November 2023

RUMA Targets Task Force 2:

Three Years On

RESPONSIBLE USE OF MEDICINES IN AGRICULTURE ALLIANCE

RUMA

RUMA Targets Task Force 2: A report summarising the third year of progress against antibiotic use targets identified by the UK livestock industry's Targets Task Force 2 (TTF2) in November 2020.

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Cat McLaughlin

RUMA Chair

& Chair of the RUMA Targets Task Force 2

Introduction

I'm delighted to report yet another positive year for U.K. agriculture in the responsible use of antibiotics. The RUMA Targets Task Force (TTF) targets continue to be largely exceeded, met or on track, and where use has been needed to address disease outbreak, this has been isolated and done so in the responsible, effective and efficient manner that the U.K. is known and recognised for.

UK agriculture is proud of its work to date on tackling AMR and, as we look ahead to the future, we will naturally start to see a shift in focus from reduction, to maintenance of the targets. It is important to highlight that zero use of antibiotics, be that across animal or human health, is neither viable nor responsible. People and animals do get sick at times even with the best health care and preventive plans in place, and antibiotics remain a key medicine in the treatment 'toolbox' to help people and animals recover. In those situations, antibiotics are rightfully needed and should be delivered under the mantra of 'as little as possible, as much as necessary'. By only using antibiotics when truly needed, UK agriculture continues to play its role in tackling AMR and protecting the efficacy of these important medicines long into the future.

Of particular note in this year's report, is the inclusion of some early Medicine Hub data which give an indication of antibiotic use in ruminants. Ruminants are incredibly complex compared to other sectors and, designing a centralised hub to start collating data has been a significant undertaking. The work that has gone into its development should not be underestimated and, this is just the start of the journey to build an evidence base from which, in a few years' time, confident baselines can then be produced. What we are seeing however, in this early 'snapshot of data' from Medicine Hub, is confidence and reassurance of the low antibiotic use we expected, coupled with low to negligible HP-CIA use - a very positive story indeed. As data submission accelerates over the next couple of years, the data will become more robust, such that industry can set a national baseline of current performance and start to implement appropriate management tools within enterprise types.

It should also be noted that 2022 was not without its challenges, many of which I have referenced before. There is still fallout from the global pandemic, the UK's exit from the European Union, rising production costs, labour shortages, climate change, ongoing trade negotiations, avian influenza, supply chain issues, and we are now firmly in the midst of the cost-of-living crisis. Each one of these is a huge challenge but combined, it makes for a perfect storm. However, this has not deterred commitment to the TTF targets and the sectors we represent at RUMA Agriculture have a strength, determination, and resilience that we should all be incredibly proud of. A resilience that is reflected in the continued efforts and achievements that this latest RUMA TTF report presents.

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[1] Medicine Hub from AHDB Medicine Hub for dairy, beef and sheep farmers | AHDB

Challenging misinformation

RUMA Agriculture prides itself on using evidence-based information to promote the industry's responsible use of medicines; at times, this means speaking up proactively to address misinformation that may be in circulation, and we are proud to provide that voice when it is appropriate to do so.

In line with that approach, another part of our work in 2022 saw us deliver a range of 'Sector in Focus' campaigns to share the antibiotic stewardship stories of different sectors, charting the inception, delivery and impacts of stewardship initiatives, as well as understanding the challenges that have been faced and the solutions that have been developed. What is evident in all of these sector journeys is the 'solutions focused' mindset and data driven strategies which underpin each and every one - qualities which are at the heart of so much of the success the industry is seeing today.

Looking to the future

While 2022 outcomes form the foundation of this report, I also wanted to reflect on some more recent work in progress to help continue to evolve and strengthen antibiotic stewardship. RUMA has this year (2023) been proud to respond to the Veterinary Medicines Regulations consultation, as well as feeding into the next UK 5-year action plan for antimicrobial resistance, which is currently in development. We are also in the early stages of starting to plan for the next cycle of RUMA Targets, and discussions will commence soon to start shaping the future trajectory. In addition, we have also commissioned a desktop report to help us develop our thinking about veterinary medicines and environmental stewardship. We are lucky that we live in a nation where we have trusted regulators; this ensures that even before veterinary medicines are authorised for use, robust checks have been undertaken which take into consideration minimising environmental impacts as well as many other factors. Even so, we are always looking for other opportunities to farm for a greener future and we will be sharing insights from this report in 2024.

Protecting the efficacy of antibiotics

I also wanted to take a moment to reflect on why all this effort matters. For those of us who work within the veterinary and farming industries, we know only too well why tackling AMR is so vital. The World Health Organisation (WHO) has declared that antimicrobial resistance (AMR) is one of the top 10 global public health threats facing humanity.

UK livestock sectors recognised over a decade ago the role they can play in responding to this threat. The mission is simple; everyone across the One Health infrastructure wants, and needs to keep antibiotics working, to protect human and animal health for the future. That is the driving force. Reduce, refine, replace remains a key foundation and, as we are starting to see now across agriculture, maintenance of low use will also start to become a key measure of success in the management of AMR.

RUMA has never prioritised one farming system over another to promote the responsible use of medicines. Whichever system of farming is used, it is important that animals are well cared for, their needs are met, they are healthy and if veterinary intervention is needed to counter a health challenge, it is done in a responsible manner. This principle also supports consumers who have a right to access good quality, safe, nutritious food, at a range of price points. This inclusive view point, allows the sharing of best practice across all farm management systems, a practise which has been instrumental in driving our Target Task Force successes, and will continue to be used in RUMA's activities.

[2] WHO factsheet on Antimicrobial resistance. Preprint at https://www.who.int/news-room/fact-sheets/detail/antimicrobial-resistance

Cattle Sectors: Beef, Dairy and Calves

Overview

Ongoing collaboration has continued in 2022 between the different ruminant sector bodies on responsible antibiotic use across the UK.

BCVA has continued to provide high quality training and education to its members in the past year, including collaboration with other industry bodies promoting Animal Health and Welfare Initiatives. The Royal College of Veterinary Surgeons (RCVS) revised its Under Care Guidance on Prescribing for vets commencing September 2023 and this has led to greater clarity for vets in practice on what responsible prescribing looks like as well as a tightening of the guidelines surrounding antimicrobial and anthelmintic prescribing. In addition, in September 2023 the Board of Dairy UK approved an updated strategy for minimising medicine residues in raw milk, further details of which can be found in the table below.

Medicine Hub

The first collated dataset of antibiotic use in the UK cattle and sheep sectors is now available from Medicine Hub, which has been developed and resourced by AHDB on behalf of industry. Totalling over 7500 enterprises across dairy, beef and sheep, these early data give an indication of antibiotic use in ruminants. However, the industry is large and this number of enterprises is not considered representative of the wider industry.

Anecdotally, it has always been felt that the ruminant sector was a low user of antibiotics, but the data have not been available, particularly in the sheep and beef sectors, to validate this view. The good news is that the preliminary data being seen across dairy, beef and sheep from Medicine Hub, go some way to giving us that confidence. It is also becoming evident that the use of Highest Priority Critically Important Antibiotics (HP-CIAs) is minimal across the ruminant sector.

Medicine Hub uptake to date has been voluntary and the scale and complexity of the ruminant sector means it will take time to build up the volume of data. Given the diversity of farms in the sectors, as more enterprises enter data, the usage figures are expected to change. However, the depth of understanding and value of the data to the industry will continue to increase. As data submission accelerates over the next couple of years, the data will become more robust, such that industry can set a national baseline of current performance and start to implement management strategies based on data and intelligence from Medicine Hub, within enterprise types.

For 2022, Medicine Hub drew on data from 2,467 dairy enterprises to calculate a mean usage of 16.6 mg/PCU. This is the same as the mg/PCU figure contained in the VARSS report, as the denominator (number of adult dairy cows) and adjusted live weights used in Medicine Hub are identical. In population terms, this represents 28% of adult dairy cows in the UK. The Medicine Hub figure for HP-CIA use in dairy was low, at 0.02 mg/PCU.

The Hub used 2,968 beef enterprises to calculate a mean antibiotic usage of 4.8 mg/kg. Mean HP-CIA use was 0.01 mg/kg. Medicine Hub has adopted the Cattle Health and Welfare Group (CHAWG) methodology to calculate beef metrics. This uses a denominator based on the overall population of beef cattle which are 'at risk', across a range of animal categories and standard weights. The ESVAC methodology, adopted by VARSS, uses only slaughtered beef animals as the denominator in its calculation. Therefore, total antibiotic use is distributed over a smaller number of animals and is more prone to bias, depending on the proportion of beef farm types contributing to the overall dataset.

Both the "mg/PCU" and "mg/kg" metrics published are extremely useful for national trend monitoring within the dairy, sheep and beef sectors. However, due to the differences in how these figures are calculated, they should not be used to compare antibiotic use between the different sectors.

These are very early days in the drive to capture a comprehensive picture of antibiotic use across the beef, dairy and sheep sectors. The data provided for the 2022 calendar year significantly exceeded the targets set by the Targets Task Force. Work continues to engage stakeholders all along the supply chain to encourage even more use of Medicine Hub for new and existing data sets, in order to achieve the ambitious targets set for Medicine Hub for the years ahead.

