



Final grant report form

PROJECT/STUDY TITLE:	Improving dairy cattle welfare: promoting uptake of veterinary advice
PRINCIPAL APPLICANT(S)	Dr. Kristen Reyher
GRANT AWARDED (DATE):	2014

Lay summary of project outcomes, achievements and potential impact on animal welfare:

Outcomes

This research project aimed to illuminate and enhance the intricacies of the herd health advisory paradigm, exploring how cattle veterinarians currently communicate in the pursuit of behaviour change, the factors implicit in the enactment of change for herd health and whether Motivational Interviewing (MI- an evidence-based communication methodology developed in the medical sciences) could be adopted in this context to facilitate greater farmer self-determination in the pursuit of herd health management.

Research findings suggest the MI methodology meets a skills gap in current veterinary communication and is congruent with veterinarian and farmer desires for the herd health advisory paradigm. Furthermore, feasibility testing of brief MI training suggests veterinarians can learn and apply MI within herd health consultations, with resulting farmer responses predictive of better advisory engagement and on-farm behaviour change outcomes. Drawing together these research findings, recommendations were made through Alison Bard's PhD Thesis that MI offers the potential to enhance veterinary communication with clients, both within this research context and wider veterinary advisory services.

Impact: Animal Welfare

Alison endeavored to engage animal health and welfare professionals both nationally and internationally throughout her PhD studies, presenting information and insight from the project at more than 40 conference and workshop events. Through this activity the impact of this project is far reaching, both through research groups nationally and internationally now pursuing MI research in large and small animal contexts (e.g. University of Guelph, Swedish University of Agricultural Sciences) and her presentations challenging the mindset and practices of numerous charity, industry and academic individuals and organisations (see 'knowledge transfer' and 'relevant information' sections).

Moving forward, Alison and her supervisor Kristen are excited to work closely with AWF to find new pathways to impact, in the hope of supporting the delivery of accessible MI training for UK animal health and welfare professionals.

Detailed progress against original objectives

Objective 1. Establish baseline communication and advisory effectiveness of dairy advisors

Outcome 1. Qualitative analysis of cattle veterinarian communication on behaviour change

Role-play communication between veterinarians (n=15) and an actress experienced in medical and veterinary education captured a 'typical' advisory interaction in the pursuit of behaviour change for herd health. Qualitative analysis suggested that veterinarian communication matched that witnessed in wider research literature; veterinarians tended to communicate in a directive style (minimal eliciting of client opinion, dominating the consultation agenda, prioritising instrumental support), reflecting a paternalistic role in the consultation interaction. Indeed, this paternalistic role appeared to be sufficiently embedded in the veterinarian identity to influence even pronoun use, with the incongruence between veterinarian and farmer pronoun adoption indicative of an advisor that is a conduit or coordinator (but not necessarily participant) in herd health.

Outcome 2. Quantitative analysis of cattle veterinarian communication on behaviour change

Quantitative exploration of data, utilising the Motivational Interviewing Treatment Integrity code (MITI 4; Moyers, Manuel and Ernst, 2014), indicated that veterinarians in this sample did not utilise MI at a level of fair competency, as would be expected from the nuance detailed in initial qualitative analysis. However, these data were still considered promising, as veterinarians communicated in a way that suggested relational engagement had value, fostering empathy through the symbolic meaning of offering instrumental support, attention to cultivating trust through emphasising the virtue of their ability and explicitly referring to farmer concerns and context (such as milk price). Where the uptake and embodiment of MI communication is not easy without specific training experience (Miller and Rollnick, 2009), the inability for untrained veterinarians to move from relational intent to communication behaviour is understandable. MI skills training was hypothesised to facilitate the translation of this intent into communication behaviour.

Outcome 3. Qualitative examination of factors influencing the enactment of advice on UK dairy farms

Fourteen UK dairy farms were recruited to take part in a qualitative study involving research observation of a 'typical' advisory consultation between veterinarian and farmer (n=14) followed by separate, in-depth interviews with the farmer(s) and their respective veterinarian (n=24). Interview data were organised using a template coding method and analysed thematically. Whilst accuracy of veterinary advisory content was valued, it was a relational context of trust, shared veterinarian-farmer understanding and meaningful interpretation of advice at a local (farmer) level that was most likely to enact change. Critically, these

relational factors were reported to work together synergistically; a trusting relationship was an essential – but not necessarily sufficient – component to create a culture of change. Findings suggested that cattle veterinarians may benefit from tailoring advisory services to the farmers’ specific world view, facilitated by a shared understanding of the farmers’ immediate and long-term motivational drivers.

These nuances in the veterinary herd health paradigm suggested a compelling relational narrative for the adoption of MI within the cattle veterinary context. Through MI-adherent communication, veterinarians could consciously pursue the shared understanding that is so valued by their farm clients by promoting collaboration and evocative exploration of farmer views, embed the desirable features of mutualistic communication that encourage farmer engagement and implementation and actively promote personal virtues that are critical to the trusting relationship (such as benevolence, central to MI Spirit). For farmers, seeking social connection in addition to scientific content, this process would encourage meaning to be manifested in advisory recommendations through a better chance of real engagement with their local world view and personal motivations, attitudes and perceptions.

