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1 Perceptions of factors influencing farmers' enactment of veterinary advice on UK dairy
2 farms, Bard
3 In-depth interviews with veterinarians and farmers exploring on-farm change suggest
4 enactment of veterinary advice requires more than accuracy of advisory content. A relational
5 context of trust, shared veterinarian-farmer understanding and meaningful interpretation of
6 advice at a local (farmer) level is critical to promote a culture of change. Veterinarians
7 concerned about advisory engagement should focus on eliciting and integrating farmer
8 priorities, motivations and goals. This collaborative communication can encourage selection of
9 appropriate, efficacious and timely veterinary expertise, leading to better integration and
10 adoption of advice on farm.

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FARMER BEHAVIOUR CHANGE AND VETERINARY ADVICE

13

To change or not to change? Veterinarian and farmer perceptions of

14

relational factors influencing the enactment of veterinary advice on UK

15

dairy farms

16

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27 **ABSTRACT**

28 Achieving herd health and welfare improvement increasingly relies on cattle veterinarians to
29 train and advise farmers, placing veterinary interactions at the heart of knowledge exchange.
30 Cattle veterinarians recognise their influence and the need to be proactive advisors but struggle
31 with acting upon this awareness in daily practice, reporting a need to enhance their advisory
32 approach to inspire farmer behaviour change. Understanding how veterinarian-farmer
33 interactions positively or negatively influence the enactment of change on farm is therefore
34 essential to support the cattle veterinary profession. This paper adopts a qualitative approach
35 to conceptualise how - and under what circumstances - veterinary advice has the potential to
36 support and inspire farmer engagement with behaviour change on the UK dairy farm.

37 Fourteen UK dairy farms were recruited to take part in a qualitative study involving research
38 observation of a ‘typical’ advisory consultation between veterinarian and farmer (n=14)
39 followed by separate, in-depth interviews with the farmer(s) and their respective veterinarian.
40 Interview data were organised using a template coding method and analysed thematically.
41 Whilst accuracy of veterinary advisory content was valued, it was a relational context of trust,
42 shared veterinarian-farmer understanding and meaningful interpretation of advice at a local
43 (farmer) level that was most likely to enact change. Critically, these relational factors were
44 reported to work together synergistically; a trusting relationship was an essential – but not
45 necessarily sufficient – component to create a culture of change. Findings suggest that cattle
46 veterinarians may benefit from tailoring advisory services to the farmers’ specific world view,

47 facilitated by a shared understanding of the farmers' immediate and long-term motivational
48 drivers. In consequence, cattle veterinarians seeking to positively engage farmers in advisory
49 interactions could consider a focus on farmer priorities, motivations and goals as paramount to
50 frame and inform advisory messages. This explicit collaborative communication encourages
51 the selection of appropriate and timely veterinary expertise, leading to better integration and
52 adoption of advice on farm given enhanced advisory relevance for farmers' unique
53 circumstances. This farmer-centered approach, involving active co-creation of plans between
54 individuals, is critical for engagement and commitment in the tackling of complex problems.

55 **Key words:** veterinary advice, behaviour change, dairy farmer, herd health, communication

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57

INTRODUCTION

58 Achieving herd health and welfare improvement increasingly relies on cattle veterinarians
59 (hereafter “veterinarians”) to train and advise farmers (DEFRA, 2004; FAWC, 2011), placing
60 veterinary communication and advisory services at the forefront of herd health management.
61 Veterinarians recognise their influence and the need to be proactive advisors but struggle with
62 acting upon this awareness in daily practice (Cannas da Silva *et al.*, 2006; Mee, 2007). In recent
63 research, Ruston and colleagues (2016) identified that this struggle is so pervasive that
64 veterinarians report challenges in influencing behaviour change as fundamentally undermining
65 the preventative advisory role itself. As one ‘male partner’ in Ruston and colleague’s (2016)
66 veterinarian interview cohort indicated, *‘I think the battle ground is probably not on the
67 science, the battle ground is on behaviour change and all this type of thing. So it’s not knowing
68 more stuff that we need, we need to basically to be able to implement it better’*.

69 In the veterinary sciences, research efforts aiming to characterise the intricacies of farmer
70 behaviour have been dominated by the adoption of theoretical frameworks from psychological
71 sciences, most notably the Theory of Planned Behaviour and the Health Belief Model (Ritter
72 *et al.*, 2017). This has generated a plethora of studies in the ‘behavioral approach’ (Ritter *et al.*,
73 2017) seeking to understand individual decision maker behaviour, focusing on psychological
74 constructs such as goals, attitudes and values and employing largely quantitative
75 methodologies (Burton, 2004a). Recent publications placing increased emphasis on the
76 sociological, rather than behavioral, perspectives have offered some insight into the herd health
77 advisory paradigm, indicating various ‘human factors’ implicit in the enactment of advice. For
78 example, veterinarians report farmers’ trust in veterinary knowledge and communication skills
79 as important for implementation (Jansen, 2010), whilst the perceived role of the veterinarian,
80 the relationship between veterinarian and farmer and the trust invested in this relationship
81 combine to effect adoption of advice (Richens *et al.*, 2016). However, existing qualitative

82 research tends to be driven by a specific disease or intervention focus, such as mastitis (Jansen,
83 2010) or vaccination (Richens *et al.*, 2016), with no qualitative literature examining the
84 veterinary advisory paradigm in and of itself.

85 This deficit in understanding means that there is little insight for veterinarians to utilize to
86 support their services and promote more positive herd health discussions, nor theoretical basis
87 for educators and trainers to tailor education packages to the specific needs and intricacies of
88 this context. The aim of this study was to begin to address this knowledge gap and investigate
89 veterinarian and farmer perceptions relating to the enactment of veterinary advice on UK dairy
90 farms using a qualitative methodology.

91 **MATERIALS AND METHODS**

92 *Participant Recruitment and Sample*

93 Participating farmers were recruited through a multinational producer of dairy products. A
94 regional operator approached all farms in a regional farmer group (n=33) with information on
95 the research study, from which a subset of farms (n=22) agreed to be contacted for recruitment
96 purposes. Following contact by the main author (Bard), a final study sample of fourteen farms
97 (n=14) resulted where both the farmer(s) and veterinarian (n=11) were able to participate
98 (some veterinarians were responsible for >1 farm in the sample). During the research process
99 (Figure 1) a selection of farms opted to have multiple farm members attend the interview,
100 meaning 19 farmers were interviewed across 14 farms. Additionally, one veterinarian became
101 unavailable for interview after the on-farm visit for personal reasons, resulting in 10
102 veterinarian interviews.

103 *Procedure and Data Collection*

104 The research methodology for each farm involved two distinct stages: (i) research observation
105 (n=14) of a 'typical' UK advisory consultation (i.e. a routine fertility visit, carried out at regular

106 weekly to monthly intervals on the majority of year round calving dairy farms) between
107 veterinarian and farmer(s) followed by (ii) an in-depth interview with the farmer(s) and an in-
108 depth interview with their respective veterinarian (n=24).

109 (i) Each participating farm was visited by the main author (Bard) who was present during a
110 routine veterinary consultation on cattle fertility involving the farmer(s) and their named
111 veterinarian. This visit was an opportunity to observe and record by dictaphone a 'typical' UK
112 consultation between the veterinarian and farmer and gain an understanding of the complexities
113 and contributing factors that shaped this interaction, for example through observing the farm
114 (layout, structure, handling systems, condition), the herd (herd size, behaviour, condition), the
115 farm staff (size, relationships to farmer, involvement, interactions) and the veterinarian-farmer
116 interaction (familiarity, topics discussed, perceived habits or routines).

117 Observations lasted a mean of 75 mins (range 43 to 142) and provided the main author (Bard)
118 with numerous insights that gave specific examples to discuss in the interviews that followed.
119 Whilst each interview developed along the same generic themes of the dynamic of interaction
120 between veterinarian and farmer, expected and performed roles, and on-farm advisory
121 behaviours, engaging the interviewee in specific grounded discussion about what happened
122 during the observation enriched what could otherwise have been an abstract discussion. Brief
123 field notes and salient photos were taken in the field to aid the analysis process of what was
124 observed.