Medicine Hub is grateful for the collaboration of individual farmers, vets, bulk data holders/data integrators (Kingshay, Map of Ag, NML), farmer groups (Welsh Lamb and Beef Producers, Blade Farming), milk buyers (Arla, First Milk, Muller, Barbers, Saputo), Herdwatch farm software, the FIIA Group and others for sharing, or facilitating access, to these important data.*

Beef, Dairy and Calves Sectors Progress Against Targets

✔ = in progress ✔✔ = well advanced ✔✔✔ = achieved

Beef, Dairy and Calves Targets			
Measurement Metric	**Target**	**2022 status**	**Progress**
Calculation, benchmarking and central upload of data	**Data from 95% of UK dairy herds captured by 2024**	Medicine Hub - please see MH summary in the overview section above. Red Tractor (RT): There are 22,300 beef and lamb members in England. There was a recommendation to upload antibiotic use to Medicine Hub or equivalent added in July 2023 to standards.	✓
	Data from 50% of UK calf rearing units captured by 2024	Medicine Hub - please see MH summary in the overview section above.	✓
	Data from 8,000 (10% of total) UK beef captured by 2024	Medicine Hub - please see MH summary in the overview section above.	✓
Farm Vet Champions (FVCs) network	**2,800 FVCs in 900 veterinary practices across UK by 2024**	As of September 2023, there are 892 FVC users. 44 SMART goals have been set and 18 teams have been created. RCVS Knowledge has promoted FVC at 14 events, reaching over 650 delegates. Resources are available for all organisations and all veterinary team members to use to promote further uptake in the network, training materials, and the SMART Goals tool. These resources have been accessed 3442 times.	✓

Beef, Dairy and Calves Targets			
Measurement Metric	**Target**	**2022 status**	**Progress**
Training uptake among vets	**Specify appropriate training**	The British Cattle Veterinary Association (BCVA) offers online and in-person CPD and resources for cattle vets to support their efforts in promoting health and welfare and managing diseases, including taking a responsible approach to the use of veterinary medicines. The education programme includes webinars and podcasts as well as a suite of accredited training courses that help farm vets to target some of the biggest challenges – most of which have a medicines element to them. As of September 2023: • BVD: 961 qualified vets • Johnes: 1221 qualified vets • QuarterPro (mastitis control and udder health): 83 qualified vets, 240 Mobility Mentors and 19 Foot Health Trainers Training in these areas not only reduces the incidence of BVD, Johnes, mastitis and lameness but also impacts on other health issues with an overall reduction in medicine use – primarily antimicrobials. MilkSure, the training and stewardship programme for farmers to drive standards around the avoidance of residues in milk and medicine best practice on their dairy farms is also administered by BCVA through the provision of training and registration of MilkSure Registered Vets. 492 vets are currently qualified to deliver the scheme to their farm clients, providing good coverage across the country. 11 webinars were held in 2022 on a variety of topics, with 1,792 live and recorded views. 12 podcasts received 8,646 listeners from the UK in the same timeframe. BCVA has been keen to support the FVC Initiative, providing podcasts, articles in Cattle Quarterly or sessions at the annual Congress. This support will continue in the coming years as the programme develops.	✓ ✓

Beef, Dairy and Calves Targets			
Measurement Metric	**Target**	**2022 status**	**Progress**
Medicines best practice training uptake among farmers	**Reduced training non-compliances in Red Tractor Dairy**	There was a drop in NC's from 8% of assessments in 2021 to 6% in 2022.	✓ ✓ ✓
	Training becomes requirement in Beef farm assurance	In Beef and Lamb there has been a drop from 30% of members having an NC raised against this requirement after this was made a full standard in the last quarter of 2021. The average during 2022 was 23%, with the final quarter being 20% of assessments. Red Tractor (RT): There are 22,300 beef and lamb members in England. Training was made a full standard in Version five of the standards in Nov 21. A recommendation to upload antibiotic use data to Medicine Hub or an equivalent was added in July 2023 to the standards. Quality Meat Scotland (QMS): In the 2022 Cattle & Sheep Scheme standards, QMS introduced a new recommendation. At least one member of staff responsible for administering medicines has undertaken training in the administration and handling of medicines". Details on training courses can be found at: www.qmscotland.co.uk/cattle-sheep-standards and at www.noah.co.uk/farmer-training. The standards will be fully reviewed in 2024 and it is likely that this recommendation could change to a full standard.	
Medicines best practice training uptake among students	**All vet school and agriculture college/ university courses include medicines best practice content by 2024**	The FVC resources have been accessed 3,442 times with 105 Vet Students accessing the resources. However, specifying whether you are a student is not a mandatory field so this may not encompass all vet students. All vet school courses include information on medicines best practice. The Veterinary Schools Council also published VSC guidance on antimicrobial stewardship in January 2023: https://www.vetschoolscouncil.ac.uk/news/new-guidance-on-antimicrobial-stewardship-published/.	

Beef, Dairy and Calves Targets			
Measurement Metric	**Target**	**2022 status**	**Progress**
Farmer & vet herd/ flock health plans	**Reduced non-compliances annually in Dairy & Beef farm assurance for development of annual health/medicines plan**	A drop in dairy NC's raised from 12% in 2021 to 9% in 2022. In dairy, the annual review standard has dropped from an average of 12% in 2021 to 9% in 2022. Beef and Lamb drop has dropped from 21% having an NC raised relating to the provision of health plans during 2021 to 18.5% during 2022. Revised Dairy UK Medicine Residues Strategy: In September 2023 the Board of Dairy UK approved an updated strategy for minimising medicine residues in raw milk. The strategy will seek to: • Extend the scope of the strategy from antibiotics to include all medicines • Develop a timetable for expanding data collection to cover on farm usage and all medicines • Ensure farmers receive feedback on the data they provide • Increase the frequency and scope of farmer training • Ensure all training packages are subject to a periodic review • Make Selective Dry Cow Therapy a mandatory requirement • Make the testing for antibiotics residues more frequent • Tighten sanctions for persistent misuse of medicines • Standardise veterinary investigations of antibiotic test failures • Explore opportunities to reduce duplication of investigations • Undertake a central analysis of vet investigation reports • Publish an annual report on progress • Undertake a regular reviews of the strategy Dairy UK will be working collaboratively with other industry organisations and stakeholders on the realisation of the strategy.	✓ ✓ ✓

Beef, Dairy and Calves Targets			
Measurement Metric	**Target**	**2022 status**	**Progress**
Impact of Bovine Viral Diarrhoea	**Reduced non-compliances for BVD control in Red Tractor Dairy**	Less than 1% of dairy assessments noted lack of BVD detail in herd health plan/ demonstration that stated control measures have been undertaken.	✓ ✓ ✓
	Initiatives to tackle BVD in the UK cattle industry **(Formerly this box referenced: 'Calves sourced from farms eradicating BVD, or screened'. This target has been updated to reflect the broader industry effort underway to tackle BVD.)**	BVDFree Launched in July 2016. This industry owned scheme which delivers a voluntary elimination programme for BVD in cattle breeding herds in England. At the end of seven years 6,844 herds have registered with BVDFree representing close to an estimated 49% of the national breeding herd in England. In addition, 25% of the registered herds currently have test negative herd status. BVD testing is now included as a funded activity within the Defra Pathway scheme for participating cattle herds.	

Beef, Dairy and Calves Sectors Indicators of Progress

✔ = in progress ✔✔ = well advanced ✔✔✔ = achieved

Dairy, Beef, and Calves Indicators of Progress		2020	2021	2022	Progress
Antibiotic use (centralised data)	**15% mg/kg fall in dairy herds by 2024; baseline 2020/21**	Data unavailable	Data pending	Data pending	✓
	25% mg/kg fall in calf rearing units by 2024; baseline 2020/21	Data unavailable	Data pending	Data pending	✓

Dairy, Beef, and Calves Indicators of Progress		2020	2021	2022	Progress
				The Welsh Lamb & Beef Producers (WLBP) AMU Calculator went live in 2021 with early adopter vet practices being able to calculate antibiotic usage on farms. Working with the veterinary profession in Wales WLBP have been able to build on these early foundations. Since July 2022 members of the Farm Assured Welsh Livestock (FAWL) scheme are required to have their antibiotic usage calculated on the platform. This process takes place during the annual health and welfare review which the vet completes in conjunction with the farmers, taking the burden away from the farmers needing to upload and calculate their own usage data. In 2023, WLBP are continuing to work with the lamb, beef and dairy supply chains to measure usage on sheep, beef and dairy farms, and also to facilitate benchmarking to evidence AMU	✓

Dairy, Beef, and Calves Indicators of Progress		2020	2021	2022	Progress
				and improve the vet-farmer discussions and decision making during the annual health and welfare review on farm. When requested, WLBP can facilitate the sharing of the farmers data under strict permission with specific supply chains if they so wish. This provides the additional benefit to the farmer in not having to replicate any calculations for numerous supply chains. In 2022 WLBP were part of a Welsh project, ARWAIN DGC. The project aims to reduce the need to use antimicrobials such as antibiotics by improving productivity, animal health and welfare through new and innovative technology and 'good practice'. Early indications are that medicines are being utilised in a way that demonstrates the industry is following responsible use practices. WLBP will continue to work with the industry and veterinary profession in Wales to ensure that antibiotics are utilised responsibly without compromising animal health and welfare.	

