1 **In Practice**

2
3 **Increasing vet and sheep flock interactions in dairy practice**

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14 **Sheep medicine has traditionally been a low priority for cattle dominated practice with**
15 **the common perception there is minimal financial opportunity. The perception that the**
16 **vet's role is an emergency care provider, the reluctance of farmers to pay for training and**
17 **preventative advice often inhibits investment in the sheep services within a**
18 **predominantly dairy practice in comparison to more lucrative revenue streams (Bellet et**
19 **al., 2015). We will explore the challenges of delivering this in private practice, the**
20 **necessity to develop positive working relationships with commercial flocks and how one**
21 **practice has worked towards developing this service.**

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23
24 The challenges facing commercial sheep flocks are multiplying with increasing diagnoses of
25 anthelmintic and flukicide resistance (Hamer et al., 2018; Glover et al., 2017; Gordon et al.,
26 2012), recent diagnosis of resistance in *Psoroptes ovis* to macrocyclic lactones (Doherty et
27 al., 2018), diagnoses of antibiotic resistance in common conditions in sheep flocks
28 (Gascoigne and Miller, 2015, Lacasta et al. 2008, emergence and spread of novel diseases
29 (Harris et al., 2014), endemic diseases (Ritchie and Hosie, 2014) and ongoing economic
30 challenge In addition to the necessity for and to demonstrate due diligence with regards to
31 antibiotic prescription (RUMA, 2017), there is increasing requirement for engagement
32 between vets and sheep farmers.

33
34 However, historically, sheep work has been lower priority for vets in traditionally dairy
35 practice accounting for a small percentage of turnover despite the high proportion of
36 holdings within practice portfolios (Reader, 2014). Furthermore, farmer perception of sheep
37 vets is described by Kaler and Green (2013) with farmers citing the low working sheep

knowledge of vets, the lack of consistency of care, high turnover of vets and time constraints of vets as undermining a positive, proactive interaction.

How to develop engagement with flocks?

When designing a service for sheep clients it is important to understand the drivers and motivators for commercial sheep flocks and previous resistance to sheep farmer engagement with farm animal vets. A commercially sensitive service delivered by practitioners with a special interest in sheep medicine is required given the complaints voiced by sheep farmers described by Kaler and Green (2013) but it must be one which is mutually beneficial for both farmer and the practitioner i.e. economically viable permitting ongoing resourcing and reinvestment in both flock and practice.

A fundamental criteria for a sheep vet is an interest in sheep health and production. Criticism of veterinary understanding of sheep production systems was forthcoming in Kaler and Green (2013) and whilst an encyclopedic knowledge of sheep systems is unrealistic especially for new graduates, and interest in sheep medicine and a willingness to learn is necessary.

The perceived high economic costs of vets with regards to sheep flocks may dissuade flocks from engaging with their veterinary surgeon and it is one that vets should not be afraid to tackle head on. Fundamentally, vets must understand the difference between cost and value. Poor non-evidence based advice, advice without follow up is costly for the shepherd, potentially costly for animal welfare and highly damaging to the relationship between shepherd and vet. A high standard of advice must be a fundamental to this working

relationship. Vets wishing to work with commercial flocks need to understand the cost of production of lamb, the cost of key disease and be prepared to communicate their own abilities in these economic terms for flocks.

Ultimately, vets wishing to work with sheep flocks must understand the difference between “positive vet spend” and “negative vet spend”. Positive vet spend is an investment in proactive flock health i.e. a flock health planning strategy visit, rams checks in advance of mating, an abortion management strategy pre-mating, a robust quarantine procedure which aims to preserve performance, creating a robust flock in advance of anticipated health challenges. Positive veterinary spend also includes investment in laboratory work to inform flock management i.e. worm egg counting throughout the grazing season, coccidia speciation prior to treatment, *Fasciola hepatica* screening protocols, sheep scab serology at purchase. Veterinary input is not costly if high quality and evidence based on farm. Negative vet spend involved the cost of disease and additional vet costs which might have limited impact. For example when managing an abortion outbreak at lambing, not only will the cost of intervention, diagnosis and management of the disease will far outstrip any costs which would have occurred in a preventative capacity (see table 1).