Objective 2. Develop training package to improve advisor communication skills and establish ethical framework for acceptable influencing

Outcome 1. Training Package Development

Following Alison’s development as an MI trainer – culminating in her successful application to become a member of the Motivational Interviewing Network of Trainers (MINT: www.motivationalinterviewing.org) – Alison designed, piloted and implemented the MI training package herself for the purposes of this PhD study. Although the initial grant details the intention to employ an ‘MI consultant’ for this part of the project, it quickly became clear that what this sector needed was training that engaged veterinarians through relevant, applicable and practically led examples linked to on-farm clinical practice, for which no MI trainer existed at the time of this research. Instead, Alison therefore endeavored to fill this niche herself, equipped with knowledge from the studies carried out in Aim 1 and her pursuit of MI training competencies via MI Cardiff Training, membership of MINT and the UK and Ireland MINT Chapter.

The training provided was a mixture of didactic presentation and demonstration, dyadic or small group experiential exercises, video observation and group feedback/discussion covering core elements of MI. Given the brief nature of training, participants were provided with veterinary-specific MI training notes to refer to following the session with summary pages, rules of thumb and ‘cheat sheets’ for incorporating the ideas into practice. Veterinarians were all offered individual feedback on audio recordings of herd health discussions they submitted to the project, as a means of coaching support in MI skills.

Outcome 2: Ethical framework for acceptable influencing

Motivational Interviewing (MI) is employed in myriad contexts, stretching beyond its foundations in addiction treatment to those such as offender rehabilitation, environmental inspection and educational psychology. One major shift as these contexts have broadened has been the use of the methodology to enhance the welfare of a third party, such as a child, a use that engenders specific considerations for both dependents, care givers and advisors that reflect ethical considerations of MI use in farm animal advisory consultation. The complex ethical assessment for this context – namely, how a veterinarian can maintain the ethos of MI between advisor and client whilst promoting change in the interests of a third party (the animal) - was therefore presented at the International Conference of Motivational Interviewing (2017) as a means of stimulating discussion and exploration of the pertinent ethical questions that stem from this unusual triadic interaction and the use of MI. Feedback and comment were used to establish ‘*The acceptability of influence to the veterinary profession*’ within Alison’s concluding Thesis chapter.

Objective 3. Evaluate training package and improvement of communication

Outcome 1. Methodological development: coding tools for analysis of MI training package

With the goal of establishing a training feasibility trial, Alison explored the usefulness and applicability of an existing MI coding protocol for consultation analysis (the Motivational Interviewing Treatment Integrity Code, MITI 4; Moyers, Manuel and Ernst, 2014) to role-play data (Described in Aim 1) to inform methodological development, in combination with the Motivational Interviewing Measure of Staff Interaction (MIMSI) scale (Hohman and Matulich, 2010) as a measure of client perception of MI (autonomy support,

collaboration and evocation) within the consultation. MIMSI and MITI 4 data were analysed statistically (SPSS Version 23; IBM Corp., Armonk, NY) to determine the strength and direction of associations between veterinarian and actress data.

MITI 4 (Moyers, Manuel and Ernst, 2014) coding exploration suggested the protocol was a useful coding tool to support the analysis MI in the herd health context, with positive outcomes in applicability and assessment of verbal behaviour measures, good intracoder agreement between two coding bouts and sound data utility for assessing an intervention trial. A statistically significant positive correlation between veterinarian use of reflections and the sense of autonomy support and collaboration experienced by the 'farmer', and a statistically significant negative correlation observed between veterinarian use of MI-inadherent behaviours (persuasion and confrontation) and the sense of experienced by the 'farmer', supported the validity of MITI coding with regards to client experience in the herd health advisory context.

Outcome 2. Evaluation of MI training package

Practicing cattle veterinarians (n=60) attended brief MI training and were asked to record an audio file of advisory communication on '*any change for the benefit of herd health*' before and after the experience, in addition to filling out a questionnaire on the training (exploring learning outcomes, perceptions of the training experience and skills learnt, financial value of training and recommendations for other veterinarians). Of these veterinarians, 36 completed the questionnaire and 14 completed the full study protocol (i.e. appropriate consent forms submitted, audio recording of at least one pre and post training consultation submitted).

Anonymised audio files (n=31) were analysed in Noldus Observer 5.0 using the Motivational Interviewing Treatment Integrity code to capture veterinarian advisory communication behaviour and the Client Language Assessment in Motivational Interviewing code to capture farmer change language (predictive of future behaviour change). Statistical analysis explored (i) *changes in veterinarian communication following training* (whether significant differences existed between pre- and post-training communication behaviours using paired sample t-tests/sign tests, SPSS Version 23) and (ii) *the validity of MI skills prescribed in training applied in the cattle veterinarian context* (Pearson/Spearman's correlation between veterinarian verbal behaviours and farmer responses: SPSS Version 23, temporal transitions between veterinarian and farmer verbal behaviours: GSEQ 5.1; Bakeman and Quera, 2011). Questionnaire responses were summarised to report (iii) *veterinarian perspectives of training*.

