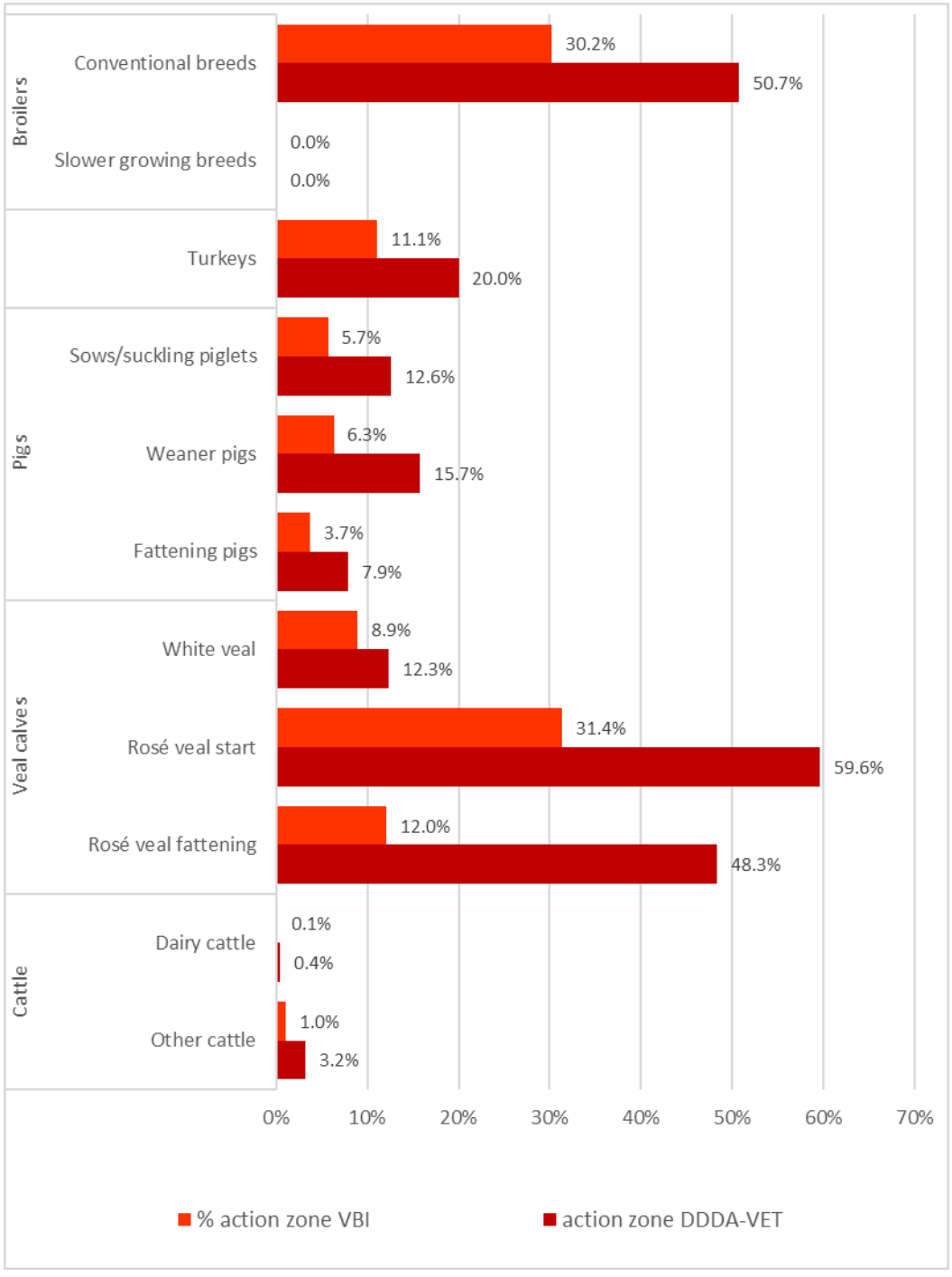


Table 1. Comparison of $DDDA_{VET}$ and VBI data for 2023

		$DDDA_{VET}$ data					VBI data					Farms excluded (due to persistently high usage levels)*	
Livestock sector	**Production category**	**Number of veterinarians**	**Mean**	**Median**	**P75**	**P90**	**Number of veterinarians**	**Mean**	**Median**	**P75**	**P90**	**Number**	**%**
Broiler farming sector	Conventional breeds	69	9.6	8.1	13.4	19.4	63	11.3	4.8	9.2	16.2	107	35.0%
	Slower growing breeds	72	1.1	0.5	1.5	2.9	71	1.0	0.4	1.5	2.7	3	0.5%
Turkey farming sector	Turkeys	10	6.3	4.0	6.4	21.7	9	3.0	0.0	3.0	17.0	8	24.2%
Pig farming sector	Sows and suckling piglets	159	3.0	2.5	4.0	5.5	158	2.5	2.3	3.4	4.4	68	5.4%
	Weaner pigs	159	13.3	8.5	15.9	28.9	158	9.2	7.9	12.9	17.4	105	7.5%
	Fattening pigs	189	2.5	2.3	3.2	4.8	188	2.2	2.0	2.8	4.1	81	2.9%
Veal farming sector	White veal calves	57	21.8	18.8	20.4	23.4	56	20.6	17.3	19.1	22.4	78	10.4%
	Starter stage rosé veal calves	52	70.0	70.3	83.7	97.4	51	58.5	54.8	71.3	83.2	74	36.8%
	Fattening stage rosé veal calves	89	5.5	3.8	8.8	11.3	83	2.3	1.1	2.2	4.6	129	25.3%
Cattle farming sector	Dairy cattle	672	2.4	2.4	2.8	3.1	671	2.4	2.4	2.7	3.0	171	1.2%
	Non-dairy cattle combined	681	0.6	0.4	0.7	1.3	678	0.4	0.3	0.6	0.9	336	2.5%

* Farms with $DDDA_F$ values that had exceeded the farm's SDa-defined action threshold for two consecutive years.