125 (ii) Each party took part in an in-depth interview, conducted by the main author (Bard) and
126 recorded by dictaphone. Each semi-structured interview lasted a mean of 54 minutes (range
127 15-105) with the focus on eliciting decisions, processes and perceptions relating to farmer
128 behaviour change in the context of advisory services. Interviews were iterative in nature,
129 resulting in the foci of the interview schedule altering as the researcher's experience and insight
130 into the topic area deepened; this allowed the main author (Bard) to more accurately follow

131 the interviewees' interest, knowledge and insights related to this topic (as per DiCicco-Bloom
132 and Crabtree 2006). For example, initial pilot questions utilised two endemic diseases
133 (lameness and mastitis) as subjects through which to explore the enactment of veterinary advice
134 on farm, given their resonance as topics of behaviour change in the herd health advisory
135 paradigm (Bard 2018). However, through the interview process, it quickly became apparent to
136 the main author (Bard) that inviting interviewees to recount their experience on the process of
137 the delivery or receipt of advice on (i) behaviour change topics of their choice and/or (ii)
138 behaviour change topics observed during the farm visit, provided more rigorous and detailed
139 personal reconstruction of events and experiences, enhancing the experiential interview
140 accounts and ensuring questions evolved responsively within each interview.

141 The pilot of this method was carried out on two farms and involved completing both interviews
142 on farm following the herd health consultation. This approach was altered thereafter for all
143 further interviews to secure separate interview locations for the farmer(s) and veterinarian, to
144 both remove any time pressure on the veterinarians and to create more perceived privacy for
145 each interviewee's experience. Farmers were interviewed on-site after the observed
146 consultation, whilst veterinarians were interviewed at their practice within two weeks of the
147 visit.

148 Of the two pilot farms, the first set of interviews (veterinarian and farmer) were included in
149 the analysis in their original form, whilst the second pilot farm participants (veterinarian and
150 farmer) agreed to be re-interviewed three months following the initial farm visit in order to
151 spend more time on the in-depth interview process (the main author (Bard) re-visited the audio
152 recording and notes of the farm visit in advance of these interviews). All visits and interviews
153 were carried out between March and June 2015.

154 An information sheet was supplied to participants detailing the aims of research prior to data
155 collection, with written consent to take part obtained. This study was reviewed and approved
156 by the University of Bristol Research Ethics Committee (ref 14261), ensuring procedures met
157 ethical guidelines in place for research with human participants.

158 ***Interview Analysis***

159 Twenty-four interviews were transcribed (*intelligent verbatim*) by external transcribers for
160 analysis. Transcripts and audio of a subset (25%) of the interviews were initially explored using
161 traditional paper-based coding methods, allowing assessment of the data and the development
162 of initial coding ideas. Informed by this exploration, data were imported into the qualitative
163 software NVivo 10 (QSR International, 2018) and organised/coded using the template
164 methodology described by King (2004) to enable the comparison of farmer and veterinarian
165 perspectives within this context. This coding process was inductive, with the template coding
166 and structure determined and shaped by the data throughout the coding process. Once the full
167 data set was coded, matrices were exported and analysed thematically (Braun and Clarke,
168 2006), seeking to shed light on perceptions of why, and under what circumstances, advisory
169 communication leads to the enactment of change for this sample of UK dairy farmers and cattle
170 veterinarians.

171 ***Research Team***

172 Analysis was carried out by the main author (Bard). Coded transcripts and thematic content
173 were shared and discussed throughout the main author's PhD studies (2014-2017) at regular
174 meetings with all authors. These data were subsequently cross-examined by one female
175 supervisor (Roe, an experienced social and cultural geographer) during a lengthy assessment
176 and conceptualization of the work immediately preceding the creation of this paper (August
177 2017) for submission within the main author's PhD thesis (April 2018).

178

RESULTS

179 *Participant Demographics*

180 Farmers in this study (n=19) were an average age of 42 years old (range 18 to 59) and had been
181 in dairy production for an average of 23 years (range 3 to 45). Their herds ranged from 60
182 head cattle to 470 head cattle and three of the 19 farmers were female. Veterinarians in this
183 study were an average age of 44 years old (range 25 to 60) and had been in farm practice an
184 average of 19 years (range 1 to 35). Two of the 10 veterinarians were female.

185 *Themes*

186 Veterinarians and farmers spoke about three core factors that influenced whether advice would
187 be enacted on farm: the context-bound capacity for advice to manifest meaning, the belief in
188 the virtue(s) in the veterinarian that lay the foundation for relational trust and the foundation of
189 a shared understanding between veterinarian and farmer.

190 *Meaning is Manifest at a Local Level*

191 *Vet 9* “To be honest it is very complex, it really is. And there is no telling
192 who is going to listen to your advice, and who isn’t... I know the very narrow
193 veterinary aspect, but there are so many factors in the game, from price of
194 milk, to relationship with dad, to relationship with the bank manager, to you
195 know.”

196 Underpinning the multitude of descriptions on enacting change was one common narrative:
197 that for knowledge to be enacted a farmer must interpret the advice as meaningful in the local
198 context of their farming world view. However, as the veterinarian quoted above recognised,
199 there are myriad ‘factors in the game’ that contribute to this local interpretation, creating a
200 complex web of interconnected considerations for the farmer that act in synergy to evaluate an
201 advisory topic. Interview data suggest that for advice to manifest meaning in the farmer’s eyes,

202 it needed to either be congruent with the farmer's world view or – if it was not congruent -
203 sufficiently salient to catalyze the recalibration of this world view in a way that would lead to
204 integration.

205 ***Congruence with the World View.*** The world view of the farmer was invoked through the
206 integration of diverse factors, broadly relating to the aspects of the farmer's individual, social
207 and environmental influences; those explored by interviewees are presented in Figure 5. With
208 regards to aspects of social influence, narratives included the farmers friends and family, on-
209 farm hierarchies, the farming community, the veterinarian and their practice, other advisors
210 (agronomists, foot trimmers, nutritionists, etc.), retailers, farm assurance and the non-farming
211 public. For example, when one farmer discussed his approach to field management around
212 his farm, the social effect that the farming community could have on his enacted behaviour
213 was clear;

214 *Farmer 9* “I own that piece of land out on the dual carriageway as you turn
215 in. It's right on the dual carriageway. Every farmer goes past that and it
216 rises up from the road. I grow maize there. That field gets everything it needs
217 because every farmer looks at that.”

218 For this farmer, their world view might include the narrative ‘*I want to be perceived as a*
219 *good farmer*’. External recommendations pertaining to the flourishing of this field in view of
220 the farming community would therefore be perceived as valuable, due to maintenance of
221 social status (a phenomenon recognised by Burton (2004b) as part of ‘roadside farming’,
222 where perceived social significance and management behaviour(s) interact).

223 The second area of influence were aspects broadly considered as environmental - farm factors
224 (restrictions of system, tenancy structure, routines dictated by the farm physical set up), the
225 season, market and milk buyer. For example, one farmer reflected on how their decision to put

226 milking robots on their farm the year before would not have happened in the current climate,
227 given the need to ‘watch every cost’ and be cautious with expenditure:

228 *Farmer 7* “I think, at the moment, what would hold people back is, dare I
229 say it, milk price. Because it’s restricting of, you know, farmer’s having to
230 watch every cost... This time last year we were just started putting in our
231 second robot. If it were the same time now, with our milk price, we wouldn’t
232 have done that.”

233 The farmer’s world view appears to have moved from something like ‘*We can be optimistic*
234 *and invest in the farm*’ to ‘*It pays to be cautious at present*’, which they perceive as influential
235 on how they interpret information and make decisions - so much so that the decision to enact
236 a significant management change is seen completely differently when considering subsequent
237 changes in the milk price.

238 The final area of influence can be considered as pertaining to the individual farmer - their
239 priorities, belief in solution(s), belief in the problem, habitual processes, emotional responses
240 and perceived role of and relationship with the advisor. For example, farmer perception of the
241 advisory role could influence engagement; one veterinarian reflected upon the difficulties of
242 engaging farmers in proactive advisory interactions when their perceived role was more
243 technical:

244 *Vet 8* “I asked him what his cost of production was a few months ago now
245 and I think his response was “What do you think you are? A consultant?” ...
246 I feel like I just go and PD [pregnancy diagnose] his cows, which is kind of
247 wrong, because he could turn around and get a technician, I guess, to do
248 what I do. But I don’t really advise him that much.”

249 For the farmer, this interaction perhaps reflects a farming world view of something like ‘*I need*
250 *my vet for practical fertility work, but for business matters I go elsewhere*’, meaning the
251 veterinarian’s advice would be unlikely to manifest meaning in the area of production costs.

252 These influences are not ‘stand-alone’ aspects as the farming world view is a cumulative
253 synergy. For example, if the above scenarios framed the internal narrative of one individual,
254 their wish ‘*to be perceived as a good farmer*’ would have to balance their sense that ‘*it pays to*
255 *be cautious at present*’. As such, the value of behaviour that enables the field seen by the
256 farming community to flourish may be diminished by the need to spend extra money when in
257 a cautious mindset.