(i) changes in veterinarian communication following training

Comparison of veterinarian verbal behaviour before and after training suggests that brief MI training can have a powerful effect on veterinarian advisory language, with post-training samples evidencing significant reductions in persuasion/confrontation and significant increases in relational, technical and reflective (empathic) veterinarian ability. A significant increase was also witnessed in farmer change talk in the post-training sample, indicative of farmers engaging in herd health discourse more positively.

(ii) validity of prescribed training measures in cattle veterinarian context: links to outcome change language

Whilst nuanced and complex, sequential analysis of temporal communication data broadly supported the causal chain hypothesised within MI; namely, that those verbal behaviours that are especially consistent with MI (such as seeking collaboration, emphasising autonomy and affirming) are most likely to increase the probability of client change talk – arguments in favour of behaviour change - following veterinarian speech. Those verbal behaviours that are inconsistent with MI (such as persuasion) are most likely to increase the probability of sustain talk – arguments against the behaviour change, or in favour of the status quo - following veterinarian speech.

Data suggest that the behaviours that dominate existing veterinary communication - information giving and persuasion - were not significantly associated with farmer expression of change talk and were more likely to be associated with neutral farmer language or language against change. Conversely, reflective empathic statements were significantly associated with change and sustain language. These data support the relational hypothesis of MI: given a context of accurate and empathic listening, clients are more likely to spontaneously vocalise and explore change (Moyers, 2014). The significant shift in training towards an increase in these

skills and a reduction in persuasion is therefore a positive one, which would be hypothesised to increase change talk. Indeed, change talk increased significantly post-training, supporting this assertion.

These outcomes are particularly significant given the predictive value of this language, with clients that offer relatively more change talk than sustain talk during advisory interactions more likely to implement change than comparable clients who offer more sustain talk than change talk (Campbell, Adamson and Carter, 2010; Morgenstern *et al.*, 2012; Walker, 2012; Gaume *et al.*, 2013).

(iii) veterinarian perspectives of training

Questionnaire data from participating veterinarians suggested that this quantitative assessment of veterinarian skill aligned with qualitative self-reports on the experience of brief training - namely, that veterinarians were able to adopt a variety of MI-consistent approaches and core skills in their interactions with clients. Additionally, questionnaires highlighted the meaning of these skills to the veterinarians; that veterinarians reported feeling better equipped to engage their farmers, improve client relationships, structure their conversations more effectively and inspire change after brief MI training indicating that this novel approach offered '*something genuinely different that made a lot of sense*'.

Aim 4. Measure and compare uptake of interventions

Given the time constraints of the PhD creating practical limitations on collecting data that would reflect the impact of advisory consultations on farmer implementation on farm, for the purposes of this PhD Alison chose to focus on reporting farmer change language as a proxy measure for behaviour change. As described above, this language is predictive of behavioural outcomes, with clients that offer relatively more change talk than sustain talk during advisory interactions more likely to implement change than comparable clients who offer more sustain talk than change talk (Campbell, Adamson and Carter, 2010; Morgenstern *et al.*, 2012; Walker, 2012; Gaume *et al.*, 2013), with specific types of change language (such as commitment statements) or particular predictive value. Given significant increases in veterinarian MI consistency post training and the relationship of these skills to client change talk (detailed above), it was hypothesised that uptake of interventions would be enhanced when veterinarians adopted a more MI consistent communication approach. Given this necessary adjustment to the PhD aims, Alison and Kristen sought to support further research in this context that offered the scope to address this important question. Through collaboration with the Swedish University of Agricultural Sciences on a Formas funded project entitled '*Motivational interviewing as a means to decrease antimicrobial drug use in animal production*', they are now co-authors of the following study currently under review in BMV Veterinary Research that seeks to bring insight on this question in to the veterinary sphere.

Dairy herd health management activities in relation to training of veterinarians in Motivational Interviewing

Catarina Svensson; Hans Wickström; Lars Forsberg; Staffan Betnér; Claudia von Brömssen; Kristen Klara Reyher; Alison Margaret Bard; Ulf Emanuelson

MI skills of 36 Swedish cattle veterinarians randomly distributed into two groups - MI veterinarians (n=18) who had received 6-months training in MI and control veterinarians (n=18) who were not trained - were assessed using the Motivational Interviewing Treatment Integrity coding system. Skills were categorized as poor_untrained, poor_trained, near moderate and moderate. Veterinarians each visited 2-6 cattle farms which they revisited 3-6 months later to document implementation of recommendations. Gamma models and logistic or ordered logistic regression models were used to evaluate association between MI training and performance measured as: a) proportion of consultations resulting in written herd health plans, b) proportion of recommended measures fully or partially implemented, c) mean Likert scores of different estimates of client satisfaction, d) total time during 6 months allocated to VHHM visits on cattle farms.