Dairy, Beef, and Calves Indicators of Progress		2020	2021	2022	Progress
Number of calves treated	**7.5 fewer treated/100 calves by 2024; baseline 2020/21**	Data unavailable	Data pending	Data pending	
Sales of lactating cow tubes in dairy	**Annual reduction in 3-yr rolling average; baseline of 0.69 DCDVet**	0.63 (2018-2020)	0.51 (2019-2021)	2022 – 0.43 (2020 – 2022)	✓ ✓ ✓
Sales of dry cow tubes in dairy	**Annual reduction in 3-yr rolling average; baseline of 0.59 DCDVet**	0.57 (2018-2020)	0.54 (2019-2021)	2022 – 0.49 (2020 – 2022)	✓ ✓ ✓
Highest priority antibiotic use (from centralised data)	**Reduction in dairy mg/kg by 2024; baseline 2020/2021**	Data unavailable	Data pending	Data pending	
	Establish baseline for calves from 2020/2021 data, then review	Data unavailable	Data pending	Data pending	

Dairy, Beef, and Calves Indicators of Progress		2020	2021	2022	Progress
Highest priority antibiotic sales	**Reduction in cattle injectables by 2024; baseline 0.26 mg/kg**	0.29 mg/kg	Injectable HP-CIA products licenced for cattle were 0.24mg/kg in 2021, representing an 18% reduction since 2020 (0.29mg/kg). There has been an 0.86 mg/kg (-78%) decrease since 2014.	Sales of injectable HP-CIA products licensed for cattle were 0.2mg/kg in 2022, which represents a 14% decrease since 2021 and an 81% reduction since 2014.	✓ ✓ ✓
	Reduction in tubes for dairy cows by 2024; baseline 0.03 DCDVet	0.07 mg/kg	Intramammary HP-CIA products in 2021 were 0.02mg/kg which is lowest they have been and represents a 96% reduction since 2014.	Sales of intramammary HP-CIA products licensed for cattle in 2022 were 0.014 DCDVet, which is 13% (0.002DCDVet) lower than in 2021 and represents a 96% decrease since 2014.	✓ ✓ ✓
Mortality rates	**Mortality falls in beef & dairy cows; baseline 2020**	Data unavailable	Pending BCMS data	Data no longer available due to data processing limitations.	
	Calf mortality falls 1%/year 2020-2024; baseline 2018	Data unavailable	Pending BCMS data	Data no longer available due to data processing limitations.	

Dairy, Beef, and Calves Indicators of Progress		2020	2021	2022	Progress
	Fall in dairy lameness and mastitis from various 2019 indicators	As part of a wider project monitoring clinical and subclinical mastitis, data were collated from 79 'Sentinel' herds across the UK. This work was carried out by QMMS Ltd and the University of Nottingham, funded by AHDB Dairy under the Dairy Research Partnership. Between 2012 and 2020 there was a 32% reduction in mean clinical mastitis rate from 44.1 to 30.2 cases per 100 cows per year. Clearly, this reduction in clinical cases is likely to result in reduced use of antimicrobial therapy. At the same time, the mean weighted bulk milk somatic cell count dropped from 186,000 to 159,000 cells/ml, suggesting a lower prevalence of infection and therefore improved mastitis control. One major change in prescribing habits over the past 10 years is the widespread introduction of selective dry cow therapy i.e. withholding antimicrobial treatment in uninfected cows.	The AHDB Sentinel Herds Project involves collating data from 92 sentinel farms to monitor trends in mastitis over time at a national level. This work began in 2017 and was carried out by QMMS Ltd and the University of Nottingham, funded by AHDB Dairy under the Dairy Research Partnership. Between 2020 and 2021, there was a significant reduction ($p<0.001$) in mean clinical mastitis rate from 29.9 to 24.9 cases per 100 cows per year. Clearly, this reduction in clinical cases is likely to result in reduced use of antimicrobial therapy. One major change in prescribing habits over the past 10 years is the widespread introduction of selective dry cow therapy i.e. withholding antimicrobial treatment in uninfected cows. It is encouraging that this has not led to an increase in new infections over the dry period.	82 sentinel herds continued to show improvement in mastitis infection levels between 2021 and 2022, although only the reduction of 17%in dry period new infection rate reached statistical significance.	✓

Dairy, Beef, and Calves Indicators of Progress		2020	2021	2022	Progress
		It is encouraging that this has not led to an increase in new infections over the dry period, as measured by a 40% reduction in clinical cases of dry period origin (mean 1.07◊0.64 cows in 12), and a 14% reduction in new cell count infections over the dry period (mean 18.0◊15.5%).	Between 2020 - 2021, there was a significant reduction ($p<0.01$) of 15.9% in rate of clinical cases of dry period origin. In 2021, in the third year of the AHDB Herd Advance project, farmers enrolled onto the AHDB Dairy Mastitis Control Plan found there to be a significant reduction in median clinical mastitis incidence rate from 23.5 to 20.5 cases per 100 cows per year. Applying a cost of £313 for a case of mastitis, this represents a saving of £939 per 100 cows per year. There was no significant change in the reported SCC of bulk milk sold. Similarly, farmers on the Herd Advance project who subscribed to either the full AHDB Healthy Feet Programme or mobility scoring only, reported a significant reduction in the median lameness		

Dairy, Beef, and Calves Indicators of Progress		2020	2021	2022	Progress
			this represents a saving of £646 per 100 cows per year. Greater improvement was achieved on farms participating in the Healthy Feet Programme (median change from 25 to 18) compared with that which mobility scored only (median change from 19 to 18).		
	Fall in beef respiratory disease from various 2019 indicators	Data currently unavailable	Data currently unavailable	Data currently unavailable.	

* Scope and Limitations of the Medicine Hub Data:
The antibiotic use data for beef, sheep and dairy were extracted from the Medicine Hub for Ruminants, which was developed by the ruminant industry with support from the VMD and launched by the Agriculture and Horticulture Development Board (AHDB) in 2021. The scope and limitations of the data (as provided by Medicine Hub) are presented below:

- For beef and sheep, these data are aggregated figures for antibiotic use calculated from individual enterprise data held in the Medicine Hub for participating beef herds and sheep flocks across the UK.
- For dairy, these data are aggregated figures for antibiotic use calculated from individual enterprise data held in the Medicine Hub and from aggregate 'bulk data' supplied by third party data holders.
- Medicine Hub uptake to date has been voluntary and this sample may not be reflective of the antibiotic use situation across the whole of the UK
- The data are supplied by farmers, their vets, or bulk data holders and, although clear outliers have been identified and queried, AHDB is not able to validate every individual farmer's data. However, at an aggregated level, the data provide an initial indication of usage within the sample provided.
- The data for 2022 were extracted from Medicine Hub on 22nd September 2023
- The Medicine Hub database and the calculations within it are subject to a series of quality assurance checks to ensure aggregated antibiotic use figures are as accurate as possible. As a result of this process, the Medicine Hub system is continuing to develop and work to further improve data accuracy is ongoing.
- The calculations used for the Medicine Hub data are in-line with the methods defined by the Cattle and Sheep Health and Welfare Groups, and are described here: https://www.ruma.org.uk/measuring-antibiotic-use/ Measuring antibiotic use – RUMA

Sheep Sector

Overview

There continue to be many positive developments to report back on across the sheep sector. Neonatal antibiotic use sales – all authorised products were removed from market from the 2021 lambing season. The Sheep Veterinary Society (SVS) and Sheep Antibiotic Guardian Group (SAGG) continued to engage with many veterinary practices and issue clear guidance to vets in both November 2022 and February 2023 to ensure that appropriate prescribing takes place. Vets had the option to import an equivalent oral spectinomycin from Europe and SAGG continued to monitor import licences and UK purchases. Sales of imported spectinomycin for lambing 2023 were less than half of what they were for lambing 2022 and only 7% of the 2021 oral spectinomycin sales.

The AHDB vaccine report continues year to show an increase in the uptake of a number of sheep vaccines between 2001 and 2022. There were considerable vaccine supply issues that impacted availability and consequently there has been a small reduction in the use of some vaccines (Footrot, Toxoplasma and EAE vaccines). Vaccine supply issues continue and present a challenge.

As in previous years, the Sheep Veterinary Society (SVS) and Sheep Antibiotic Guardian Group (SAGG) have engaged with many veterinary practices and issued clear guidance to vets to ensure appropriate prescribing takes place. In December 2022 guidance was issued on alternative navel dressings due to a risk of reduced availability/high cost of strong iodine (10%) for navel dressing of neonatal lambs.

In September 2023, SAGG launched a new industry campaign #healthyfeethappysheep to support farmers and vets with conversations, signposting to tools and resources to tackle lameness, considered a hot-spot area of use for sheep. In October 2023 the Ruminant Health & Welfare UK Sheep Welfare Strategy 2023-28 was launched. Content is centred around six goals: appropriate ewe condition, collaborative flock management, healthy feet, positive welfare, sheep comfort and thriving lambs. The goals support several metrics within this report.

The RCVS Knowledge Awards for Antimicrobial Stewardship (AMS) showcase practical examples where individuals and/or teams are using Quality Improvement to improve responsible antimicrobial prescribing. The first RCVS Knowledge Awards focusing on AMS were awarded in 2023 celebrating farm veterinary practitioners who have put antibiotic stewardship principles in place to avoid unnecessary treatments for neonatal lambs and following surgical procedures in both calves and ewes https://knowledge.rcvs.org.uk/quality-improvement/qi-awards/.

Medicine Hub

The sheep industry continues its support of Medicine Hub (MH) from AHDB, and its encouragement of sheep farmers and vets to input data. In Oct 2022 Red Tractor included a recommendation that total annual antibiotics used must be collated and uploaded onto MH or equivalent.

The first collated dataset of antibiotic use in the UK cattle and sheep sectors is now available from Medicine Hub, which has been developed and resourced by AHDB on behalf of industry. Totalling over 7500 enterprises across dairy, beef and sheep, these early data give an indication of antibiotic use in ruminants. However, the industry is large and this number of enterprises is not considered representative of the wider industry.

Anecdotally, it has always been felt that the ruminant sector was a low user of antibiotics, but the data have not been available, particularly in the sheep and beef sectors, to validate this view. The good news is that the preliminary data being seen across dairy, beef and sheep from Medicine Hub, go some way to giving us that confidence. It is also becoming evident that the use of Highest Priority Critically Important Antibiotics (HP-CIAs) is minimal across the ruminant sector.