258 ***Catalysts for Recalibration of the World View.*** If a recommendation was not aligned with this
259 existing world view, this did not (necessarily) mean it would not be enacted. Certain
260 circumstantial aspects of advice giving could recalibrate farmer interpretation of advisory
261 content, which can be broadly thought of as those relating to the practical or relational mode
262 of advisory delivery.

263 ***(1) Relational saliency.*** In this interaction, the veterinarian reflects on an instance when their
264 advice spontaneously found meaning after seven years of the same message:

265 *Vet 3 “A classic was I’d been working on one guy for about seven years*
266 *about his mastitis and how he milked his cows. He’d start at the front, going*
267 *all the way down and wiping the cows. And then come all the way back,*
268 *putting the clusters on. And I was trying to tell him, ‘Go back to the front and*
269 *do it the same way.’ Then we had a mastitis meeting one evening and*
270 *[respected industry specialist] said just the same thing, and he did it*
271 *overnight... The guy started it the next day and never looked back.”*

272 For this farmer, the relational context under which the advice was given embedded the advice
273 with new meaning. It was the advisor giving the message - more than the message itself- that
274 gave the message saliency and inspired enactment.

275 This relational enactment of meaning was recognised in myriad circumstances, for example
276 interactions between farmers and respected speakers (such as at group meetings with industry
277 specialists, industry conferences, producer meetings), specialist advisors (nutritionists, foot
278 trimmers, agronomists), other farmers, family and friends.

279 **(2) Delivery saliency.** Advisory meaning could also manifest because of delivery saliency.
280 Novel messages where farmers were able to ‘see the change’ in action, such as seeing another
281 farmer or veterinarian using a new piece of equipment or viewing the results of change on other
282 farms (whether in action or through improved health and production figures) enhanced the
283 saliency of management recommendations:

284 *Vet 9 “That pump that [farmer x] was mentioning... ‘No, we don’t want to*
285 *buy that, it cost £80.00!’ ... Then something happened... he saw that when we*
286 *drenched cows with our pump it worked. So he bought a pump. And all of a*
287 *sudden that pump is fantastic”*

288 Another aspect of delivery salience identified was the communication approach utilised by the
289 veterinarian. Both veterinarians and farmers reported a variety of communication behaviours,
290 attributes and ethos (Appendix 1) that are desirable and undesirable in the dairy context. From
291 both a veterinarian and farmer perspective, desired qualities tended to reflect a mutualistic
292 communication paradigm, for example where client opinions were actively sought, negotiation
293 and collaboration led to an openly agreed upon plan and active empathic skills are used (Roter
294 2000):

295 *Farmer 1* “Vets do know the academic side. They’re bright lads and lasses.
296 But sometimes it doesn’t hurt to stop talking, and start listening, when you
297 go on farm.”

298 Undesirable communication attributes were generally associated with making the farmer feel
299 ‘less than’ the veterinarian in some way, such as chastising, blaming, judging, using jargon,
300 rudeness or assuming farmer wants or needs:

301 *Farmer 8* “I won’t go back to those that think... “I’m a professional. And
302 you’re just a dairy farmer.”

303 Both veterinarians and farmers reported desirable communication features as associated with
304 positive outcomes, such as engaging farmers better in conversations, protecting a sense of
305 pride, promoting ownership over behaviour changes and enhancing satisfaction and adherence
306 to veterinary recommendations.

307 The means of delivery of advice, whether providing information in person, in paper form, via
308 email, by phone or by tablet, was felt to provide different opportunities for engagement and
309 understanding. For example, one veterinarian reflected on his habit of following an advisory
310 discussion on an National Milk Record (NMR, 2018) report by leaving a hard copy of the
311 elements discussed with the farmer:

312 *Vet 3* “I tend to leave [the report hardcopy] there so they can go back and
313 think, “Oh, what was he on about?” But also, it just lets it tickle in their
314 mind. ... The best way of getting things to change is if they think about it, and
315 want to change, rather than they feel they’ve got to because you’ve told
316 them.”

317 For this veterinarian, the integration of multiple delivery mechanisms allowed their advice to
318 be ‘present’ on the farm in their absence, moving it from a something to be pushed on the
319 farmer in the moment to something that could be mulled over and engaged with in choice.
320 Veterinarians reported working out by trial and error which farmers would be receptive to
321 which delivery types to allow their advice to permeate beyond the boundaries of just face to
322 face contact to enhance saliency.

323 Finally, novel messages that were felt to be consistent with those held by other social contacts
324 - such as within veterinarians in the same practice, between veterinarians and outside advisors
325 (such as foot trimmers), or between veterinarians and farming contacts - were reported to
326 have the potential to be viewed more favorably.

327 ***The Belief in Virtue***

328 *Farmer 12* “Oh God yes, yes, 100%. It’s got to be. It takes a long time to
329 build that trust up and it’s only done over time from seeing what [sick]
330 animals recover from their examination [of the animal], from their points of
331 view [as to] what’s wrong. And yeah there has to be a lot of trust there, which
332 is why I find it strange when people jump from one veterinary practice, to
333 the next, to the next.”

334 Throughout these interviews, veterinarians and farmers spoke at length about a critical bond of
335 trust between them; their professional relationship was predicated upon this attribute. The
336 importance of establishing this relational bond was witnessed in narratives on the working
337 relationship, where virtues that secure trustworthiness (Figure 2) manifest in stories of what
338 defines the ideal farm veterinary experience.

339 ***Ability***. The perceived ability of the veterinarian was a critical foundation of the interaction,
340 with both parties expressing a perceived correlation between the veterinarians ‘overall

341 experience’ and this virtue. This ‘overall experience’ captured traits of both
342 scientific/professional knowledge (age, length of time in practice, specialism, mixed/specialist
343 practice) and local knowledge (personal background in or out of farming, degree of personal
344 and professional involvement in dairy context) suggesting that whilst ability in this context is
345 founded upon scientific prowess, the virtue also encompasses employing this knowledge
346 ‘appropriately’ given contextual understanding. The value of ability was such that farmers
347 would actively engage with advice when this virtue was perceived in their veterinarian, as
348 perceived ability ensured accurate, reliable and relevant herd health recommendations:

349 *Farmer 3 “Yes, we are lucky that [our vet] is the best vet that is up there.*
350 *He has got experience. And he does talks all over the world. And he is a*
351 *pretty knowledgeable chap, so what he says you sort of listen to... His quality*
352 *is his knowledge”*

353 Veterinarians showed an awareness of this through their cultivation of ability ‘signals’, such
354 as being a specialist in a particular area (for example, having publications on a particular topic),
355 seeking further qualifications (for example, through the Royal College of Veterinary Surgeons
356 Certificate(s) in Advanced Veterinary Practice (RCVS, 2018a) or Advanced Practitioner Status
357 (RCVS, 2018b)) or emphasising the longevity and closeness between themselves and their
358 farmers and having a ‘shared understanding’ of their local world.

359 ***Benevolence.*** The perception of benevolence threaded through narratives on the working
360 relationship, where farmers expressed a desire for the veterinarian to deliver a service on
361 compassionate grounds - one that was not strictly constrained by veterinary protocol and did
362 not exist only to create veterinary profit, but that respected and had compassion for the needs
363 and goals of the farmer(s). Veterinarians, in turn, were acutely aware of this benevolent side to
364 veterinary services, reporting at times altering or adjusting service expectations and delivery

365 based on the individual constraints and desires of the farmer they were interacting with. For
366 example, veterinarians reported avoiding situations where they would have to deliver criticism
367 to their primary farm clients, choosing instead to bring in another individual at the practice
368 rather than thwart their benevolent perception:

369 *Vet 9 "If I told them that they're doing rubbish work at certain things they*
370 *might take offence and that would impact on the relationship. Sometimes it*
371 *is really nice to get somebody else on the farm, to tell them the bad things.*
372 *And [then] you are still on good terms with them and you can then*
373 *reemphasize."*

374 **Integrity.** The need for integrity underpinned all aspects of the advisory interaction, where
375 farmers' perceptions of this virtue instilled confidence in veterinary services. For example,
376 farmers desired a sense that they received fair costings of treatment(s); the best advisory
377 recommendations possible (in their unique circumstance); transparency on any mistakes made;
378 and open acknowledgement of risks and 'dead end' treatments:

379 *Farmer 3 "You need someone honest as well, if someone says the cow is*
380 *knackered, she is knackered, there is no point in trying. Whereas someone*
381 *would say treat for this, treat for that. Sooner [I'd] have someone say "She*
382 *is knackered. It is not worth trying.", rather than spending money and having*
383 *to shoot her later."*