Were there any challenges or barriers/modifications to the project?

Participant focus: veterinarians and farm assurance ‘advisors’

The original focus of the project was to assess both farm assurance and veterinary advisors in the herd health advisory paradigm. On the commencement of the PhD, Alison ran a brief MI workshop session with farm assurance assessors (n=26) from diverse organisations. Given that MI has a focus on moving a client towards behaviour change, she explored how this might fit within the farm advisor role by providing questionnaires on whether those in farm assurance have a role in promoting best practice (above standards) and – following the brief MI workshop (information, video and exercise) - asking whether the principles might be useful to farm assurance workers. There was feedback that the role of a farm assurance assessor may be different to a farm advisor (like a veterinarian), in that they were not always there to provide additional information and their role in motivating and influencing was less pronounced. There were great individual differences between schemes in what the role was perceived to be and, as such, whether/how MI might fit.

Alison then interviewed three UK farm assurance scheme managers on the challenges in the assessor role, skills critical to the assessor role and the potential for MI to be used by assessors to gain more nuanced insight. It was apparent that perceptions of the role were very different between these individuals, which significantly altered the perceived level of acceptability and integration of a methodology such as MI. For example, these contrasting perspectives on the role:

(Assessor 1) *“We try to give advice to farmers when they don’t meet minimum standards. In this way we promote animal welfare beyond current standards”*

(Assessor 2) *“(Our scheme) does not provide additional information or motivate”*

Given the contradictory definitions of the role of the farm assurance assessor (particularly in relation to motivating change in animal health and welfare outcomes) and the differences attributed to this role and that of a veterinarian, pursuing research that simultaneously evaluated these contexts did not appear to be straightforward; indeed, it was felt that the examination of either would require a full PhD project. Alison and her supervisory team decided to push forward with examination of the veterinary advisory paradigm alone, given the large scope of this research to both understand the advisory context and develop, deliver and analyse training, which was not felt to be achievable across both farm assurance and veterinarian roles in unison. The team were however confident that any training developed could be adapted for those in farm assurance assessor (and wider animal health and welfare) roles, given careful thought at the completion of the study.

Methodological changes

The final outcomes detailed previously meet the initial objectives detailed in AWF grant submission, however many details relating to the structure of the research were changed. These changes were carried out in a responsive way as Alison progressed through the research, as our understanding of the research methodologies, participant involvement and training context evolved. It is difficult to list these sequential alterations without an extensively detailed narrative, however these changes are clearly indicated in the previous section where the detailed outcomes for each aim can be compared to the original grant. Alison is happy to discuss the thought process underpinning these changes if this is of use to the AWF team; she and the supervisory team are confident this research approach was more methodologically robust and better able to deliver the objectives detailed in the original grant submission.

Provide details of knowledge transfer activities to date and any future plans/actions.

INVITED PRESENTATIONS AND WORKSHOPS

Forthcoming

- *'Motivational Interviewing and mastitis management: how evidenced-based communication can support your advisory role'* (2021) Workshop: National Mastitis Conference- Virtual/Texas, USA