86 **Table 1: Examples of positive and negative veterinary spend**

87

	Example of POSITIVE vet spend for a 1000 ewe flock, 20% replacement rate	Example of NEGATIVE vet spend for a 1000 ewe flock, 20% replacement rate
Chlamydial abortion	A health plan (90 mins) £150 Abortion vaccination for replacements £2.00 per ewe Total cost: <u>£400 per annum</u>	Lost costs of an aborted lambs £25.62 lowland lamb (Gascoigne and Lovatt, 2017) 2% lambs at 200% scanning percentage: Total cost: 40 lambs <u>£1024.80</u>
Lameness	A lameness visit including inspection of 5% sheep lame if isolated, strategy £300 Implementation of five point plan <i>Dichelobacter</i> vaccination, £1 per ewe per year: £1000 Total cost: <u>£1300 per annum</u>	Cost of 10% lameness in a sheep flock with incomplete management £14.46 per ewe (Lovatt, 2016) Total cost: <u>£14,460 per annum</u>
Coccidia where no pathogenic species	Coccidia counts and speciation £37	Cost of toltrazuril in 20kg lambs £0.70 per lamb Cost per 2000 lambs, <u>£1400 plus time to handle lambs</u>

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89 **Different models for providing services**

90 Types of flock health package are described elsewhere (Gascoigne, 2016, Ganter, 2008,
 91 Richards and Knight, 2005) and notably in the UK with Flock Health Clubs (Anon, 2016,
 92 Anon, 2016b) which involves spreading the cost of preventative health care i.e. flock

93 planning meetings by monthly payments and sharing costs between groups of similar flocks
94 using group knowledge transfer. There has been a high level of national uptake by private
95 practitioners and commercial sheep flocks.

96
97 How we communicate with our flocks is constantly evolving and one practices have
98 developed novel services, marketing is crucial to uptake. In addition to the traditional paper
99 based farming press and the radio, social media platforms i.e. Twitter®, Instagram®,
100 Facebook®, SellMyLivestock® are growing in uptake. The Royal College of Veterinary
101 Surgeons issues guidelines for veterinary surgeons and practices engaging with social media
102 either professionally or personally and these can be found online at www.rcvs.org.uk. How
103 we are engaging with our clients is evolving and novel services should take advantage of
104 this.

105
106 In the authors' experience, a focused approach to engaging with flocks is crucial i.e.
107 targeting by flocks types has had a positive impact on service uptake i.e. on flock size,
108 organic versus conventional flock types, store lamb versus breeding flocks as enables
109 targeted advice. This could extend to targeted newsletters, meetings and discussion groups.

110
111 Any package structure developed should include sufficient visits to the flock to permit
112 generation of flock specific data and confidential discussions and to facilitate generation of
113 flock specific advice.

114 115 **Appraising your sheep business**

116 Veterinary informatics is the use of "big data" generated in practice to inform clinic

protocols, facilitate disease surveillance and to facilitate business development and appraisal (Santamaria and Zimmerman, 2011). There are few published examples of how informatics can be used to appraise business performance in farm animal veterinary practice (Smith-Akin et al., 2007) but it can be a useful approach when growing an aspect of your business.

Appraisal of sheep veterinary business has been performed by Gascoigne et al., (2017) extracting data from a practice management system. This coded data was used to appraise how flocks were using the practice i.e. visit types, purpose of the visit and themes of visits in practice.