384 Veterinarians recognised the need for honesty to underpin their services, with trust in their
385 veterinary judgement sometimes stemming as much from honesty over things that they 'can't
386 do', as much as ability in areas they have mastered:

387 *Vet 6 "Know what you can do. Know what you can't do. Be honest. If you*
388 *do the things, you say you can do, very well, and get someone else to help*

389 *with the things you can't do. That instils a lot of confidence in them. They'll*
390 *trust your judgement basically."*

391 **Predictability.** Finally, veterinarian predictability encouraged a sense of security and stability
392 in the advisory service. This sense of predictability arose through various factors, such as
393 farmers having an individual they thought of as 'their vet' at a particular practice who was
394 primarily responsible for their routine visits, having a veterinarian who could be relied upon to
395 support them in emergencies (access to the veterinarian's mobile phone number was often
396 mentioned as indicative of this support) and could be relied upon to be connected with them
397 over the long term. One farmer's 'twitchiness' at having to change veterinarians reflects this
398 need for stability and predictability:

399 *Farmer 10 "We've been with [Vet x] a long, long time now...oh 10 or 15*
400 *years I suppose... We had some other vets for a while in there. They weren't*
401 *partners, they were just employed, and they kept leaving. ... I was getting a*
402 *bit twitchy about it if I'm honest.... This is not good. You just get into a*
403 *routine with one vet, how they work and they know how I work and they*
404 *announce they're leaving. ... So it is quite nice to have that stability with [Vet*
405 *x]... I've got his mobile phone number if I need to ask him any questions."*

406 The culmination of the virtues underpinning trustworthiness is well illustrated in this
407 veterinarian's statement on the working relationship:

408 *Vet 9 "They trust you and they believe in you. And you are entrusted with*
409 *something, as I said, quite sacred to my mind, because you mustn't bluff. You*
410 *should try to do your best at all times. Even if you are tired, and completely*
411 *broken and you have had three horrible nights of cold. If he then needs you...*
412 *you can say "Alright, I will jump in the car." And then I will go today."*

413 In this one statement the veterinarian has echoed the need for ability (*‘doing your best at all*
414 *times’*), integrity (*‘don’t bluff’*), predictability (*‘even if you are tired and broken... you jump in*
415 *the car’*) and benevolence, where the overall description intuitively conveys an approach
416 embedded in kindness and concern.

417 The sense of trust between farmer and veterinarian was reported to build up over time and
418 become embedded through a variety of attributes of the working relationship (Table 1),
419 facilitating the decision to trust and enactment of trust (advisory behaviour change). This
420 contextual development offers some benefits to veterinarians - both parties recognised the
421 ‘protective effect’ of trust between veterinarian and farmer. Once this trust was established,
422 farmers would become more forgiving of mistakes given a strong perceptual establishment of
423 these virtues (perhaps underpinning why both parties reported mistakes early in a veterinarian’s
424 relationship as particularly damaging).

425 It is important to note that trustworthiness was not necessarily perceived in an ‘all or nothing’
426 manner but could be attributed by farmers in degrees, based on the management topic under
427 consideration and how the farmer interpreted veterinarian trustworthiness in this area. For
428 example, one farmer was happy to receive his veterinarian’s advice on animal health but very
429 reluctant to engage in any discussion on production costs.

430 Trust could also be ameliorated by the depth, strength, longevity and loyalty of the relationship
431 in question, varying from professional colleagues to personal friends from farm to farm.
432 Interestingly, it was not that some veterinarians and/or farmers were particularly likely to be
433 friends with their clients (or vice versa) but a synergistic effect of individual veterinarian-
434 farmer dyads; one veterinarian could be close friends with some farmers and not others, whilst
435 some farmers found their veterinary relationship shifted with engagement of a new
436 veterinarian.

437 ***A Shared Understanding***

438 Both veterinarians and farmers reported the need for a shared understanding with the farmer –
439 of his or her world view, perspective and myriad aspects that could act as barriers and
440 motivators to enacting change. This shared understanding shaped veterinarian choices about
441 advisory communication, farmers' proclivity to engage with advisory communication and the
442 consultation paradigm itself.

443 ***Veterinarian Advisory Choices.*** Veterinarians reported two levels to understanding the
444 farmer: a need to understand the dairy farming context, combined with an understanding of
445 the individual farmer and his/her farming world view (the way that they perceive the farming
446 world in which they are situated):

447 *Vet 8: "I'd say try and get a really good understanding of how dairy farms*
448 *run. And try and see as many farms as you can. And I think just treat each*
449 *farm as an individual. Don't look at all farmers as the same, 'cos some will,*
450 *yeah, want to do things that others don't. ... Everybody has different*
451 *aspirations."*

452 Veterinarians often spoke about this shared understanding with pride, feeling that their in-depth
453 knowledge offered them the chance to provide a unique and valuable service to their farmer(s)
454 that is often qualitatively different to what can be provided to clients in small animal services.
455 Indeed, veterinarians felt farmers recognised this as part of the added value in their service:

456 *Vet 2 "I think you understand their relationship and needs better when*
457 *you've had that continual link. Somebody coming in [to small animal*
458 *practice] you have to start again really to try and understand what they*
459 *really want... we have all this intellectual property on their farms really."*

460 This ability to connect with the localized reality of the farm could influence all aspects of advice
461 giving on behalf of the veterinarian, from the topics broached and interpretation of diagnostic
462 protocols taken, to the advice given and parameters set for success. Veterinarians reported an
463 ability to make appropriate judgements and decisions on their advisory approach and
464 recommendations made, through knowing whether topics would be likely to be received
465 positively or negatively (and thus whether it is ‘worth’ broaching them), what actions would
466 be feasible for the farmer in question and/or what type of delivery of advice the farmer would
467 be most receptive to:

468 *V10 “Because you know them well, you know what their expectations are*
469 *likely to be. There are certain cases you would treat differently, on different*
470 *farms.”*

471 Veterinarians would often use this insight on their farm clients to group them by the valence
472 of their broad overall response to advisory recommendations. Whilst varied in name, these
473 group labels or farmer ‘types’ were semantically similar and broadly reflected binary divisions
474 of whether farm clients were likely to enact complex change (positive) or unlikely to enact
475 complex change (negative); for example, ‘proactive and reactive’, ‘good and bad’, ‘advice
476 takers and advice leavers’, ‘motivated and unmotivated’, ‘listeners and non-listeners’;

477 *Vet 9 “It is probably farmer’s type. Some would listen to advice. And some*
478 *won’t listen to advice and crash and burn.”*

479 This ability to categorize farmers illustrates how well veterinarians felt they shared an
480 understanding of the farmer’s context and world view. Through this categorization,
481 veterinarians felt they were able to shape delivery of advice to maximize enactment on farm,
482 making advice giving a situated activity; veterinary recommendations were an entanglement
483 of scientific knowledge and local understanding.

484 **Farmer Engagement.** Farmers echoed veterinarian narratives on the shared understanding
485 underpinning their advisory services. Many reported a desire to feel as if the veterinarian
486 understood their unique farming context and farming world view, encouraging their
487 veterinarian to ‘act accordingly’ in the advisory process;

488 *Farmer 15 “Yeah, and I think they need to understand what you want to do.
489 And if you're [clear] they will. They'll know exactly what you want to do. And
490 how focused you are to meet targets. And to get cows in calf. Or to achieve
491 a growth rate. Or to fatten a store at a certain date or whatever. And I think
492 they'll act accordingly”*

493 This sense of being understood by the veterinarian could add meaning to the advice being
494 conveyed, making it more salient through the perception of relevance to the individual farmer:

495 *Farmer 11 “It’s building up a relationship isn’t it? ... Because I think my
496 new vet’s got more background knowledge [of my farm]. I would probably
497 instigate any change on his doing, [more] so than I would have done in the
498 past.”*

499 Farmers recognised that having a shared understanding shaped how veterinarians gave advice,
500 with regards to the type of recommendations the veterinarian might make and their expectations
501 of a farmer’s response:

502 *Farmer 8 “It’s not necessarily knowing the farm as knowing the person. That
503 personality you feel. That relationship... that’s critical.”*

504 In this way, farmers also recognised advice giving was most valued as a situated activity, where
505 veterinary recommendations could not be reduced to mere scientific knowledge; local

506 understanding of the farmer, their context and their farming world view were critical in
507 meaningful delivery.