Medicine Hub uptake to date has been voluntary and the scale and complexity of the ruminant sector means it will take time to build up the volume of data. Given the diversity of farms in the sectors, as more enterprises enter data, the usage figures are expected to change. However, the depth of understanding and value of the data to the industry will continue to increase. As data submission accelerates over the next couple of years, the data will become more robust, such that industry can set a national baseline of current performance and start to implement management strategies based on data and intelligence from Medicine Hub, within enterprise types.

A total of 2,160 sheep enterprises were submitted, equivalent to 9% of UK finished lambs. Mean antibiotic usage was calculated to be 7.8 mg/kg. This differs slightly from the figure (7.7 mg/PCU) contained in the VARSS report. Medicine Hub has adopted the Sheep Health and Welfare Group (SHAWG) methodology to calculate sheep metrics. This includes topical antibiotics, which are more widely used in sheep production and also includes flock replacements in the denominator, alongside ewes and finished lambs. Mean usage of HP-CIAs was particularly low for sheep at 0.0003 mg/kg.

Both the “mg/PCU” and “mg/kg” metrics published are extremely useful for national trend monitoring within the dairy, sheep and beef sectors. However, due to the differences in how these figures are calculated, they should not be used to compare antibiotic use between the different sectors.

These are very early days in the drive to capture a comprehensive picture of antibiotic use across the beef, dairy and sheep sectors. The data provided for the 2022 calendar year significantly exceeded the targets set by the Targets Task Force. Work continues to engage stakeholders all along the supply chain to encourage even more use of Medicine Hub for new and existing data sets, in order to achieve the ambitious targets set for Medicine Hub for the years ahead.

Medicine Hub is grateful for the collaboration of individual farmers, vets, bulk data holders/data integrators (Kingshay, Map of Ag, NML), farmer groups (Welsh Lamb and Beef Producers, Blade Farming), milk buyers (Arla, First Milk, Muller, Barbers, Saputo), Herdwatch farm software, the FIIA Group and others for sharing, or facilitating access, to these important data.*

Sheep Sector Progress Against Targets

✔ = in progress ✔✔ = well advanced ✔✔✔ = achieved

Sheep Targets			
Measurement Metric	**Target**	**2022 status**	**Progress**
Calculation, benchmarking, and central upload of data**	**Data from 8,000 (10% of total) UK sheep flocks captured by 2024**	Medicine Hub - please see MH summary in the overview section above. Red Tractor (RT): There are 22,300 beef and lamb members in England. There was a recommendation to upload antibiotic use to Medicine Hub or equivalent added in July 2023 to standards. The Welsh Lamb & Beef Producers (WLBP) AMU Calculator went live in 2021 with early adopter vet practices being able to calculate antibiotic usage on farms. Working with the veterinary profession in Wales WLBP have been able to build on these early foundations. Since July 2022 members of the Farm Assured Welsh Livestock (FAWL) scheme are required to have their antibiotic usage calculated on the platform. This process takes place during the annual health and welfare review which the vet completes in conjunction with the farmers, taking the burden away from the farmers needing to upload and calculate their own usage data. In 2023, WLBP are continuing to work with the lamb, beef and dairy supply chains to measure usage on sheep, beef and dairy farms, and also to facilitate benchmarking to evidence AMU and improve the vet-farmer discussions and decision making during the annual health and welfare review on farm. When requested, WLBP can facilitate the sharing of the farmers data under strict permission with specific supply chains if they so wish. This provides the additional benefit to the farmer in not having to replicate any calculations for numerous supply chains. In 2022 WLBP were part of a Welsh project, ARWAIN DGC. The project aims to reduce the need to use antimicrobials such as antibiotics by improving productivity, animal health and welfare through new and innovative technology and 'good practice'. Early indications are that medicines are being utilised in a way that demonstrates the industry is following responsible practices. WLBP will continue to work with the industry and veterinary profession in Wales to ensure that antibiotic use is utilised responsibly without compromising animal health and welfare.	✓

Sheep Targets			
Measurement Metric	**Target**	**2022 status**	**Progress**
Farm Vet Champions (FVCs) network	**2,800 FVCs in 900 veterinary practices across UK by 2024**	As of September 2023, there are 892 FVC users. 44 SMART goals have been set and 18 teams have been created. RCVS Knowledge has promoted FVC at 14 events, reaching over 650 delegates. Resources are available for all organisations and all veterinary team members to use to promote further uptake in the network, training materials, and the SMART Goals tool. These resources have been accessed 3442 times.	✓
Training uptake among vets	**Specify appropriate training within Farm Vet Champion (FVC) plan**	See FVC information above. A total of 18 teams have been created with 44 SMART goals being set. There have been 14 events and 653 delegates reached through the network.	✓
Medicines best practice training uptake among farmers	**Training becomes requirement in Beef/ Lamb farm assurance**	Quality Meat Scotland (QMS): In the 2022 Cattle & Sheep Scheme standards, QMS introduced a new recommendation. At least one member of staff responsible for administering medicines has undertaken training in the administration and handling of medicines". Details on training courses can be found at: www.qmscotland.co.uk/cattle-sheep-standards and at www.noah.co.uk/farmer-training The standards will be fully reviewed in 2024 and it is likely that this recommendation could change to a full standard. Red Tractor (RT): There was recommendation to upload antibiotic use to Medicine Hub or equivalent added in July 2023 to standards. On farmer training was made a full standard in Version 5 of standards launched in Nov 21. Amongst Red Tractor Farm Assured Beef and Lamb enterprises there has been a drop from 30% of members having an NC raised against this requirement after this was made a full standard in the last quarter of 2021. The average during 2022 was 23%, with the final quarter being 20% of assessments. On NOAH's Animal Medicines Best Practice (AMBP) training a total of 102 people complete the AMBP Sheep training in 2022 and this reflected 25% of all of the AMBP course content accessed. In Northern Ireland it is mandatory for members of the Northern Ireland Beef and Lamb Farm Quality Assurance Scheme (NIBL FQAS) to attend training on the Responsible Use of Antimicrobials on beef and sheep farms. As of September 2023 over 10,500 of the 11,500 farm businesses have been trained with over 16,600 individual farmers now trained.	✓ ✓

Sheep Targets			
Measurement Metric	**Target**	**2022 status**	**Progress**
	All vet school and agriculture college/ university courses include medicines best practice content by 2024	FVC presentations have been delivered online to FAVS (Farm Association of Veterinary Students) and FVC has been promoted to veterinary student teaching staff. There are 105 FVC users who have identified as veterinary students (though this is not a compulsory field so may not encompass all student users). The FVC resources have been accessed 3,442 times. All vet school courses include information on medicines best practice. The Veterinary Schools Council also published VSC guidance on antimicrobial stewardship in January 2023: https://www.vetschoolscouncil.ac.uk/news/new-guidance-on-antimicrobial-stewardship-published/.	✓

Sheep Targets			
Measurement Metric	**Target**	**2022 status**	**Progress**
	Increased health planning on sheep farms tracked through FVCs and other initiatives	In early 2023 both the Sheep Antibiotic Guardian Group (SAAG) and the Farm Vet Champion Sheep Ambassador group identified lameness and ovine infectious keratoconjunctivitis (OIKC, pink eye) as reasons for high use of antibiotics in certain sheep flocks and set SMART goals to address these. As a direct result, the following initiatives took place: • OIKC – SVS online conference in May 2023 discussed OIKC with European colleagues who clearly advised against using injectable antibiotics for mild or unaffected sheep facing an outbreak due to its detrimental effect on immunity causing significant protraction of outbreaks. This discussion is available as a webinar at https://www.youtube.com/watch?v=XdSzZ6foT24 • Lameness – In recognition of the treatment of lameness being responsible for the majority of antibiotics used in the sheep industry, the Sheep Antibiotic Guardian Group launched an industry-wide collaborative campaign in September 2023 #HealthyFeetHappySheep with a dedicated website for both farmers and vets to highlight available resources. In particular, the campaign used the Plan, Prevent, Protect, mantra and encouraged sheep farmers to invite vets to undertake 'Healthy Feet' visits on farm. Vets were encouraged to hold Flock Health Club meetings and to undertake farm visits specifically to tackle lameness. #HealthyFeetHappySheep presentations are to be included at the British Cattle Veterinary Association (BCVA) Congress and NSA Sheep Farmer conference in Birmingham in October 2023 and at the London Vet Show in November 2023. The SVS Autumn Conference in September 2023 hosted three sessions on vaccine use including: a key note presentation on induction of immune response by vaccine platform technologies, sheep vaccine developments and solutions and NOAH Category 1 guidelines.	✓✓

Sheep Targets			
Measurement Metric	**Target**	**2022 status**	**Progress**
		In October 2023, the NSA held its biennial Sheep Farmer's Conference and a three-day Sheep, Health, Wealth and Production conference. Both events included focused content on a several health planning topics. RCVS Knowledge worked in conjunction with the Society of Practising Veterinary Surgeons (SPVS) to host a Farm Vet Champions session at BCVA with input from the Chairs of CAGG and SAGG as well as case studies from Antimicrobial Award winners to motivate and inspire cattle practitioners. Defra launched its Animal Health and Welfare Annual Health and Welfare Reviews for livestock farmers in England in Spring 2023. This three-year voluntary programme co-designed with industry supports increased health planning on farm and includes a recommendation to discuss responsible medicine use on farm. The Arwain Vet Cymru project: In September 2023, Hybu Cig Cymru (Meat Promotion Wales - HCC) completed the delivery of the Red Meat Development Programme (RMDP) in Wales. The RMDP was a five-year strategic initiative that looked at three specific work areas which includes animal health, sheep genetics and lamb meat eating quality. For the animal health element, HCC worked with nearly 400 farmers and their vets to promote proactive flock and herd health management. Following the completion of the work, 97% of farmers responded that they were more aware of the importance of animal health planning from being part of the project, and 100% responded that they would now continue to work closer with their vet. Within the project, specific areas of activity were identified to support improvements in animal health and these included sheep and beef fertility projects and a sheep lameness project.	

