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encouraging improved animal health and responsible medicines use through data collection and benchmarking within the UK beef industry

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The responsible use of farm animal medicines - specifically antimicrobials (AMs) - is a key concern for all food system stakeholders. Farmers and veterinarians must demonstrate responsible and evidence-based medicines usage to maintain both animal health and safe food production. Data from UK dairy farms has shown that use of highest-priority critically important AMs (HPCIA) may be significantly reduced or stopped altogether while improving cattle health and productivity. Improving on-farm medicines usage has been shown to be facilitated by benchmarking between time periods, farms and industry sectors. Various AM benchmarking metrics are already in use by UK livestock industries (e.g. mg/kg, mg/population-corrected unit (PCU), average daily dose (ADD), etc.), with the relevance, applicability and adoptability of each metric depending on the quality of input data. However, UK beef producers are unique in that, in contrast to other livestock industries, farms are heterogenous, spanning a wide range of cattle breeds, herd sizes, production systems and marketing strategies. This study used on-farm interviews, questionnaires and medicine records in combination with veterinary prescribing records to gain an understanding of the quality and quantity of medicines data available from UK beef farms in order to develop adoptable, appropriate and effective data collection methodologies. Focus groups involving farmers, veterinarians and beef industry stakeholders were also convened, with novel participatory methodology used to gain insight into opportunities for, and barriers to, data collection. Although it is a legal requirement to keep detailed medicine records, the UK has no standard approach for beef operations, with considerable differences in the quality, accessibility and extent of data recorded between operations. The absence of logical and technical standards for recording and interchange of medicines data, combined with the diversity of approaches to recording by farms in this study, has revealed impediments to development of effective data pipelines for on-farm medicine use. The medicines data that is recorded is often confounded by multiple beef operations on a single holding or the co-presence of sheep or dairy operations. Furthermore, many beef operators do not weigh their cattle and growing cattle move between operations without concurrent movement of medicine records. It is therefore difficult to calculate accurate livestock weight-based metrics (e.g. mg HPCIA/kg cattle liveweight), dose-related metrics (e.g. ADD) or AM footprints (total AM use over the animal's lifetime/kg beef produced). Nevertheless, metrics that allow cattle producers to benchmark medicines use between cattle groups or timepoints and allow for AM usage to be quantified and compared (total mg AM or HPCIA/standard beef cattle unit) are achievable by and applicable to the current UK beef cattle industry. Establishing such metrics will encourage producers to improve both animal health and responsible medicines use. In future, it is expected that there will be significantly greater linkages between cattle productivity, health and disease, movement and medicines recording databases such that, with the adoption of electronic cattle identification, it will be possible to benchmark medicines use not simply by operation, but on an individual animal basis. This study was funded by AHDB Beef & Lamb