Completed

- *'The Future of Youngstock Management- Understanding the Individual'* (2020) Keynote Presentation, University of Sydney and University of British Columbia Discussion Symposium- Virtual
- *'Engaging clients in conversations on behaviour change: a brief introduction to Motivational Interviewing and mastitis management'* (2020) MEX ConneXion Event – Virtual/US/UK/ France/Belgium
- *'Building engagement with herd health advice: a Motivational Interviewing perspective'* (2019) Workshop: Synergy Farm Health- Dorset, UK
- *'Motivational Interviewing in your veterinary role'* (2019) Workshop- University of Surrey, Production Animal Elective. UK
- *'The Farm Advisor Communication Tool (FACT): practical support for effective conversations on veterinary medicines use'* (2019) Webinar- The Webinar Vet
- *'Theories of Change: Self-Determination and the Transtheoretical Model of Change'* (2018) Workshop and Presentation: AHDB KE Staff Development Day on 'Approaches to get farmer/grower buy in and changing the mind-set' - Coventry, UK
- *'Motivational Interviewing: enhancing conversations about change'* (2018) XLVets National Farm Meeting, Hexham, UK
- *'The adoption of MI by animal health & welfare advisors: rationale, research & current professional engagement'* (2018) Presentation: Motivational Interviewing Network of Trainers, UK and Ireland Chapter Meeting – Gloucestershire, UK
- *'The future of BVDFree: Partnership or persuasion?'* (2018) Workshop: 'BVD Free' events - Worcester, Honiton and Liverpool, UK
- *'Motivational Interviewing and Herd Health Advice: engaging clients in helpful conversations about behaviour change'* (2018) Webinar- The Webinar Vet, sponsored by BCVA
- *'Resistance to advice is not pathological'* (2018) Workshop: Boehringer Ingelheim Animal Health Nordics- Vejle, Denmark
- *'Motivational Interviewing and veterinary communication'* (2018) Workshop: Autonomous University of Barcelona, Department of Animal and Food Science- Barcelona, Spain
- *'Research update – Improving dairy cattle welfare through Motivational Interviewing'* (2018) British Veterinary Association Animal Welfare Foundation Discussion Forum- London, UK
- *'Effective communication in large animal practice'* (2018) Presentation, Society of Practising Veterinary Surgeons Congress- Newport, UK
- *'Motivational Interviewing as a tool for behaviour change'* (2018) Human Behaviour Change for Animals: from principles to practice. Workshop Event, Exeter
- *'Motivational Interviewing and veterinary communication: inspiring farmers and ranchers in conversations about change'* (2018) Western Canadian Association of Bovine Practitioners- Calgary, Canada
- *'Motivational Interviewing: enhancing conversations about change'* (2018) Workshop, Boehringer Bovine and swine annual meeting- Calgary, Canada
- *'Inspiring change using Motivational Interviewing: can evidence-based veterinary communication enhance client outcomes?'* (2018) Ontario Veterinary College: Guelph, Canada
- *'Motivational Interviewing: enhancing veterinary communication on behaviour change'* (2018) Workshop, Ontario Veterinary College- Guelph, Canada
- *'An Introduction to Motivational Interviewing'* (2017) Workshop, Human Behaviour Change for Animals- Bristol, UK
- *'Communicating about antimicrobial stewardship'* (2017) Webinar- Boehringer Academy series
- *'Improving dairy cattle welfare: promoting uptake of veterinary advice'* (2017) Presentation with Kristen Reyher, British Veterinary Association Animal Welfare Foundation Discussion Forum- London, UK
- *'Motivational Interviewing'* (2017) Presentation, AHDB staff development day- Stratford-upon-Avon, UK

- *'How communication can improve animal well-being'* (2017) Workshop, Boehringer Expert Forum on Farm Animal Well-Being- Rome, Italy
- *'Advising on behaviour change: communication matters'* (2017) Presentation, Waitrose Farming Partnership Livestock Steering Group, Fieldstaff Development Day - Warwickshire, UK
- *'Motivational Interviewing and The National Johnes Programme'* (2017) Workshop: provided within *'Winning Farmer Engagement'* (Dick Sibley and Peter Orpin) British Cattle Veterinary Association Congress - Stourport, UK
- *'Inspiring change: what motivational Interviewing can teach us about communicating herd health advice'* (2016) Workshop, British Cattle Veterinary Association Congress - Hinckley, UK
- *Motivational Interviewing- what could it do for us?* (2016) Presentation and workshop, The Brooke-London, UK
- *'Motivational Interviewing communication strategies'* (2016) Hennovation facilitators training- Bristol, UK

CONFERENCE PRESENTATIONS

- *'How – and under what circumstances – can veterinary communication inspire farmer behaviour change? A qualitative investigation'* (2018) Presentation: 30th World Buiatrics Congress – Sapporo, Japan (Presented by Kristen Reyher)
- *'Veterinarian communication on herd health: a feasibility study of Motivational Interviewing and farmer change language'* (2018) Presentation: 30th World Buiatrics Congress – Sapporo, Japan (Presented by Kristen Reyher)
- *'Understanding the 'battle ground' of behaviour change: a qualitative exploration of veterinarian and farmer perceptions on the enactment of herd health advice'* (2018) Presentation : British Cattle Veterinary Association Congress - Hinckley, UK (Presented by Kristen Reyher)
- *Veterinarian communication on herd health: a feasibility study of Motivational Interviewing and farmer change language* (2018) International Conference on Communications in Veterinary Medicine-Ontario, Canada (Presented by Kristen Reyher)
- *How- and under what circumstances- can veterinary communication inspire farmer behaviour change? A qualitative investigation* (2018) International Conference on Communications in Veterinary Medicine-Ontario, Canada (Presented by Kristen Reyher)
- *'Inspiring change through Motivational Interviewing- can evidence-based veterinary communication influence farmer behaviour?'* (2017) Presentation, The 10th Animals for Asia Conference- Kathmandu, Nepal
- *'A feasibility study of Motivational Interviewing: the effect of brief training on veterinarian communication and farmer change language in herd health discussions'* (2017) Presentation, British Cattle Veterinary Association Congress - Stourport, UK
- *'Motivational Interviewing for third party benefit: navigating the ethical use of influence'* (2017) Presentation, International Conference on Motivational Interviewing, 2017- Philadelphia, USA
- *'Should we teach Motivational Interviewing skills within the veterinary curriculum?'* (2017) Presentation, Veterinary Education Symposium- Liverpool, UK
- *'It's the dollar value... isn't it? Form, function and efficacy of veterinary advice for farmer behaviour change: a qualitative investigation'* (2016) Poster, Animal Welfare Research Network second annual meeting - Birmingham, UK
- *'Inspiring change: can Motivational Interviewing improve the uptake of advice on cattle health and welfare?'* (2016) Presentation, Human Behaviour Change for Animal Welfare - Surrey, UK
- *'It's the dollar value... isn't it? Form, function and efficacy of veterinary advice for farmer behaviour change: a qualitative investigation'* (2016) Presentation and poster, British Mastitis Conference - Worcester, UK
- *'Advising on mastitis: The use of in-depth, qualitative interviews to investigate the efficacy of current veterinarian strategies'* (2016) Presentation, European Mastitis Research Workers meeting- Stourport-on-Severn, UK
- *'What really matters in herd health advice? The use of in-depth, qualitative interviews to investigate the efficacy of advisory and communication strategies currently employed by cattle veterinarians'* (2016) Poster, British Cattle Veterinary Association Congress - Hinckley, UK
- *'Improving dairy cattle welfare: promoting uptake of veterinary advice through evidence-based communication approaches'* (2016) Poster, Animal Welfare Research Network inaugural meeting - London, UK