Sheep Sector Indicators of Progress

✔ = in progress ✔✔ = well advanced ✔✔✔ = achieved

Sheep Indicators of Progress		2020	2021	2022	Progress
Oral antibiotic sales for lambs	**Annual reduction of 10% in doses/ year; baseline 7.45 million**	21.5% reduction from 7.45 million doses in the year from Sept 19 to Aug 20 to 5.85 million doses in the year from Sept 20 to Aug 21 47.9% reduction over last 5 years	No longer an applicable metric. Following the considerable reduction in use of oral antibiotic for neonatal lambs reported in the last TTF report, all authorised products were removed from the market for the 2022 lambing season which means that using the same metrics as previous years, usage would now be zero.	No longer an applicable metric. Following the considerable reduction in use of oral antibiotic for neonatal lambs reported in the last TTF report, all authorised products were removed from the market for the 2022 lambing season. Vets had the option to import an equivalent oral spectinomycin from Europe and SAGG continued to monitor import licences and UK purchases. Sales of imported spectinomycin for lambing 2023 were less than half of what they were for lambing 2022 and only 7% of the 2021 oral spectinomycin sales.	✓✓
Highest priority antibiotic use (from centralised data)	**Ensure does not rise in sheep above 0.05% of total sheep use**	Use remains very low and there is no evidence that it has increased.	Use remains very low and there is no evidence that it has increased. Exact figures pending	Use remains very low and there is no evidence that it has increased. Exact figures pending.	✓

Sheep Indicators of Progress		2020	2021	2022	Progress
Mortality rates	**Increase in lamb survivability from various indicators**	Completion of levy board Neonatal Survival Project – planned vet CPD courses. Survivability data and trends not currently available.	Survivability data and trends not currently available. The Neonatal Survival Project (a collaborative project funded by the joint levy boards of England, Scotland and Wales) culminated in vet CPD sessions in January 2021 with 41 attendees over three events, and very positive feedback.	Survivability data and trends not currently available. In light of ongoing issues with sheep vaccine supplies, SAGG will consider in 2024 whether national surveillance data on abortions could provide a useful metric to report EAE and toxoplasmosis prevalence trends against vaccine use.	✓
Health and welfare metrics	**Increased annual uptake of vaccines in sheep, baseline 2019**	Analysis of vaccine use in sheep and cattle for 2020 was completed and was published on the AHDB website as webpages - http://www.ahdb.org.uk/vaccineuse. Penetration of EAE vaccine increased from 43% in 2019 to 50% in 2020 and penetration of Footrot vaccine increased from 14% in 2019 to 16% in 2020.	Analysis of UK vaccine use in sheep for 2021 has been completed and is published on the AHDB website. For the sheep vaccines monitored, the total number of doses sold increased by 12.6% between 2011 and 2021. Penetration of clostridial disease vaccines increased from 57.0% in 2020 to 62.8% in 2021, with a 10.2% increase in doses sold observed within this period. Similarly, penetration of Footrot vaccinations increased from 15.6% in 2020 to 19.4% in 2021.	Analysis of UK vaccine use in sheep for 2022 has been completed and is published on the AHDB website (https://ahdb.org.uk/knowledge-library/use-of-vaccines-in-sheep). For the sheep vaccines monitored, the total number of doses sold increased by 13.9% between 2011 and 2022 to approximately 37 million doses. From 2021 to 2022, Clostridia and Pasteurella vaccine use increased. Unfortunately, due to vaccine supply shortages, use of Footrot, Toxoplasma and EAE vaccinations decreased during this period.	✓

Sheep Indicators of Progress		2020	2021	2022	Progress
			Penetration of EAE vaccines only increased by 0.7% between 2020 and 2021 and penetration of Toxoplasma vaccinations remained at 30.7% between 2020 and 2021. NOAH has launched a Livestock Vaccination Guideline (for dairy, beef, and sheep sectors), providing support to vets, SQPs and farmers, to help improve the health and welfare of UK sheep and cattle and support farm resilience and sustainable improvements in productivity.	In 2022, the estimated proportion of sheep vaccinated for clostridial diseases (65.2%) and for pasteurellosis (52.4%) were both above the 2012-2022 average. In the year to 2022, the number of doses of Clostridia vaccine sold increased by 3.8%, whilst the number of doses of Pasteurella vaccine increased by 2.7%. The estimated proportion of breeding sheep vaccinated for Toxoplasma decreased from 30.7% in 2021 to 20.3% in 2022. Uptake of Footrot vaccinations, which had previously risen rapidly to 19.4% during 2021, fell to 16.3% in 2022. Similarly, uptake of EAE vaccines fell from 49.9% to 44.1% during the year to 2022. There was a large reduction in Toxoplasma vaccination use from 30.7% in 2021 to 20.3% in 2022. These decreases are likely a result of supply issues with Footvax, Toxovax and EAE vaccinations in 2021 and 2022.	

Sheep Indicators of Progress		2020	2021	2022	Progress
				A recent longitudinal study over six years failed to demonstrate a direct link between the quantity of antibiotic and vaccine use on 272 GB sheep farms though the authors point out that there are a wide range of potential confounding biological and behavioural factors that may influence the relationship between vaccine use, vaccine efficacy, disease prevalence and AMU and that unravelling this complex relationship was outside the scope of the study. For this reason, as well as the ethical and welfare benefits to preventative health measures such as vaccination, SAGG considers it is important to continue to encourage and monitor vaccine use in the sheep sector.	

* Scope and Limitations of the Medicine Hub Data:

The antibiotic use data for beef, sheep and dairy were extracted from the Medicine Hub for Ruminants, which was developed by the ruminant industry with support from the VMD and launched by the Agriculture and Horticulture Development Board (AHDB) in 2021. The scope and limitations of the data (as provided by Medicine Hub) are presented below:

- For beef and sheep, these data are aggregated figures for antibiotic use calculated from individual enterprise data held in the Medicine Hub for participating beef herds and sheep flocks across the UK.
- For dairy, these data are aggregated figures for antibiotic use calculated from individual enterprise data held in the Medicine Hub and from aggregate 'bulk data' supplied by third party data holders.
- Medicine Hub uptake to date has been voluntary and this sample may not be reflective of the antibiotic use situation across the whole of the UK
- The data are supplied by farmers, their vets, or bulk data holders and, although clear outliers have been identified and queried, AHDB is not able to validate every individual farmer's data. However, at an aggregated level, the data provide an initial indication of usage within the sample provided.
- The data for 2022 were extracted from Medicine Hub on 22nd September 2023
- The Medicine Hub database and the calculations within it are subject to a series of quality assurance checks to ensure aggregated antibiotic use figures are as accurate as possible. As a result of this process, the Medicine Hub system is continuing to develop and work to further improve data accuracy is ongoing.
- The calculations used for the Medicine Hub data are in-line with the methods defined by the Cattle and Sheep Health and Welfare Groups, and are described here: https://www.ruma.org.uk/measuring-antibiotic-use/ Measuring antibiotic use – RUMA

**Of note: A longitudinal study published AMU use on 272 sheep farms from 2015 to 2021. The aim of the study was to describe the longitudinal dynamics of antimicrobial use (AMU) on sheep farms and explore associations between AMU and management factors, vaccination strategies, reproductive performance and prevalence of lameness. The study concluded that AMU on sheep farms is generally low, with a small number of farms being responsible for high usage. Annual median AMU ranged from 8.1 to 11.8 mg/kg population corrected unit. (Davies PL, Hyde RM, Lovatt FM. Longitudinal study of antimicrobial use patterns, vaccination and disease prevalence in British sheep flocks. Vet Rec. 2023;e2786. https://doi.org/10.1002/vetr.2786)

Pig Sector

Overview

In 2022 the pig sector continued to prioritise the health and welfare of the pig herd reducing the usage of antibiotics by 20% to 72 mg/kg PCU[1]. The continuing low use of Highest Priority Critically Important Antibiotics fell again to 0.01 mg/kg PCU with no use of colistin, further demonstrates the ongoing responsible approach to the health of pigs in the country.

The 2022 data shows the pig sector has achieved an overall 74% reduction in antibiotic use since 2015, and takes the sector below the RUMA Targets Task Force 2 target. Meeting the target early is a reflection of the extended use of zinc oxide manufactured before the withdrawal of its Marketing Authorisation (MA) as permitted by the Veterinary Medicines Directorate (VMD). The supply of zinc oxide is close to depletion and it is anticipated that some producers will be unable to find a solution for post-weaning diarrhoea that works for their unit with the current tools available. These producers are likely to be compelled to manage the health and welfare of their pigs post-weaning through the use of antibiotics to treat clinical disease, as has been the case in some EU countries that have already lost the use of zinc oxide.

Significant challenges continued for the sector in 2022; although the financial situation improved, the estimated cost to producers of the previous few years was £750 million. The cost of production remains high and there is significant debt which needs repaying before infrastructure investments can be made. A consequence of the previous two years has been the contraction of the UK sow herd by about 25%, leaving the smallest herd the country has had for some time.

With a reduction in herd size comes a reduction in levy which has resulted in the need for AHDB to prioritise their work and the subsequent loss of the Pig Health Scheme (PHS) at the end of 2022. The scheme was a useful indicator for pig health and was used as a benchmarking tool by producers and their vets. The relationship between producers and their vets remains strong and underpins the responsible approach to medicine usage. During adversity and challenge the British pig sector continues to demonstrate a responsible approach to medicines and the success achieved to date is one they are rightly proud of.