508 ***Consultation Paradigm.*** Interview and observational data suggest that this sense of a shared
509 understanding was not just conceptual but was manifested in the very behaviours surrounding
510 the on-farm consultation paradigm, enacted between veterinarians and farmers in predictable
511 and repeatable ways according to a socially perceived routine. This culturally shared
512 expectation of events is well recognised and can be defined as a ‘cultural script’, a feature of
513 social interactions of importance as scripts provide a framework for interaction (Vanclay and
514 Enticott, 2011).

515 Within on-farm consultations, advisory communication was expected to informally pervade all
516 points at which the veterinarian was present on farm;

517 (i) Most typically, during - and often inextricable from - the practical obligations of cow- or
518 herd-specific tasks (such as pregnancy diagnosis checks)

519 (ii) Permeating any point of the visit from the veterinarian exiting their vehicle at the beginning
520 to climbing back in at the end (whether preparing equipment, cleaning boots, walking the farm
521 or drinking tea in the office).

522 (iii) Where paperwork or computer-based reports were necessary to oil the wheels of this
523 communication, these were often informally presented within the farm environment rather than
524 pursuing a more formalized ‘sit down’ meeting (E.g. Figure 3 (a) and (b))

525 (iv) If a more formal ‘sit down’ interaction was to occur within a farm visit, the thread of
526 informality would often be maintained by the location (the farm kitchen could be used), the
527 continued integration of social and animal health communication and the offer of hospitality
528 (hot beverages and/or food).

529 Additionally, socially orientated communication (friends, family, community, sport, leisure)
530 was diffused throughout the consultation in the same way, making advisory communication
531 mirror the process of more personal engagement.

532 If veterinarians were not willing or able to adapt their advice to this informal consultation space,
533 farmers would have to pay significantly more for their services, being charged for both the time
534 spent in practical cow- and herd-specific tasks in addition to a more formalized advisory
535 consultation. Whilst the latter certainly occur, the dominant paradigm was reported to be advice
536 delivered informally during or bridging other tasks. This consultation paradigm - a 'cultural
537 script' of informality - therefore represents more than an ease of fit to the bounded environment
538 of the farm consultations; it also implicitly signals that veterinarians share an understanding of
539 the needs of the dairy farmer and prioritize a service that meets these needs, rather than focusing
540 on maximizing veterinary profits by demanding structured advisory meetings separate from
541 cow-side tasks.

542 **DISCUSSION**

543 *Interpreting this study*

544 This research study took a qualitative approach to understanding nuance within the herd health
545 advisory paradigm. This approach allows researchers to explore and uncover the complexity
546 of interviewee experiences, rather than seeking to quantify opinions within a select group or
547 generate a representative sample of those opinions (Vaarst *et al.*, 2007). As such, the authors
548 intend for the research findings to be ethnographically rigorous and valid in delivering detailed,
549 context-specific insights on the veterinary advisory paradigm in action. The findings from this
550 methodology could never claim to create a universal, representative picture of the paradigm in
551 action, but importantly contribute understandings and nuance that positivist methodologies are
552 ill-suited to grapple with.

553 It is important to consider the study sample may differ in meaningful ways from UK dairy
554 farmers as a population:

555 (i) engagement with the research was by choice, meaning study recruitment may have
556 favored farmers with relatively better or more comfortable relationships with their herd
557 veterinarian if this encouraged more favorable appraisal of the research topic.

558 (iii) The cohort involved in this study – dairy farmers and their respective veterinarians
559 in the South West of the UK – may have focused research insight on factors that are
560 linked in some way to this geographical context.

561 These factors may have introduced bias into the interview sample, meaning results echo the
562 insights of a unique group of farmers and veterinarians with a certain relationship style and/or
563 interaction quality linked to the South West veterinary experience.

564 However, as the interview process involved the discussion of all experiences over the course
565 of a participant's lifetime - exploring interactions with both current and past herd veterinarians
566 or clients in addition to experiences with wider members of practice, advisory and on-farm
567 teams – the impact of the current veterinarian-farmer relationship was felt to have been
568 mitigated to a reasonable extent (all participants had both good and bad experiences to recount
569 and reflect on given this broad focus). Additionally, whilst it is not possible to rule out a
570 geographical influence, the prominence of relational factors in wider research on veterinarian
571 advisory services (Richens *et al.*, 2016) suggests that factors in this study are of broad relevance
572 and not stringently bound to geographical divides. As a result, the authors feel these results
573 can still offer meaningful insight to practicing veterinarians. As data saturation was reached,
574 the opinions of this sample of farmers and veterinarians were also considered to be adequately
575 evoked during the interview process.

576 ***Integrating Themes: Three considerations for building engagement with advice***

577 When considering whether farmers are likely to engage with advisory recommendations,
578 results suggest that veterinarians could benefit from considering not only the content and
579 accuracy of their advice but also the local and relational context within which the advice is
580 being transmitted. This could be achieved through attending to three core considerations
581 suggested by the data:

582 ***Consideration one: advice must manifest meaning***

583 (a) Advice must align with the farmer's local world view, through resonating with the
584 synergy of individual, social/cultural and environmental influences that create such a
585 world view (e.g. farmers' need to be 'cautious on costs' whilst also being 'a good
586 farmer').

587 Competing personal influences create an internal narrative determining the interpretation and
588 judgement of advisory recommendations; veterinarians should aim to evoke and understand
589 this narrative in its complexity to target effective advice, rather than attribute advisory value to
590 a single perceived factor (e.g. by assuming financial efficacy alone is (always) sufficient
591 motivation for change). It is perhaps for this reason that veterinarian narratives and consultation
592 paradigms intuitively reflect the need to develop and harness a shared understanding with the
593 farmer to deliver recommendations with which farmers will engage.

594 If advice does not align with this world view:

595 (b) Advice must be of sufficient salience that this world view is reconfigured through
596 relational attributes (e.g. becoming a practice specialist in an advisory area, forging a
597 specific practice identity or harnessing peer advisory support) and/or delivery attributes
598 (e.g. utilizing mutualistic communication in advisory discussions, 'showing the change'
599 being advised in a practical and/or accessible manner)

600 These relational and delivery attributes that enhance advisory salience may in fact be embedded
601 through the amplification of features identified as trustworthy virtues. For example, for
602 relational attributes, if a speaker was recognised by a farmer as having special *ability* in a topic
603 of interest their recommendation for a specific change measure may resonate more strongly
604 (for example, industry specialists). Similarly, when hearing a recommendation from another
605 farmer, the virtue of *integrity* behind the advice may be amplified, where farmers report feeling
606 peer messages on change reflect honest evaluation of an intervention; “*they’ll tell you the truth*
607 *most of the time*”.

608 Similarly, for delivery attributes, aspects such as the tangibility of change, accessible delivery
609 mediums and message consistency may embed *integrity* in advisory messages, given the sheer
610 transparency of advisory efficacy. This perhaps contributes to the perceived effectiveness of
611 benchmarking for engaging farmer motivation, as the sense of ‘seeing the change’ in other
612 farmers’ practices is implicit in the process of data access and peer comparison, argued by
613 Sumner, von Keyserlingk and Weary (2018) to stimulate instrumental value in the
614 benchmarking process.

615 Communication attributes reported as desirable – those more akin to relationship-base
616 approaches- may also embed greater feelings of advisor *benevolence* and *integrity* in advisory
617 interactions, perhaps underpinning their association with enhanced client satisfaction (Coe,
618 2008) and enhanced adherence to veterinary recommendations (Kanji *et al.*, 2010). It is
619 possible that conscious and deliberate adoption of these features might therefore encourage
620 advisory recommendations to manifest meaning for farm clients.

621 ***Consideration two: promote veterinary trustworthiness***

622 Veterinary advisors must be considered in a place of trust, predicated on the trustworthy virtues
623 of veterinarian ability, benevolence, integrity and predictability; without this quality in the
624 working relationship, advisory recommendations will not readily be integrated and enacted.

625 These components of trustworthiness set the virtuous stage for the advisory paradigm and give
626 the information conveyed by the veterinarian meaning. For a trustworthy veterinarian, the
627 farmer can reasonably assume that the advisory communication comes from someone with
628 appropriate knowledge, skill and confidence to address the problem (ability), who will give
629 care and consideration for the farmer's needs in deciding and advising on appropriate action
630 (benevolence), is honest about the contextual benefits, drawbacks and costs of this (or other)
631 management choices (integrity) and whose continued support and insight can be relied upon
632 when enacting the advice (predictability). If the legitimacy of one or more components is
633 questionable, the decision to trust and use this trust to guide action would be expected to
634 flounder (Dietz and Den Hartog, 2006); that is, a farmer's proclivity to accept vulnerability and
635 risk from the veterinarian's advice weakens and, with it, the resolve to enact advice:

636 *Farmer 1* "Once you lost trust in a vet it's difficult. You start questioning
637 everything. Probably 95 percent of his advice was absolutely spot on and
638 wonderful, but a couple of things had led me to doubt him a little. I think
639 once that's gone, it's no[t] good for anybody. I'd sooner start again with
640 somebody else."