- *'What really matters in herd health advice? The use of in-depth, qualitative interviews to investigate the efficacy of current advisory strategies'* (2016) Presentation, World Buiatrics Congress - Dublin, Ireland
- *'Understanding communication on mastitis management: could Motivational Interviewing aid in the uptake of advice?'* (2016) Poster, World Buiatrics Congress - Dublin, Ireland
- *'Motivational Interviewing- a communication strategy to promote the uptake of advice on mastitis management'* (2015) Presentation with Kristen Reyher, British Mastitis Conference - Worcester, UK
- *'Motivational Interviewing- what could it do for us?'* (2015) Presentation, Animal Welfare Science Ethics and Law Association Autumn conference 'From research to practice' - Bristol, UK
- *'Strategies adopted by key influencers to promote the uptake of advice on animal health and welfare'* (2015) Poster, Universities Federation for Animal Welfare 'Animal populations – World Resources and Animal Welfare' conference- Zagreb, Croatia
- *'Using motivational interviewing in veterinarian-farmer communication: towards improved uptake of veterinary advice'* (2015) Presentation, British Cattle Veterinary Association Congress- Hinckley, UK (Presented by Kristen Reyher)

WORKSHOPS

- *'Effective communication of welfare outcome assessments'* (2015) Assurewel International meeting on 'Communicating Welfare Outcomes'- Vienna, Austria
- *'Animal Welfare: Influencing and behaviour change'* (2015) Red Tractor Assurance: Dairy Welfare Outcomes training day (VETSM0046) - Bristol, UK

INTERNAL PRESENTATIONS (UNIVERSITY OF BRISTOL)

- *People, practices and AMR: research examining (i) a farmer centred approach to veterinary advisory services (Motivational Interviewing) and (ii) diagnostic innovation and treatment decision making in livestock farming* Presentation: South West National Farmer's Union Visit
- *'People, practices and (behaviour) change'* (2019) Presentation, Bristol Vet School Research Mingle
- *'The future of veterinary communication: partnership or persuasion'* (2017) Presentation at Bristol 'Three Minute Thesis' and interactive display at Bristol 'Research without Borders'
- *'Improving dairy cattle welfare: promoting uptake of veterinary advice'* (2016) Presentation, School of Veterinary Sciences research lunch
- *'Improving dairy cattle welfare: promoting uptake of veterinary advice'* (2015) Presentation: Postgraduate research day
- *'Improving dairy cattle welfare: promoting uptake of veterinary advice'* (2014) Presentation: BVSc undergraduate research day

ONLINE LEARNING

- *'Strategies for motivating change towards more responsible antimicrobial use'*
Future Learn: Antimicrobial Stewardship in Veterinary Practice (Integration of MI work: presented by Kristen Reyher)
<https://www.futurelearn.com/courses/antimicrobial-stewardship-in-veterinary-practice>

Provide details of any original peer-reviewed research papers, book chapters and books/monographs that have resulted directly from your work supported by this grant.

PUBLISHED

To change or not to change? Veterinarian and farmer perceptions of relational factors influencing the enactment of veterinary advice on dairy farms in the United Kingdom

Bard, A. M., Main, D., Roe, E., Haase, A., Whay, H. R. & Reyher, K. K., 1 Nov 2019, In : Journal of Dairy Science. 102, 11, p. 10379-10394 16 p.

The future of veterinary communication: Partnership or persuasion? A qualitative investigation of veterinary communication in the pursuit of client behaviour change

Bard, A., Main, D., Haase, A., Whay, B., Roe, E. & Reyher, K., 3 Mar 2017, In : PLOS ONE. 12, 3, 17 p., e0171380.