[1] Data collected by AHDB using the electronic Medicine Book (eMB), represents approximately 95% of pigs slaughtered in the UK

Pig Sector Progress Against Targets

✔ = in progress ✔✔ = well advanced ✔✔✔ = achieved

Pig Targets			
Measurement Metric	**Target**	**2022 status**	**Progress**
Persistently High Users (PHUs)	**Introduce a programme in 2021 supporting PHUs to reduce use**	Quality Meat Scotland (QMS) has introduced a standard in line with Red Tractor standards that requires Persistently High Users (as defined and reviewed by the Pig Health and Welfare Council - PHWC) to develop an antibiotic reduction plan in conjunction with their vet using the PHWC template. This should be reviewed quarterly and must indicate progress made. AHDB continues to notify producers in the upper 5-10% usage range that they are close to being identified as a PHU in the eMB as an early warning system. The thresholds for PHU status have fallen in 2022. The PHWC continues to review the definition of PHU but no changes were made in 2022.	✓ ✓ ✓
Pig Health metrics	**Monitor effects of reduced antibiotic use annually**	The PHWC Pig Health subgroup, meets regularly to discuss pig health and makes use of any available data to inform the discussion and establish whether relevant activity is required. Discussions between the subgroups of the PHWC are frequent at the PHWC Council meetings. The Pig Health Scheme (PHS) stopped at the end of 2022, having been a valuable tool which producers and their vets used to inform their approach to the health of their herd. There is no equivalent scheme planned for producers in England currently. A parallel scheme in Scotland (Wholesome Pigs Scotland - WPS) continues to operate.	✓ ✓

Pig Targets			
Measurement Metric	**Target**	**2022 status**	**Progress**
Plan for weaner management	**Identify/launch best-practice weaner management before 2022**	AHDB completed a Rapid Evidence Assessment (REA) to assesses how alternative practices – nutritional changes, management changes, and improving the immune status – impact levels of post-weaning diarrhoea, post-weaning mortality and growth rate. The REA concluded there is no single intervention that scores as highly on repeatability, reliability or cost-effectiveness as the use of zinc oxide at therapeutic levels to control post-weaning diarrhoea, highlighting the need for a multifactorial approach tailored to each farm. AHDB put together a report and a return-on-investment calculator. Communications on this topic from AHDB, NPA, PVS and others has continued to producers through 2022.	✓
Shift from in-feed medication	**Ensure Government post-Brexit plans support switch to in-water**	This data is collected by the VMD and published in the VARSS report annually. While in-feed medication remains the most common route for delivery, this continues to decrease and in 2022 accounted for 50% of annual use (down from 59% in 2021). In-water antibiotics now account for 45% of active ingredient used, compared with 37% in 2021. As part of the Animal Health and Welfare Pathway (AHWP) the Government provided financial support for producers in England through the Equipment and Technology Grants to support the improvement of pig health and welfare. This included equipment to facilitate in-water medication.	✓ ✓
e-Medicine Book (eMB) data	**Maintain/increase on-time submission of data to eMB annually**	Timely submission of eMB data continues to be good with 87% on time. AHDB, QMS and other stakeholder groups remind producers ahead of the submission dates for antibiotic usage data.	✓ ✓ ✓

Pig Targets			
Measurement Metric	**Target**	**2022 status**	**Progress**
Medicines training uptake	**Review gaps and increase opportunities for uptake, baseline 2020**	QMS has introduced a standard which recommends that there is a named person responsible for medicines on farm, who is trained and revised every two years. Compliance remains high for the Red Tractor standard which requires at least one team member on each unit to have undertaken approved training in the responsible use of medicines, with 99% of Red Tractor pig farms meeting the standard at audit. Latest analysis (Qtr.2, 2023) saw just four Non-Conformances raised for this standard; members have 28 days to rectify non-conformances. Red Tractor has approved 21 pig-specific responsible use of medicines courses. The approval process involves a check of the course provider's training material to ensure it meets all the learning objectives. Producers are also able to access courses approved by Red Tractor for the ruminant standards.	✓ ✓ ✓

Pig Indicators of Progress

✔ = in progress ✔✔ = well advanced ✔✔✔ = achieved

Pig Indicators of Progress		2020	2021	2022	Progress
Antibiotic use (from eMB)	**30% reduction in total use by 2024, baseline 2020**	Antibiotic usage was 105 mg/ PCU in 2020.	The 2021 eMB data was published in June 2022. Antibiotic usage was 87mg/PCU in 2021. Antibiotic usage in the pig sector has reduced by 17% from the 2020 baseline. This equates to an overall reduction of 69% since 2015.	The 2022 eMB data was published by AHDB in June 2023. Antibiotic usage was 72mg/ PCU in 2022. Antibiotic usage in the pig sector has reduced by 17% from 2021. This equates to an overall reduction of 74% since 2015.	✓ ✓ ✓
Highest priority antibiotic use (from eMB)	**Use equal to or lower than 2019 baselines**	0.05 mg/PCU No colistin use was reported in pigs 2020.	2021 figures: 0.03mg/PCU - a slight decrease from recorded use in 2020 (0.05mg/PCU). No Colistin use was reported in pigs in 2021.	The 2022 eMB data showed use of highest priority critically important antibiotics remains very low at 0.01 mg/ PCU. No Colistin use was reported in pigs in 2022.	✓ ✓ ✓
Antimicrobial resistance surveillance	**Monitor current data; aim for reduction on 2020 baselines**	Antibiotic resistance continues to be monitored by the VMD and reported annually in the VARSS report. The harmonised monitoring of antibiotic resistance carried out by the VMD continues biennially and they will report on 2021 data in 2023. Clinical surveillance continues and helps the PHWC to identify emerging issues, although the group is mindful that it is not representative data.		Antibiotic resistance continues to be monitored by the VMD and reported annually in the VARSS report. PHWC works with the VMD if concerns arise from this to ensure any action is based on evidence. Clinical surveillance continues and helps the PHWC to identify emerging issues, although the group is mindful that it is not representative data.	✓ ✓

Salmon Sector

Overview

In 2022, the Scottish salmon farming sector continued to focus on the responsible use of antibiotics, balancing the need to protect fish health and welfare with a global aim to reduce use. The sector successfully achieved all of its targets, with activity against those targets, data collation and overall antibiotic stewardship, driven forward through the Salmon Scotland Prescribing Vets (SSPV) group.

Salmon farmers recorded an overall reduction in the volume of antibiotic used, compared to 2021 and 2020. Reductions were observed in both the freshwater and marine phases of production. Antibiotic treatments are still limited to a relatively small number of farms each year, with only 1.5% of freshwater farms and 8.7% of marine farms undertaking an antibiotic treatment in 2022.

In 2022, the majority of treatments were with oxytetracycline, with a smaller volume of florfenicol also used. As with 2021, there was no use of oxolinic acid, which is defined as a higher priority antibiotic.

Environmental considerations:

Salmon are farmed in the wild lochs around Scotland's coastline. They are sensitive to environmental changes, which can have direct impacts on the fish, but which more often impact the development and proliferation of some of the harmful organisms that can impact fish health and welfare.

In 2022, the salmon sector recorded a reduction in antibiotic use, and did so against challenging conditions within the marine environment where salmon are farmed. Increased water temperatures and oceanic changes further afield led to, in particular, significant and much publicised challenges with blooms of harmful algae and micro jellyfish during late summer and autumn. Although antibiotics are clearly not used against such organisms, jellyfish and harmful algal blooms can impact fish health, potentially leading to secondary bacterial infection. The sector continues to monitor its fish and the farming environment on a daily basis, promptly reacting wherever necessary.

Salmon Sector Progress Against Targets

✔ = in progress ✔✔ = well advanced ✔✔✔ = achieved

Salmon Targets			
Measurement Metric	**Target**	**2022 status**	**Progress**
Highest priority antibiotic use	**Only prescribed as last resort after sensitivity testing**	No HP CIAs used	✓ ✓ ✓
Vaccination of Atlantic salmon	**All Atlantic salmon vaccinated before seawater phase**	100% of fish vaccinated against key bacterial and viral health challenges.	✓ ✓ ✓
Use of autogenous vaccines	**To be developed in absence of licensed vaccines**	Autogenous vaccines developed where appropriate.	✓ ✓ ✓
Prescribing Vets' group input	**Quarterly meetings, antibiotic stewardship a standard item**	Quarterly meetings of the Salmon Scotland Prescribing Vets group (SSPV) held alongside ad hoc meetings as required.	✓ ✓ ✓
Compliance with Code of Good Practice	**All producers compliant with Code of Good Practice**	100% of salmon produced to the standards of the Code of Good Practice.	✓ ✓ ✓
Collection/ collation of data	**100% collection and reporting of antibiotic use**	Data collated from all prescribing veterinary practices, covering 100% of the salmon farmed in Scotland.	✓ ✓ ✓

Salmon Sector Indicators of Progress

✔ = in progress ✔✔ = well advanced ✔✔✔ = achieved

Salmon Indicators of Progress		2020	2021	2022	Progress
Antibiotic use (from usage data)	**Aim for maximum 5 mg/kg annually**	2020 usage = 29.3mg/kg	2021 usage = 43.1mg/kg	2022 usage = 18.6 mg/kg The TTF Indicator of Progress is highly ambitious. Fish veterinarians will continue to focus on responsible use of antibiotics, balancing the health and welfare needs of the fish against an overall desire to reduce use and to meet this ambitious level.	✓
Metric for % fish treated	**Develop new metric to indicate the % of fish treated annually**	In 2020 the Prescribing Vets Group established a new metric that reports the percentage of active farms that were treated with antibiotic in 2020. This metric considers the freshwater and marine production phases separately. In 2020 6.9% of freshwater farms and 4.4% of marine farms were treated with antibiotics.	In 2021, 8.5% of freshwater farms and 4.9% of marine farms were treated with antibiotics.	In 2022, only 1.5% of freshwater farms and 8.7% of marine farms were treated with antibiotics. This continues to demonstrate that use is restricted to a small number of farms, where antibiotics were responsibly prescribed in response to a specific health issue.	✓ ✓ ✓

Trout Sector

Overview

In 2022, usage of antibacterials increased temporarily above the TTF target to 44.1 mg/kg. This was in response to an outbreak of Aeromonas salmonicida on a small number of production sites with rainbow trout at a large size and therefore high biomass, meaning that antibiotics were needed for treating disease that would otherwise have had welfare consequences. This is not anticipated to recur and it is expected that the Trout sector will once again fall below the industry target of 20mg/kg in 2023. The Trout sector has a proven track record of reduced usage over the past five years. The extreme weather conditions seen 2022 caused higher water temperatures which in turn proved challenging for some farms. The sector continues to look at ways of mitigating issues caused by extreme weather.