641 Indeed, this proclivity was recognised by Fisher (2013) who described trust as critical in
642 building social capital between the farming community and external advisors, without which
643 farmers' will lack confidence in the actions taken by these advisors and doubt the importance
644 and usefulness of the recommendations they provide. Veterinarians considering why their

645 farmers fail to listen and engage with their advice could consider this perception of
646 trustworthiness as the first step in enactment of behaviour. Careful consideration of how their
647 farmer may perceive them across these trustworthy virtues may encourage them to alight on
648 positive ways to enhance their interactions on farm.

649 ***Consideration three: ensure a perceived 'shared understanding' is accurate***

650 The shared understanding between veterinarians and farmers reported by participants in this
651 study is a critical contributor to successful target and delivery of advice; if the shared
652 understanding between veterinarian and farmer is accurate, veterinarians will have a realistic
653 understanding of the farmers' world view and thus whether an advisory recommendation will
654 intuitively manifest meaning of require further attention to message saliency to build
655 engagement. Indeed, in veterinarians 'short hand' for farmer types – e.g.
656 'motivated/unmotivated', 'proactive and reactive', 'listeners and non-listeners' – veterinary
657 participants already reported allowing this shared understanding to guide their
658 recommendations with differing farm clients.

659 However, the reality of a shared direction within the herd health advisory paradigm is often
660 elusive. Farmers and veterinarians differ in their opinions on what the veterinary advisor's main
661 role is on farm (Hall and Wapenaar, 2012) and, when polled, show discrepancies in their
662 prioritization of herd health topics (Derks *et al.*, 2013). These discrepancies may in fact be
663 underpinned by this very sense of shared direction and informality, for where veterinarians fail
664 to make goals explicit with their clients, this is reported to in part be attributed to veterinarians
665 feeling that (i) goal documentation is 'too formal' and that (ii) both veterinarians and farmers
666 are aware of each other's wishes (Derks *et al.*, 2013). Additionally, interview data suggest that
667 the shared understanding may also mean communication on animal health topics is not always
668 prioritized:

669 *Vet 7 “I like the long-term relationships with [clients]. I just sometimes*
670 *wonder if because of that, we [don’t] look at things as properly as we should*
671 *do, because we always talk about other things, rather than cows.”*

672 As a result, this perceived consensus in herd health discussion creates two issues in the
673 provision of animal health services. First, both parties are relying on their shared understanding
674 to guide activity on farm, yet the consensus may to some extent be fictional; this consensus
675 may be a perceptual product of a trusting relationship and embedded cultural script, rather than
676 a measurable construct derived from mutual understanding of animal health priorities. Second,
677 because of this perceived consensus, agenda setting within the clinical encounter does not
678 demand substantive attention; if there is an implicit assumption of priorities under appraisal, it
679 does not make sense to expend time (often perceived as valuable, limited and/or costly in
680 advisory interactions) on the tasks that typify agenda setting in the clinical encounter (Figure
681 4). This is to the detriment of the herd health consultation, as agenda setting offers numerous
682 benefits within advisory encounters; in the medical sciences, both advisors and clients
683 experience greater satisfaction with the clinical interaction given agenda setting processes,
684 patients experience enhanced motivation towards positive behaviour change for their illness
685 and/or recovery and time is more efficiently utilised (Gobat, 2014).

686 In lieu of these considerations, it is critical that the trusting and close working relationship so
687 valued within this professional interaction is not conflated with an ability to accurately predict
688 a farmers’ immediate and long-term motivational drivers, which are complex and may vary
689 temporally with evolving individual, social/cultural and environmental conditions. If the
690 shared understanding between veterinarian and farmer is accurate, knowing whether an
691 advisory recommendation will initially align with a farmer’s world view or needs further
692 attention to message saliency appears to be intuitive. However, given support for the assertion
693 that this shared understanding is often mismatched (Derks *et al.*, 2013), careful attention to

694 communication about farmer goals and values should precede any such intuitive assumption
695 on behalf of the veterinarian.

696 ***A practical recommendation: integrating considerations in practice***

697 Developing a collaborative consultation focus - with farmer priorities, motivations and goals
698 recognised as paramount in framing and informing advisory messages - could encourage
699 veterinarians to deliver more appropriate, efficacious and timely veterinary expertise through
700 ensuring an accurate shared understanding of the farmers' world view. In turn, farmers could
701 be more likely to effectively integrate and enact recommendations, given their enhanced
702 relevance for their unique personal and farming circumstances. This farmer-centered approach
703 to veterinary interactions has the potential to establish a meaningful culture of change within
704 the herd health advisory paradigm; active co-creation of plans between invested individuals
705 stimulates better engagement and commitment in the tackling of complex problems (Steinlin
706 and Jenkins 2010).

707 Change-orientated, client-centered veterinary communication could support this need, with
708 evidence-based methodologies such as Motivational Interviewing (Miller and Rollnick 2012)
709 encouraging 'checking in' on the shared understanding ('*Do I really know my farm client's*
710 *goals and priorities for their farm right now?*' '*Am I fully aware of what my farm client wants*
711 *from this consultation?*') and promoting effective engagement with advice ('*Am I ensuring my*
712 *farm client feels heard, respected and autonomous in this discussion? What are their real*
713 *thoughts on this change?*') during the advisory interaction, whilst emphasising virtues critical
714 for trust (Bard 2018). Education and training focused on veterinarians' clinical communication
715 competencies is therefore well placed to support creating a culture of change within the herd
716 health encounter, through refining interpersonal skills that attend to critical relational factors
717 underpinning the enactment of veterinary advice.

718

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724

REFERENCES

725 Braun, V. and Clarke, V. (2006) ‘Using thematic analysis in psychology Using thematic
726 analysis in psychology’, *Qualitative Research in Psychology*, 3(2), pp. 77–101. doi:
727 10.1191/1478088706qp063oa.

728 Burton, R. J. F. (2004a) ‘Reconceptualising the “behavioural approach” in agricultural
729 studies: A socio-psychological perspective’, *Journal of Rural Studies*, 20(3), pp. 359–371.
730 doi: 10.1016/j.jrurstud.2003.12.001.

731 Burton, R. J. F. (2004b) ‘Seeing Through the “Good Farmer”s ’ Eyes : Towards Developing an
732 Understanding of the Social Symbolic Value of “Productivist ” Behaviour’, 44(2).

733 Coe, J. B. (2008) *Communication during veterinarian-client-patient interactions in companion*
734 *animal practice*. The University of Guelph.

735 Cannas da Silva, J., Noordhuizen, J.P., Vagneur, M., Bexiga, R., Gelfert, C.C.
736 and Baumgartner, W. (2006) ‘Veterinary dairy herd health management in Europe Constraints
737 and perspectives’, *Veterinary Quarterly*, 28(1), pp. 23–32. doi:
738 10.1080/01652176.2006.9695203.

739 DEFRA (2004) ‘Animal Health and Welfare Strategy for Great Britain’. Available at:
740 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/192951/animal

741 -health-welfare-strategy.pdf.

742 Derks, M., van Woudenberg, B., Boender, M., Kremer, W., van Werven, T. and Hogeveen,
743 H. (2013) 'Veterinarian awareness of farmer goals and attitudes to herd health management in
744 The Netherlands', *Veterinary Journal*. Elsevier Ltd, 198(1), pp. 224–228. doi:
745 10.1016/j.tvjl.2013.07.018.

746 Dicicco-Bloom, B. and Crabtree, B. F. (2006) 'The qualitative research interview', *Medical*
747 *Education*, 40, pp. 314–321. doi: 10.1111/j.1365-2929.2006.02418.x.

748 Dietz, G. and Den Hartog, D. N. (2006) *Measuring trust inside organisations*, *Personnel*
749 *Review*. doi: 10.1108/00483480610682299.

750 FAWC (2011) 'Education, Communication and Knowledge Application in Relation to Farm
751 Animal Welfare', (December), pp. 1–37. Available at:
752 [https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/324908/FAW](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/324908/FAW_C_report_on_education__communication_and_knowledge_application_in_relation_to_farm_animal_welfare.pdf)
753 [C_report_on_education__communication_and_knowledge_application_in_relation_to_farm_](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/324908/FAW_C_report_on_education__communication_and_knowledge_application_in_relation_to_farm_animal_welfare.pdf)
754 [animal_welfare.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/324908/FAW_C_report_on_education__communication_and_knowledge_application_in_relation_to_farm_animal_welfare.pdf).