Key indicators practices could use to appraise the sheep sector of the practice could include:

- a.) Number of active ovine clients
- b.) Change in number of flock health planning visits
- c.) Number of training places filled on sheep specific training courses
- d.) Flock health club membership
- e.) Change in turnover of the sheep business

Box 1: Changes in a large farm animal practice in the South West actively engaging with commercial sheep flocks (Gascoigne et al., 2017)

	2012 vs. 2017
Active flocks based on invoicing	1.4 x increase (409 in 2017)
Flock health planning visits	5x increase (70 in 2017)
Training attendance	3.5x increase (35 in 2017)
Flock health club membership	4x increase (80 in 2017)
Turnover	25% increase
Gross margin of a sheep vet based on 60% time, including medicine sales	24.3%

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142 Practitioners should remember that whilst there is increasing emphasis on flock health
143 work, “intervention” visits i.e. incidental and emergency work still have huge importance for
144 both smallholders and commercial flocks. In Gascoigne et al., (2017) individual visits
145 accounted for 68% of all of the practice sheep visits with preventative work accounting for
146 just 19%. In this study, sick animals accounted for 30% of the reason for all ovine visits,
147 obstetrics for 20%, lameness 13%, flock health planning for 11% and post-mortems 5% of all
148 ovine visits.

149

150 However, there is an opportunity for practitioners with a large ovine caseload to carve a role
151 with a high level of ovine work. This “vet with a specialist interest” in the aforementioned
152 work had a markedly different caseload spending 29% of time with investigative work and
153 44% preventative work i.e. just 27% on interventions and emergency work. These veterinary
154 surgeons may wish to pursue further study with opportunities detailed in Box 2.

155

156 **Conclusions**

157 There are huge opportunities for veterinary surgeons willing to engage with sheep flocks
158 providing they are willing to engage in evidence based medicine, prepared to engage in
159 understanding the economics of both endemic disease and cost of management of those
160 disease and use their imaginative to deliver innovative solutions to flocks.

161

162 The fundamental requirement for developing a sheep service, is a veterinary surgeon or
163 team of vets who are genuinely enthused by sheep. This will be unlikely to be all members
164 of mixed or farm animal vets within a team but this creates an opportunity for internal

referral for creation of a specialist role for non-emergency work. One practice has achieved the changes in case load and development of a specialist role by: investing in an individual's knowledge and interest (with the individual working towards a diploma of the European College of Small Ruminant Health Management from 2015 onwards), benchmarking key performance indicators for commercial flocks, running discussion groups i.e. large flock, organic, commercial flock, offering training courses for commercial flocks, producing ovine specific newsletters promoting preventative services and maintaining a high profile in the sheep farming press. This individual has a respectable positive gross margin demonstrating the potential value to practices of ovine work and the potential cost: benefit of investing in resource and continual professional development for the vets within the team.

With vision, a supportive and enabling management team, imagination and a love of sheep, generating income from proactive flock work for farm animal and mixed practices should be achievable for the benefit of the commercial flocks and the practice. Innovative shepherds and vets will recognise the role of the other in the success of either venture. The gauntlet is ours.

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BOX 1: Reason for treatment

Reason for the visit were classified and the reason for visits listed as sick recorded and analysed.

We can see from figure 1 (generated from visits by all vets in the practice) that sick sheep account for 30% of all vet visits and that 20% of all visits are related to obstetrical work. Five per cent of all ovine visits were listed as post-mortem visits. Parasitic gastroenteritis appears underrepresented in this presentation given its significance to small ruminant production. This is likely to reflect its inclusion in flock health planning and consultancy in a preventative capacity, performance in an investigatory capacity i.e. where poor performance is being explored but may also be a reflection of the diverse range of animal health advisors through which worm management is provided by. This highlight the importance of establishing a common “language” when using informatics for practice analysis.

Figure 2: Classification of all calls across all vets in 2016-2017 by number of calls

When examining “sick” visits in more detail we can see that where cause of visit is described, skin and euthanasia were the most common reason for sick visits accounting for 18% and 14 % respectively (see figure 2). Visits were unspecified when there was insufficient detail on the practice management system to assign a topic to the visit i.e. where clinical notes had been recorded in an alternative format or location. It was evident that “sheep scab” was the most common reason for skin visits within the practice which is highly relevant given the recent diagnosis of Macrocylic Lactone resistance in *Psoroptes ovis*. It should be noted that this practice is based in England and therefore Sheep Scab is not notifiable although it does come under the Sheep Scab Order (1997). As a consequence, practitioners and farmers are not required to inform the Animal Health and Plant Agency of any suspicion of confirmation of sheep scab. Practice informatics potentially have a role in supporting surveillance but requires a common metric used.