The industry is committed to decreasing usage and there is no prophylactic usage of antibacterials.

The trout sector is undergoing changes with a move towards larger fish production. This means the tonnage of standard table fish has decreased. Total tonnage has increased based on fewer but larger fish.

Trout Sector Progress Against Targets

✔ = in progress ✔✔ = well advanced ✔✔✔ = achieved

Trout Targets			
Measurement Metric	**Target**	**2022 status**	**Progress**
Stewardship of antibiotics	**No preventative use; no highest priority antibiotics used routinely; pathogen surveillance through 'bug bank' initiative**	This has proved successful, but this can only go so far as treatment cannot be withheld on welfare grounds. With support from CEFAS and VMD the 'Bug Bank' project is up and running. 150 bug samples have now been submitted which will allow CEFAS to collect data on the bug type and distribution across the UK, checking for any resistance on antibiotics that are used for treatments and keeping the bugs in cryo for future work on vaccines.	✓ ✓ ✓
Vaccine uptake	**Vaccination in freshwater phase to be increased, baseline 2020**	Uptake of vaccines continues to be high, held back only by supply from big-pharma during 2022.	✓ ✓
Promotion of best practice	**All members compliant with quality standards**	The industry follows best practice, Table Trout production follows best practice by being audited to the Quality Trout UK Standard	✓ ✓ ✓

Trout Sector Indicators of Progress

✔ = in progress ✔✔ = well advanced ✔✔✔ = achieved

Trout Indicators of Progress		2020	2021	2022	Progress
Antibiotic use (from usage data)	**Maintain usage below 20 mg/kg**	13.9mg/kg	5.9mg/kg* *The industry has reduced usage again, but this may be the limit.	44.1 mg/kg The industry has reduced usage over five years. 2022 proved challenging with usage increasing in response to a disease outbreak.	✓ ✓
Metric for % fish treated	**Develop a new metric to indicate the % of fish treated annually**	In progress		In development. Treatment at hatcheries is common. Vaccines are not available	✓

mg/kg produced	2017	2018	2019	2020	2021	2022	Change 2017-2021 (%)
Oxytetracycline	7.3	3.8	5.1	7.7	4.3	40.0	+445
Oxolinic acid	6.6	5.8	2.4	4.3	3.2	2.2	-67.3
Florfenicol	4.4	2.2	1.9	1.9	1.4	2.0	-55.5
Amoxicillin	0.9	1.2	0.2	0.0	0.0	0.0	-100
Grand Total	19.2	13.0	9.7	13.9	5.9	44.1	+130

Gamebird Sector

Overview

The gamebird sector was heavily impacted by Avian Influenza (AI) in 2022. A catastrophic outbreak in France prevented the importation of hatching eggs to the UK from the usual supply chain in the affected area of France. Consequently, new sources of eggs were explored with varying degrees of success and most UK suppliers continued to collect eggs for an additional two-three weeks to try to cover the shortfall. This resulted in poorer than usual egg and chick quality which had an impact on antibiotic use. However, overall antibiotic use was down by approximately 25% compared to 2021, whereas the number of birds reared was estimated to be 17% lower than 2021, so progress was still made in reducing antibiotic use per bird. This was helped by relatively good weather in the peak releasing months of July and August.

The weather is having an increasingly greater impact on antibiotic use in the gamebird sector. The sector is more vulnerable to the effects of weather than any other, and this is equally true during the rearing cycle at the time of release (although treatment at time of release increases antibiotic use disproportionately as a course of treatment requires a greater quantity of medication as the birds get older). As the effects of climate change appear to create more extreme weather patterns, there is a distinct correlation with weather patterns and the effect on antibiotic use in the gamebird sector, whether it be due to wet weather affecting egg cleanliness, hot weather leading to heat stress, damp weather creating problems with hexamita and coccidiosis, or cold windy weather making it difficult to maintain uniform temperatures in brooder huts; all these factors contribute to increasing the need for medical intervention.

Gamebird Sector Progress Against Targets

✔ = in progress ✔✔ = well advanced ✔✔✔ = achieved

Gamebird Targets			
Measurement Metric	**Target**	**2022 status**	**Progress**
Discussion with vets	**Every rearer to calculate use and discuss with their vet**	Progress made with gamebird vets more widely used in the sector and having greater influence.	✓✓
Improve husbandry	**Monitor uptake of new British Game Alliance Game Farm Audits**	Uptake poor due to aftereffects of Covid and the impact of AI on the 2022 season. Vet led Health and Welfare scheme has launched successfully.	✓
Increase education	**Enhance existing learning tools**	Good uptake of BVPA, AIC and other vet delivered training modules.	✓✓
Medicated feed stewardship	**Work with Game Feed Trade Association to steward sales**	Good liaison with feed trade to educate on antibiotic stewardship and lasalocids.	✓✓
Monitor welfare effects	**Ensure antibiotic reductions are safe and sustainable**	Greater involvement of gamebird vets in the sector has ensured that antibiotic use has been minimised without compromising welfare.	✓✓
Research into damaging diseases	**Promote research into ways to reduce disease pressures**	Research is continuing into hexamita (the single biggest cause of antibiotic use in the sector).	✓

Gamebird Sector Indicators of Progress

✔ = in progress ✔✔ = well advanced ✔✔✔ = achieved

Gamebird Indicators of Progress		2020	2021	2022	Progress
Antibiotic Use (from usage data)	**Reduce use by 40%, baseline 2019 of 10.4 tonnes**	2020 use: 6.0 tonnes (42% reduction from 2019 baseline)	2021 use: 9.0 tonnes in line with the 40% reduction by 2024, a 10%* reduction was made when compared to 2019. *excluding 2020 figures due to pandemic	2022 use: 6.4 tonnes against TTF2 target of 6.24 tonnes (but with reduced number of birds reared).	✓✓
Highest priority antibiotic use (from usage data)	**Reduce use by 19% to 47kg, baseline 2019 of 58 kg**	2020 use: 22Kg (63% reduction from 2019 baseline)	2021 showed a 48% reduction compared to base year of 2019.	2022: HP-CIA use in the sector fell by 12% to 20kg in 2022 (but with 17% less birds reared).	✓✓✓

Laying Hens Sector

Overview

The antibiotic use data from members of the British Egg Industry Council (BEIC) Lion Scheme for 2022 shows further reductions and continues to be below the target of 1% bird days, and for the sixth year running no HP-CIAs were used. This is a significant achievement, especially in light of the major challenges in 2022, which included cost of production increases and bird flu outbreaks.

The Lion standard continues to focus on bird health through good biosecurity and hygiene, as well as feed and water quality. Version 8 of the Scheme has seen significant developments in biosecurity requirements. Training of the enhanced requirements of Version 8 of the Lion Scheme is also required, and the training modules encourage prudent use of antibiotics. All Lion accredited breeder, pullet rearing and laying farms have to be registered with a vet and have an up-to-date flock specific or annual veterinary health and welfare plan.

The industry is continuing the trend for retail supply away from enriched colony cage production and towards free-range and barn production. The sector is confident that it will continue to remain below its on-going antibiotic use target of 1% bird days, and 0.05% bird days for HP-CIAs.

The sector has maintained robust vaccination programmes and good biosecurity with ongoing cooperation and understanding amongst vets and farmers that antibiotic use is generally a last resort. Management practices, especially pre-emptive, are more successful.

Laying Hens Sector Indicators of Progress

✔ = in progress ✔✔ = well advanced ✔✔✔ = achieved

Laying Hens Indicators of Progress		2020	2021	2022	Progress
Antibiotic use (usage data)	**Maintain bird days treated below 1%**	The antibiotic usage data from members of the BEIC Lion Scheme continues to remain below the %1 bird days.			✓ ✓ ✓
HP-CIA use (usage data)	**Fluoroquinolone days medicated remains below 0.05%**	No HP-CIAs were used.			✓ ✓ ✓

Poultry Meat Sector

Overview

Poultry is half the meat eaten in the UK. The sector's producers have a responsibility to deliver excellent animal health and welfare to enhance the productivity of an industry feeding the nation. The challenges faced daily are varied and often extreme: businesses are dealing with the challenges of Highly Pathogenic Avian Influenza (HPAI), ongoing UK-EU trade barriers, and a cost of production crisis. Nevertheless, demand for quality and affordable food prevails, meaning the responsible use of antibiotics remains a priority.

With a responsibility to feed the nation and a duty of care to protect bird health and wellbeing, British Poultry Council (BPC) members have demonstrated phenomenal resilience. As a result, we remain below antibiotic target usage levels: broiler chickens are at 14.05 mg/PCU under the 25 mg/PCU sector-specific target, and turkeys are 35.36 mg/PCU under 50 mg/PCU. Any fluctuations demonstrate the sector's treatment in real time, only using antibiotics when necessary.