FOR SUBMISSION 2020/21: drafted and seeking co-author(s) approval

Encouraging self-determination in herd health advisory discourse: a sequential linguistic analysis of veterinarian-farmer communication and motivational interviewing

Bard, A. M., Main, D., Roe, E., Haase, A., Whay, H. R. & Reyher, K. K.

Have any other funding bodies been involved in supporting the development of the work supported by this grant?

No.

Has any intellectual property activity has resulted directly from the research funded through this grant to date?

No. MI booklets, presentations and support sheets produced for the MI training were informed by materials provided to Alison freely via the Motivational Interviewing Network of Trainers (MINT) under a creative commons license 'Sharealike 4.0'. This explicitly states '*If you remix, transform, or build upon the material, you must distribute your contributions under the same license as the original*'. As such, all our material is similarly creative commons.

For further details please see: Attribution-ShareAlike 4.0 International (CC BY-SA 4.0)
<http://creativecommons.org/licenses/by-sa/4.0/>

How has the grant contributed to the professional development of the staff named above (including yourself)?

Alison Bard

Alison is now a Research Associate in Veterinary Communication and Social Science at the Bristol Veterinary School, working within Bristol's AMR Force to pursue her passion for understanding the complexities of veterinarian and farmer behaviours. Alison would not be in this position without the opportunities available to her through this PhD studentship, which encouraged:

- (i) the development of a comprehensive research skill set in the collection, analysis and presentation of both quantitative and qualitative data
- (ii) invaluable insight into the organisation of - and interaction between - key actors within our research context, where Alison effectively recruited, managed and liaised with individuals from the farming and veterinary communities; more than 50 farmers and 80 veterinarians (representing 10 practices and one regional group) contributing across her PhD studies
- (iii) honing her approach to scientific presentation and networking with diverse stakeholders, speaking on this PhD topic in academic, charity and industry contexts
- (iv) the building of skills and confidence in the practice and training of Motivational Interviewing; she has now provided training in MI to animal health and welfare professionals both nationally and internationally

Emma Roe

Emma is a social and cultural geographer often found working in the spaces of transdisciplinary research. Her theoretical and methodological interests develop across two major research themes - the spheres of farming and laboratory animal research - where she studies human-animal relations through supply chain and animal care practices. This project allowed Emma to extend her work in the farming sphere.

Have you, or any of the staff included above, received any prizes, awards or commendations as a direct result of the research supported by this grant to date?

Alison Bard

- ‘Best Communication: Notable Mention’, Research without Borders, University of Bristol (2017)
- ‘Best Poster Prize’, British Mastitis Conference (2016)
- ‘School of Veterinary Science Impact Award’ for planned PhD impact activities, University of Bristol (2015)

If any clinical trials have been supported by the funding of this grant, please enter the title of the trial and briefly describe any key developments or outcomes

N/A

Have the results been published? If yes please state when:

N/A

Use the space below for any other relevant information you wish to report on.

ENGAGEMENT WITH WIDER ACADEMIC INSTITUTIONS

Autonomous University of Barcelona, Barcelona, Spain

In 2018, Alison visited the Animal Welfare group to provide training in MI and a research overview of her PhD studies to offer insights into engaging with pet owners and farmers in their research activities.

Ontario Veterinary College, University of Guelph, Ontario, Canada

Funded by Boehringer Ingelheim Canada, Alison visited Ontario Veterinary College in 2017 to promote awareness of the MI methodology, share research outcomes and provide a taster of MI training with staff and students. Training in Motivational Interviewing has subsequently been included in their ‘Dairy Health Management Continuing Education Program’, a course aimed at progressive dairy veterinarians to expand their knowledge, skills and attitudes so they may enhance the health and sustainability of dairy farms. The course is delivered as a series of 12 meetings over two years to a class of about 40 enthusiastic practitioners.

Prof. Jason Coe – researcher in veterinary communication – was interested and able to act as Alison’s external examiner for her Viva at the University of Bristol. Jason Coe now supervises Kat Sutherland as a PhD candidate, examining how communication about pet obesity between veterinarians and clients may be improved and the potential application of Motivational Interviewing to weight-management conversations in small animal veterinary practice.

Swedish University of Agricultural Science, Uppsala, Sweden

Following contact from Prof. Catarina Svensson in 2015, Alison and Kristen collaborated with Catarina and four co-applicants and secured a Formas grant to study 'Prevention better than cure: motivational interviewing as a means to reduce antimicrobial drug use in animal production'. A cohort of 42 Swedish veterinarians were enrolled on this study from 2016-2018 examining baseline veterinary communication in Swedish cattle veterinarians, the effects of training in Motivational Interviewing on cattle veterinarian communication, client response and outcome behaviour, influential factors in the uptake of advice and the relative advantages of assessing veterinarian communication in differing contextual conditions. The following papers have resulted from this collaboration, which further enrich the evidence-base for MI in cattle veterinary contexts in addition to Alison's work produced during her PhD:

Dairy veterinarians' skills in motivational interviewing are linked to client verbal behavior

Svensson, C., Forsberg, L., Emanuelson, U., Reyher, K. K., Bard, A. M., Betnér, S., von Bromssen, C. & Wickström, H., 19 May 2020, In : *animal*. 11 p.