Box 2: Further specialism in sheep medicine and production

For practitioners wishing to pursue further specialism in sheep medicine and production there are several options depending on the requirements of the practitioner, the practice and time available. For those wishing to increase their knowledge to expand their understanding of production, further training is available from the Sheep Veterinary Society (www.sheepvetsoc.org.uk) and commercially available.

For those wishing to pursue formal further training, the RCVS introduced the Certificate of Advanced Veterinary Practice (Sheep) CertAVP in 2007. Practitioners are able to access the CertAVP(Sheep) through the Universities of Liverpool and Edinburgh and three ovine specific modules are available (Diseases of adult sheep, Reproduction, pregnancy and parturition of sheep, Diseases of lambs and parasitic disease). To achieve a designated sheep certificate, completion of all three ovine modules is required.

To achieve recognised specialist status in the UK unless the practitioner already holds a RCVS diploma, veterinary surgeons need to achieve a Diploma of Small Ruminant Health Management (Dip.ECSRHM) awarded by the European College of Small Ruminant Health Management as part of the European Board of Veterinary Specialisation. This can be achieved either in a university residency (typical programme length 3 years) under the supervision of a diplomate of the ECRHM or alternatively in practice i.e. the alternative route. The alternative route is not in a designated training centre and not under the direct supervision of a diplomate. It is anticipated that this route will take longer than the university residency but both should be completed within seven years of commencing. It is recommended that residents have caseloads where over 60% is small ruminants. Residents are required to conduct and publish original research work and case studies in addition to maintaining a case log. Further information is available at www.ecsrhm.eu

BOX 3: Antibiotic custodianship

Like all other areas of the veterinary profession, the industry is being required to justify and reduce its usage of antibiotics. Whilst the estimated usage of antibiotics is low in comparison to other sectors (Davies et al., 2017), RUMA has set the industry three key areas of usage are targets for reduction.

1. Infectious lameness management
2. Routine use of antibiotics in the management of infectious abortion
3. Use of prophylactic antibiotics in neonatal lambs

Key targets which have been set by RUMA (2017) are:

1. Total reduction in antibiotics by 10% by 2020
2. Monitor and reduce usage of High Priority Critically Important Antibiotics by 50% by 2020
3. Coordinate national data and usage
4. Reduce national lameness level. Target increase in foot rot vaccine sales by 5% between 2017-2021
5. Reduce abortion in ewes. Target increase in chlamydial abortion vaccine sales by 5% between 2017-2021
6. Reduce use of oral antibiotics in neonatal lambs by 10% between 2017-2021
7. Increased knowledge transfer of best practice

However, RUMA also acknowledges there are challenges which the sheep industry faces and these include (a) low veterinary involvement in the sector with many POM-VPS prescriptions and dispensing occurring via merchants (b) usage of multiple veterinary practices amongst others (full details available at www.ruma.org.uk)

Davies et al., (2017) found that 79% of variance was at farm level but also that 21% was between veterinary practices. Given the targets set out by RUMA, this is an opportunity for practices to review standard operating procedures with regards to their prescribing and dispensing for sheep flocks. A guide to prescribing is available from the RCVS www.rcvs.org.uk

Figure 3: Routine oral prophylaxis in lambs should be avoided and it is essential to have a positive working relationships with sheep farmers to facilitate discussions to reduce usage. Colostral transfer is essential to this. (Photograph Fiona Lovatt)

Figure 4: Benchmarking and flock specific discussion groups can facilitate discussions and knowledge transfer (Photograph Synergy Farm Health)