Of particular note, no fluroquinolones were used in chicken meat production in 2022. Overall use of CIAs (including Macrolides and Polymyxins) have decreased 98.7% since 2012; these are prescribed as a last resort only after other treatments have been considered.

The BPC Antibiotic Stewardship is at the core of British poultry meat producers' commitment to progress.

The impact of a combination of challenges such as rising production costs, ongoing labour shortages, the impacts of avian influenza an burdensome EU-UK trade barriers, means British poultry meat businesses are being pushed to capacity.

Members of the BPC Antibiotic Stewardship continue to collaboratively drive improvements and best practice across the whole supply chain. As new alternate management practices and therapies come to market, these will be critically assessed and the benefits and experiences gained shared across the sector. The BPC Antibiotic Stewardship believe it is this level of transparent and quality communication across the sector in a pre-competitive space that is key to ensuring continuous improvement.

Ensuring responsible use of antibiotics remains a priority for British poultry meat producers. If industry can continue to get it right, as it always strives to do, it can continue ensuring safe, affordable, and nutritious food for all.

Poultry Meat Sector Indicators of Progress

✔ = in progress ✔✔ = well advanced ✔✔✔ = achieved

Poultry Meat Indicators of Progress		2020	2021	2022	Progress
Antibiotic use (usage data)	**Use remains < 25mg/kg PCU in broiler production; reviewed 2021**	16.3 mg/kg PCU	13.66 mg/kg PCU	14.05 mg/kg PCU	✓ ✓ ✓
	Use remains < 50mg/kg PCU in turkey production; reviewed 2021	25.7 mg/kg PCU	42.55mg/kg PCU	35.36 mg/kg PCU	✓ ✓ ✓

Appendices

The RUMA Targets Task Force 2:

Chair of the RUMA TTF - Cat McLaughlin

Beef	**Mark Jelly** – Beef Farmer **Elizabeth Berry** – Vet
Dairy	**Karen Halton** - Dairy Farmer **Elizabeth Berry** – Vet
Calves	**Richard Cooper** – Vet
Sheep	**Charles Sercombe** – Sheep Farmer **Fiona Lovatt** – Vet
Pigs	**Richard Lister** – Pig Farmer **Alex Thomsett** – Vet
Salmon	**Iain Berrill** - SSPO
Trout	**Oliver Robinson** – BTA **Peter Scott** – Vet
Gamebirds	**Paul Jeavons** – Game Farmer **Dr Kenny Nutting** – Vet
Laying hens	**Ian Lowery** – Vet
Poultry Meat	**Thomas Wornham** – Poultry Farmer **Daniel Parker** – Vet

Observers:

Gwyn Jones – Past Chair, **Anna Judson** – BVA, **Fraser Broadfoot** – VMD, **Donal Murphy** – NOAH, **Georgina McDowell** – Red Tractor, **Mandy Nevel** – AHDB

RUMA Chairing and Organisation:

Catherine McLaughlin - Chair, **Chris Lloyd** - Secretary General, **Dawn Howard** - Deputy Chair, **Tim Brigstocke** - RUMA Treasurer, **Mary Bawn** - Communications Manager

Abbreviations & glossary

AHDA	Animal Health Distributors' Association
AHDB	The Agriculture and Horticulture Development Board (AHDB) is a statutory levy board, funded by farmers, growers and others in the supply chain to help the industry succeed in a rapidly changing world.
AHWP	Animal Health and Welfare Pathway
AIC	Agricultural Industries Confederation
AMR	Antimicrobial Resistance
AMU	Antimicrobial Use
Antibiotic	A medicine specifically used to prevent and treat bacterial infections. This report is primarily focused on the use of antibiotics, as a subset of wider antimicrobials
Antimicrobial	A product which kills or slows the spread of a range of microorganisms including bacteria, viruses, protozoa, and fungi. Antibiotics are antimicrobials.
APHA	Animal and Plant Health Agency, formerly AHVLA
AHWBE	Animal Health and Welfare Board England
BCMS	British Cattle Movement Service
BCVA	British Cattle Veterinary Association
BEIC	British Egg Industry Council
BGA	British Game Assurance
BMPA	British Meat Processors' Association
BPC	British Poultry Council
BTA	British Trout Association
BVPA	British Veterinary Poultry Association
BVA	British Veterinary Association
BVD	Bovine Viral Diarrhoea
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CHAWG	Cattle Health and Welfare Group of Great Britain
CoGP	Code of Good Practice for Scottish Finfish Aquaculture
CTS	Cattle Tracing System
CVO	Chief Veterinary Officer
Dairy UK	The trade association for the British dairy supply chain
Defra	The UK Government's Department for Environment, Food and Rural Affairs

DCDVet	Defined Course Dose for animals, the assumed average dose per kg animal per species per treatment
DDDVet	Defined Daily Dose for animals, the assumed average dose per kg animal per species per day
DMCP	Dairy Mastitis Control Plan
DSC	Disease Surveillance Centres
EBV	Estimated Breeding Value
EFSA	European Food Safety Authority
eMB-Pigs	The electronic Medicine Book, developed by AHDB to electronically collate antibiotic usage data from the UK pig sector
EMA	European Medicines Agency EMA
EMS	Extra Mural Studies
AMEG	European Medicines Agency's Antimicrobial Expert Group
FAO	Food and Agriculture Organisation of the United Nations
FAVS	Farm Association of Veterinary Students
FAWL	Farm Assured Welsh Livestock
FSA	Food Standards Agency
FSS	Food Standards Scotland
FUW	Farmers Union of Wales
FVC	Farm Vet Champions, a collaborative antimicrobial stewardship scheme led by RCVS Knowledge
FVS	Fish Veterinary Society
GFA	Game Farmers' Association
HCC	Hybu Cig Cymru, responsible for the development, promotion and marketing of Welsh red meat
HPAI	Highly Pathogenic Avian Influenza
HP-CIA	Highest Priority Critically Important Antibiotic (for human medical purposes), as defined by the European Medicines Agency (category B)
Hybu Cig Cymru	Meat Promotion Wales (HCC) is the industry-led organisation responsible for the development, promotion and marketing of Welsh red meat.
IBR	Infectious Bovine Rhinotracheitis
iSAGE	Innovation for Sustainable Sheep and Goat Production in Europe
ISG	Independent Scientific Group (RUMA)
MA	Marketing Authorisation
Medicine Hub (MH)	The centralised database for medicine use in UK ruminants, developed by AHDB

Metaphylaxis	The treatment of a group of animals after the diagnosis of infection and/or clinical disease in part of the group, with the aim of preventing the spread of infectious disease to animals in close contact and at considerable risk and which may already be (sub-clinically) infected or incubating the disease. Also called Control treatment
mg/kg PCU and mg/kg	Milligrams per PCU, the unit of measurement developed by the EMA to monitor antibiotic use and sales across Europe, which has also been adopted by the UK in its national reports although convention in 2017 was to refer to mg per kg for simplicity
NFU	National Farmers' Union (England and Wales)
NFU Cymru	The National Farmers' Union (Wales)
NFUS	National Farmers' Union of Scotland
NIBL FQAS	Northern Ireland Beef and Lamb Farm Quality Assurance Scheme
NPA	National Pig Association
NSA	National Sheep Association
PCU	Population Correction Unit, which is used to help measure antibiotic use. PCU takes into account the animal population as well as the estimated weight of each particular animal at the time of treatment with antibiotics
PCV2	Porcine Circovirus Type 2 viruses
PCVAD	Porcine Circovirus Associated Disease
PHU	Persistently High Use/Users (of antibiotics)
PHWC	Pig Health and Welfare Council
PI	Persistently Infected (with BVD)
Prophylaxis	The treatment of an animal or a group of animals, before clinical signs of infectious disease, in order to prevent the occurrence of disease or infection. Also called Preventative treatment.
PRRS	Porcine Reproductive and Respiratory Syndrome Virus, also known as Blue Ear Disease
PVS	Pig Veterinary Society
QMS	Quality Meat Scotland, the levy board representing the red meat industry in Scotland
RABDF	Royal Association of British Dairy Farmers
RCVS	Royal College of Veterinary Surgeons
REA	Rapid Evidence Assessment
Red Tractor (RT)	A food assurance scheme which covers production standards on food safety, hygiene, animal health, welfare and environment
RMDP	Red Meat Development Programme in Wales
RTFS	Rainbow Trout Fry Syndrome
RUMA	Responsible Use of Medicines in Agriculture

SAAG	Sheep Antibiotic Guardian Group
SHAWG	Sheep Health and Welfare Group
SPVS	Society of Practising Veterinary Surgeons
SSPCA	Scottish Society for Prevention of Cruelty to Animals
SSPO	Scottish Salmon Producers' Organisation
SSPV	Salmon Scotland Prescribing Vets
SVA	Sheep Veterinary Association
Therapeutic treatment	The curative treatment of a sick animal or group of animals following the diagnosis of infection and/or clinical disease in those animals.
Trusted Game	Gamebird Health and Welfare Scheme
TTF	Targets Task Force group, established to reduce antibiotic use in food producing animals
TTF1	The first Targets Task Force and the period their targets cover (2017-2020)
TTF2	The second Targets Task Force and the period their targets cover (2021-2024)
VARSS	Veterinary Antimicrobial Resistance and Sales Surveillance, a collection of reports from the VMD providing the details of UK veterinary antibiotic resistance & sales surveillance
VMD	Veterinary Medicines Directorate
VPC	Veterinary Products Committee
WHO	World Health Organisation
WLBP	Welsh Lamb and Beef Producers Ltd
WPS	Wholesome Pigs Scotland

RESPONSIBLE USE OF MEDICINES IN AGRICULTURE ALLIANCE

RUMA

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