A comparison of potential benchmarking methods for veterinarians

The SDa expert panel has identified two options for future benchmarking of veterinarians:

1. **VBI-based benchmarking** – the current benchmarking method for veterinarians. With this method, livestock farms with persistently high usage levels are not included when calculating veterinarians' benchmarking results. Those farms require targeted measures to be developed by the veterinarians and livestock sectors concerned.

2. **$DDDA_{VET}$-based benchmarking** – a benchmarking method based on the indicator currently used to monitor veterinarians' prescription pattern trends. $DDDA_{VET}$ values are calculated in a similar way as VBI values. The only difference between the two calculation methods is that livestock farms with persistently high usage levels are included when calculating veterinarians' $DDDA_{VET}$-based benchmarking results.

The table below compares both indicators with respect to several characteristics/objectives.

Table 2. Comparison of the VBI and $DDDA_{VET}$ with respect to several characteristics/objectives. The colors indicate how well each indicator performs in terms of the selected characteristics/objectives, as assessed by the SDa expert panel (red = insufficient, orange = moderate, yellow = sufficient, green = good)

Characteristic/objective	VBI	$DDDA_{VET}$
Monitoring trends in prescription patterns	VBI data are based on a variable set of livestock farms. Any adjustment to the benchmark threshold will create a discontinuity in the prescription pattern trend, since the application of a different threshold changes the subset of farms with persistently high usage levels (i.e. the subset excluded from VBI calculations). This leads to year-to-year variation in VBI results.	$DDDA_{VET}$ data can be calculated from the first year in which antibiotic usage data were recorded. This indicator is not affected by changes in the population of livestock farms over time, which makes it well-suited for trend monitoring. Additionally, the distribution of $DDDA_{VET}$ data provides insight into prescription pattern differences between individual veterinarians.
Evaluating the effects of interventions	Since the subset of livestock farms that are excluded from VBI calculations (i.e. farms with persistently high usage levels) is not constant, the effects of interventions are difficult to assess. In theory, a successful intervention may even result in a higher VBI value. If farms that were previously excluded from the VBI calculation due to persistently high usage levels reduce their $DDDA_F$ values to just below the action threshold, they will be included in the calculation and may drive up the VBI value.	This indicator can provide insight into the effects of interventions on veterinarians' prescription patterns.

Benchmarking	Some veterinarians cannot be provided with a VBI value for a particular production category because all farms they worked with had persistently high usage levels. An advantage of excluding those farms from VBI calculations is that veterinarians will not feel as though they are penalized twice.	When interpreting $DDDA_{VET}$ values, it is important to consider whether the benchmarking results have been affected by farms with persistently high usage levels. If veterinarians with action zone $DDDA_{VET}$ values work with farms with persistently high usage levels, addressing antibiotic usage at these farms should be their first priority.
Ease of interpretation	This indicator represents the average number of days that an animal under the veterinarian's care was treated with antibiotics, but only with respect to livestock farms without persistently high usage levels. The fact that farms with persistently high usage levels do not contribute to their veterinarian's VBI value makes interpretation of VBI data more challenging.	This indicator is easy to interpret, as it simply represents the average number of days that an animal under the veterinarian's care was treated with antibiotics.
Association with the risk of development of resistance	This association is expected to be relatively weak, since the livestock farms with the highest risk of resistance development (i.e. those with persistently high usage levels) are excluded from the calculation.	This association is expected to be relatively strong, since the entire population of animals for which the veterinarian is responsible is included in the calculation.

Conclusions and recommendations

The SDa expert panel prefers the $DDDA_{VET}$ indicator both for benchmarking veterinarians and for monitoring veterinarians' prescription pattern trends. Unlike the VBI, the $DDDA_{VET}$ is suitable for both purposes and relatively easy to interpret.

The expert panel strongly recommends using the weighted $DDDA_{VET}$ indicator, as it is easier to interpret than the mean $DDDA_F$ value (which is unweighted) of the farms with which the veterinarian has a registered one-to-one relationship, and because it is expected to be more strongly associated with the risk of development of resistance.

It is important for veterinarians to not only be provided with their $DDDA_{VET}$ value, but also gain insight into which livestock farms have persistently high usage levels. To show the extent to which farms with persistently high usage levels have impacted the calculated $DDDA_{VET}$ value, veterinarians could also be provided with the measure underlying the VBI, which could be presented alongside their $DDDA_{VET}$ value. In addition, the SDa expert panel recommends that a veterinarian's overview should also include the number of farms with persistently high usage levels with which the veterinarian has a registered one-to-one relationship, and a list of the farms concerned. Reducing the amounts of antibiotics used at livestock farms with persistently high usage levels should be a key priority. This requires a joint approach involving the farmers concerned and their veterinarians (and potentially other stakeholders, such as feed consultants).