Training in motivational interviewing improves cattle veterinarians' communication skills for herd health management

Svensson, C., Wickström, H., Emanuelson, U., Bard, A. M., Reyher, K. K. & Forsberg, L., 17 Apr 2020, In : *Veterinary Record*. 9 p.

Communication styles of Swedish veterinarians involved in dairy herd health management: A Motivational Interviewing perspective

Svensson, C., Emanuelson, U., Bard, A. M., Forsberg, L., Wickström, H. & Reyher, K. K., 1 Nov 2019, In : *Journal of Dairy Science*. 102, 11, p. 10173-10185 13 p.

Trust, feasibility, and priorities influence Swedish dairy farmers' adherence and nonadherence to veterinary advice

Svensson, C., Lind, N., Reyher, K. K., Bard, A. M. & Emanuelson, U., 1 Nov 2019, In : *Journal of Dairy Science*. 102, 11, p. 10360-10368 9 p.

In review with journal:

Dairy herd health management activities in relation to training of veterinarians in Motivational Interviewing

Catarina Svensson; Hans Wickström; Lars Forsberg; Staffan Betnér; Claudia von Brömssen; Kristen Klara Reyher; Alison Margaret Bard; Ulf Emanuelson

In review with co-authors:

Simulated client interactions as a measure of clinician 'real-life' skill: a motivational interviewing study of veterinary medical dialogue and respondent client behaviour

Alison Margaret Bard, Catarina Svensson; Ulf Emanuelson; Hans Wickström; Lars Forsberg; Staffan Betnér; Claudia von Brömssen; Kristen Klara Reyher

CONTRIBUTIONS TO VETERINARY EDUCATION

- Alison provided a workshop at VetEd 2017 on 'Should we teach Motivational Interviewing skills within communication skills training in the veterinary curriculum' as a means to engage with and disseminate ideas with individuals from other veterinary teaching institutions (<https://www.thewebinarvet.com/pages/veted-symposium-2017/>)

- Alison co-supervised two undergraduate communication projects at Bristol during her PhD

Ilikiya Guruswamy (2015-2016): Animal Behaviour and Welfare BSc Student, Bristol Vet School (Intercalating BVSc undergraduate) : *'Using Motivational Interviewing in first opinion small animal veterinary practice'* Dissertation project

Joshua Woodward BSc (2015) Animal Behaviour and Welfare BSc, Bristol Vet School *'Analysis of communication skills used in veterinarian-client interactions in large animal practice: a focus on empathic verbal behaviours'* Summer Animal Behaviour and Welfare research placement

- Alison provided lectures on Motivational Interviewing to BVSc undergraduates during her PhD (University of Bristol)
- Alison provided workshops on Motivational Interviewing for student Farm Animal and Professional Skills BVSc electives (University of Bristol, University of Surrey)

ENGAGEMENT WITH INDUSTRY

Throughout the course of her PhD, Alison engaged in discussion with a variety of companies actively involved in communication training (Onswitch, Zoetis, The Veterinary Defence Society). These were exploratory meetings looking at opportunities to roll out MI training further. To date, the complexities of delivering MI training and the demands of a busy role in research have not enabled delivery of the ideas discussed, but there is certainly an appetite for this material and topic that could be explored further.

POLICY

In her current role within the Diagnostic Innovation and Livestock Project at Bristol Vet School, Alison organised a meeting with members of the Parliamentary Office for Science and Technology (POST) in May 2018 regarding the POSTnote *'Reducing UK Antibiotic Use in Animals'* (POSTnotes provide impartial, balanced and peer-reviewed briefings that make research evidence accessible to the UK Parliament). As part of the topics covered within this meeting, Alison was able to discuss her PhD research on training veterinarians in Motivational Interviewing. These insights were included in the policy briefing document: <file:///C:/Users/as12141/Downloads/POST-PN-0588.pdf>

NEWS

Project publication (PLOS One 2017) noted by:

- 'In Practice' News Section (2017) *'Using motivational interviewing can help vets change client behaviour'* *Veterinary Record* **180**, 39
- Veterinary nursing news via <https://www.vetnurse.co.uk/b/veterinary-nursing-news/posts/vets-need-to-stop-telling-owners-what-to-do>
- 'Horse talk' <https://www.horsetalk.co.nz/2017/05/05/vets-change-connect-clients-research/>
- Canadian Vet News
- American College of Veterinary Surgeon emails

Lastly: a huge THANK YOU to AWF from Alison: I feel truly blessed to have been able to complete this PhD project and initiate the beginning of a real culture shift in the provision of advisory services across animal welfare and health professions. It has been exciting, rewarding and fascinating! I hope with continued work - both at the University of Bristol and through individuals and institutions we have engaged with throughout the project - the impact of this PhD is only just beginning.