755 Fisher, R. (2013) "'A gentleman's handshake': The role of social capital and trust in
756 transforming information into usable knowledge', *Journal of Rural Studies*. Elsevier Ltd, 31,
757 pp. 13–22. doi: 10.1016/j.jrurstud.2013.02.006.

758 Gobat, N., Kinnersly, P., Gregory, J.W and Robling, M. (2015) 'What is agenda setting in the
759 clinical encounter? Consensus from literature review and expert consultation' *Patient*
760 *Education and Counseling*. Volume 98, Issue 7, pp. 822-829.

761 Gobat, N. H. (2014) *Agenda setting in the clinical encounter: what is it, and is it measureable?*
762 Cardiff University.

763 Hall, J. and Wapenaar, W. (2012) 'Opinions and practices of veterinarians and dairy farmers

764 towards herd health management in the UK’, *Veterinary Record*, 170(17), p. 441. doi:
765 10.1136/vr.100318.

766 Jansen, J. (2010) *Mastitis and farmer mindset. Towards effective communication strategies to*
767 *improve udder health management on Dutch Dairy farms*. Wageningen University.

768 Kanji, N., Coe, J. B., Adams, C. L. and Shaw, J. R. (2010) ‘Effect of veterinarian-client-patient
769 interactions on client adherence to dentistry and surgery recommendations in companion-
770 animal practice’, in *5th International Conference on Communication in Veterinary Medicine*.

771 King, N. (2004) ‘Using templates in the thematic analysis of text’, in *Essential Guide to*
772 *Qualitative Research Methods in Organisational Research*. SAGE Publications, pp. 256–270.

773 Mee, J. F. (2007) ‘The role of the veterinarian in bovine fertility management on modern dairy
774 farms’, *Theriogenology*, 68(SUPPL. 1), pp. 257–265. doi:
775 10.1016/j.theriogenology.2007.04.030.

776 Miller, W. R. and Rollnick, S. (2012) *Motivational Interviewing: helping people change*. 3rd
777 edn. Guilford Press.

778 NMR (2018) *Introduction to NMR*. Available at: <https://www.nmr.co.uk/about> (Accessed: 7
779 April 2018).

780 QSR International (2018) *What is NVivo?*, *NVivo*. Available at:
781 <http://www.qsrinternational.com/nvivo/what-is-nvivo> (Accessed: 8 April 2018).

782 RCVS (2018a) *Postgraduate Qualifications: Certificate in Advanced Veterinary Practice*
783 *(CertAVP), Lifelong learning*. Available at: [https://www.rcvs.org.uk/lifelong-](https://www.rcvs.org.uk/lifelong-learning/postgraduate-qualifications/certificate-in-advanced-veterinary-practice-certavp/)
784 [learning/postgraduate-qualifications/certificate-in-advanced-veterinary-practice-certavp/](https://www.rcvs.org.uk/lifelong-learning/postgraduate-qualifications/certificate-in-advanced-veterinary-practice-certavp/)
785 (Accessed: 8 April 2018).

786 RCVS (2018b) *Professional Accreditation: Advanced Practitioner status, Lifelong learning*.

787 Available at: [https://www.rcvs.org.uk/lifelong-learning/professional-accreditation/advanced-](https://www.rcvs.org.uk/lifelong-learning/professional-accreditation/advanced-practitioner-status/)
788 [practitioner-status/](https://www.rcvs.org.uk/lifelong-learning/professional-accreditation/advanced-practitioner-status/) (Accessed: 8 April 2018).

789 Rees, G. (2015) ‘Always tell the truth?’, *In Practice*, pp. 150–151.

790 Richens, I.F., Hobson-West, P., Brennan, M.L., Hood, Z., Kaler, J., Green, M., Wright,
791 N., Wapenaar, W. (2016) ‘Factors influencing veterinary surgeons’ decision-making about
792 dairy cattle vaccination’, *Veterinary Record*, 179(16). doi: 10.1136/vr.103822.

793 Ritter, C., Jansen, J., Roche, S., Kelton, D.F., Adams, C.L., Orsel, K., Erskine,
794 R.J., Benedictus, G., Lam, T.J.G.M. and Barkema, H.W. (2017) ‘Invited review: Determinants
795 of farmers’ adoption of management-based strategies for infectious disease prevention and
796 control’, *Journal of Dairy Science*. American Dairy Science Association, 100(5), pp. 3329–
797 3347. doi: 10.3168/jds.2016-11977.

798 Roter, D. (2000) ‘The enduring and evolving nature of the patient-physician relationship’,
799 *Patient Education and Counseling*, 39(1), pp. 5–15. doi: 10.1016/S0738-3991(99)00086-5.

800 Ruston, A., Shortall, O., Green, M., Brennan, M., Wapenaar, W. and Kaler, J. (2016)
801 ‘Challenges facing the farm animal veterinary profession in England: A qualitative study of
802 veterinarians’ perceptions and responses’, *Preventive Veterinary Medicine*. Elsevier B.V., 127,
803 pp. 84–93. doi: 10.1016/j.prevetmed.2016.03.008.

804 Steinlin, M and Jenkins, C. W. (2010). Knowledge Sharing for Change: Designing and
805 Facilitating Learning Processes with a Transformational Impact. Cape Town: Ingenious
806 Peoples Knowledge Consultants.

807 Sumner, C. L., von Keyserlingk, M. A. G. and Weary, D. M. (2018) ‘How benchmarking
808 motivates farmers to improve dairy calf management’, *Journal of Dairy Science*, pp. 3323–
809 3333. doi: 10.3168/jds.2017-13596.

810 Vaarst, M. , Nissen, T.B., Østergaard, S., Klaas, I.C., Bennedsgaard, T.W. and Christensen, J.
811 (2007) ‘Danish Stable Schools for Experiential Common Learning in Groups of Organic Dairy
812 Farmers’, *Journal of Dairy Science*. Elsevier, 90(5), pp. 2543–2554. doi: 10.3168/jds.2006-
813 607.

814 Vanclay, F. and Enticott, G. (2011) ‘The Role and Functioning of Cultural Scripts in Farming
815 and Agriculture’, *Sociologia Ruralis*, 51(3), pp. 256–271.

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Appendix 1

Veterinarian communication behaviours, attributes and ethos reported as desirable or undesirable by farmers, veterinarians or both

VETERINARIAN COMMUNICATION BEHAVIOURS		
<i>BOTH</i>	Listen: <i>to what the farmer says and does not say</i> Emphasise achievements/successes/strengths Elicit the farmer's ideas Be interested Accessible/clear language Explain the 'why' and 'how' (not just 'what') Explicit attention to what they think/want/their opinion/concerns Empathy (Veterinarian should) offer opinion (Veterinarian should) provide choices/options	Jargon/being overly technical
<i>VET</i>	Open questions Accessible concepts Facilitate: <i>Get farmers to come up with ideas themselves, help farmers come to own conclusions rather than telling, explore their ideas before advising</i> Acknowledge farmer's world Highlight the small steps possible Balance veterinarian and farmer priorities Match advice to circumstances at hand Invest time Show evidence base Explain options Educate	Presenting too much data Preaching at farmer Dominating conversation Making snap judgements Criticism/ chastising Blaming
<i>FARMER</i>	Explicit attention to: what the farmer does, how and why they do it Right balance of questions/listening with advice giving Be open and clear on the reason behind the change Say it like it is- be direct with the truth	'Salesmanship' Not enough talk with farmer Not 'upbeat' Not conveying what's going on Bringing up mistakes Telling farmer what to do
VETERINARIAN COMMUNICATION ATTRIBUTES		
<i>BOTH</i>	Honesty/transparency Conviction/confidence Tact/Subtlety Sensitivity	Arrogance Anger Indifference/coldness
<i>VET</i>	Modesty Enthusiasm Passion	Accusatory Judging Rudeness Vagueness
<i>FARMER</i>	Relaxed Compassionate Fair Proactive	Condescension/'being full of own importance' Ignorance Pushy/forcefulness Blasé Cockiness
VETERINARIAN COMMUNICATION ETHOS		
<i>BOTH</i>	Friendly and positive attitude Interest in farmer situation/experience/farm/work Ability to tailor advice to the individual Trust between veterinarian and farmer Partnership between veterinarian and farmer Develop a friendship/relationship Willingness to devote time	
<i>VET</i>	Conscious of the effect of advice "Take your heart to work" (care) Must earn farmer respect: this can take years Dedication to keep promises Awareness of communication opportunities- account for farmer mood, farm triggers, time you have Make farmer feel valued Patience	Making assumptions about farmer/farmer wants Performing outside role Showing lack of knowledge on farm
<i>FARMER</i>	Easy to talk to Promote the business Know the farmer well/value the farmer as an individual Connecting with and being willing to educate the younger generation on farm Being nice Open mind Sense of humor	Underestimating farmer intelligence/knowledge/expertise Looking down on the farmer Making farmer feel like a fool

820

821 **Table 1.** Attributes of the veterinarian-dairy farmer working relationship offering the
 822 opportunity for the development of veterinarian trustworthy virtues

823

Attribute	Description
Longevity	Many veterinarian-farmer relationships are established over years or even decades.
Intensity	Intense interactions are par for the course, such as working under stressful conditions late at night together for long periods, or the veterinarian being there for the farmer in times of crisis on the farm.
Frequency of communication	Most herds will receive a routine consultation weekly or fortnightly to manage fertility, within which other health matters are integrated. In addition, veterinarians are contactable for advice off the farm.
Sociality	The isolated nature of farming means veterinarians are often an important social contact for farmers.
Community integration	The integration and involvement of both veterinarian and farmer in the wider farming/social community, meaning shared personal contacts and overlapping social networks validate and strengthen the connection between veterinarian and farmer.

824

825 FIGURE CAPTIONS

826

827 Figure 1. Flow diagram of recruitment process for total farmers (n=19) and veterinarians
828 (n=10) across 14 farms

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830 Figure 2. The four virtues needed for assessment of veterinarian trustworthiness
831 (Dietz and Den Hartog, 2006)

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833 Figure 3. Examples of informal 'desks' participant veterinarians used to integrate computer
834 and paper-based reports into the dairy consultation paradigm

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836 Figure 4. Agenda setting tasks in the clinical encounter (Gobat et al., 2015)

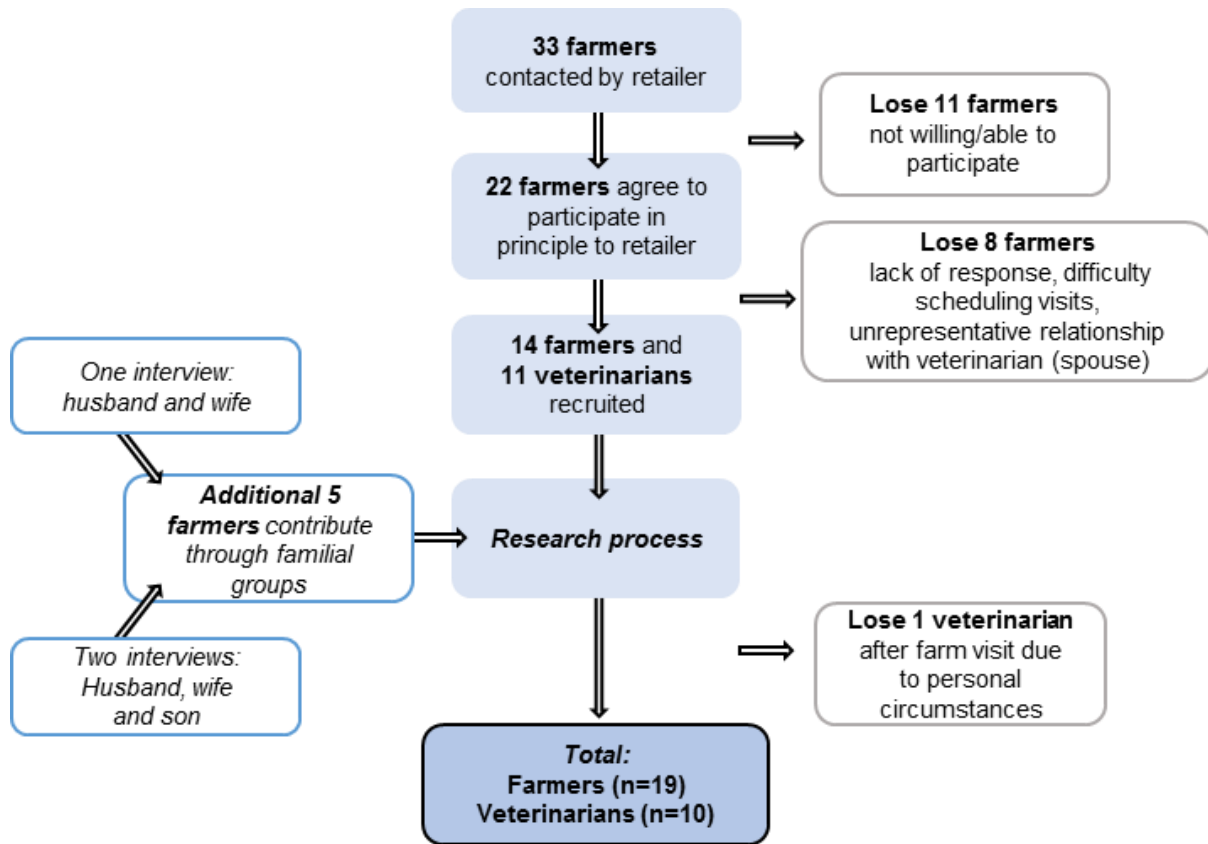
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838 Figure 5. Factors reported by interviewees as contributing to the world view of the farmer,
839 broadly relating to the aspects of the farmer's individual, social and environmental world

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841 *Bard Figure 1.*

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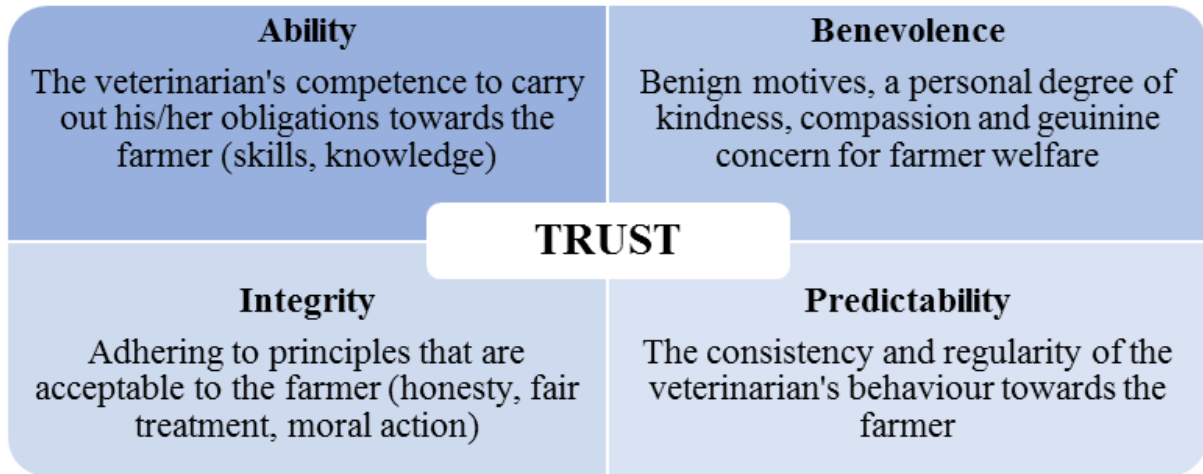
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846 ***Bard Figure 2.***

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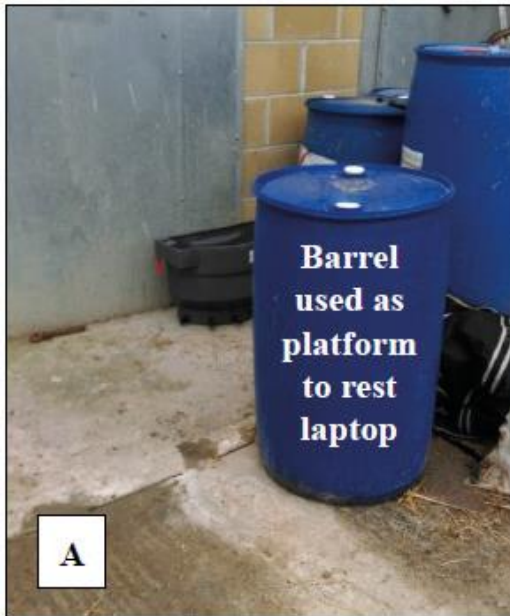


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849 ***Bard Figure 3.***

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853 ***Bard Figure 4.***

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