

## The 6th International Colloquium on Working Equids



29<sup>th</sup> November - 2<sup>nd</sup> December 2010 | India Habitat Centre, New Delhi, India



### Learning from others:

Drawing inspiration from the fields of international development, social science, human health and education to break new ground for working animals

Organised by:



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Proceedings of a Colloquium organised by The Brooke

at the India Habitat Centre, New Delhi, India

29<sup>th</sup> November - 2<sup>nd</sup> December 2010

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## The Brooke's foreword

We are pleased to introduce the Proceedings of the 6th International Colloquium on Working Equids, hosted by the Brooke and held at the India Habitat Centre, New Delhi, India, 29<sup>th</sup> November to 2<sup>nd</sup> December 2010.

Since 1991 the International Colloquium on Working Equids has been an important forum for discussing the recent and most important issues related to working donkeys, horses and mules. As half of the world's 44 million donkeys are used for work in Asia, India provides a significant and exciting venue for this Colloquium.

The aim of the 6th Colloquium is to broaden the horizons of those engaged in the world of working equids, bringing animal scientists, project managers, veterinarians and policy makers together with experts in international development, social sciences, human health and education. In doing so, new approaches can be explored to benefit both working animals and their owners. This four-day conference provides an excellent opportunity to exchange experience and ideas, to learn from others, to share best practices and ultimately benefit working donkeys, horses and mules world-wide.

We would like to thank delegates for submitting their papers in a timely manner and for their assistance in the post-submission process. This has enabled us to compile these Proceedings prior to the Colloquium and include them in delegates' welcome packs, to ensure delegates can refer to all the papers during the Colloquium and can use them to initiate discussions with others. To make this possible the editing process was necessarily short, therefore we apologise if some grammatical or spelling errors may remain in the papers.

The views expressed in these Proceedings are those of the respective paper authors and do not necessarily reflect those of the hosts, organisers or sponsors. The Brooke cannot vouch for the accuracy of information contained in these papers. Please take particular note that some of the papers are specialised and contain information, such as veterinary drug doses, which should be clarified and confirmed by their authors before use. Most papers have a corresponding author email address and we encourage delegates to meet authors personally, discuss their work at the Colloquium and exchange contact details for future communication and collaboration in their specific areas of interest.

In keeping with the theme of this Colloquium, **Learning From Others**, we would like to encourage all delegates to participate actively and enthusiastically. Please talk to keynote speakers and Chairs about their work, ask and answer questions, take part in the interactive sessions, demonstrate and share ideas at the Share and Learn Marketplace and feel free to organise your own satellite meetings and discussions throughout the week. The success of the Colloquium depends on you!

Welcome to Delhi!

Petra Ingram, CEO, The Brooke

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## MONITORING AND EVALUATION IN DEVELOPMENT WORK: WHY INVOLVING LOCAL PEOPLE MATTERS AND HOW IT CAN BE DONE

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### Introduction

There are multiple purposes for the work of monitoring and evaluation (M&E), which has risen up the development agenda in recent years. These include: accountability for the use of funds to donors/trustees; demonstrating impact and the value of the work for donors, supporters, fundraising, and advocacy work; accountability to the people in whose lives agencies have intervened; and learning to improve practice and deepen understanding. There are different approaches and tools associated with each purpose: currently the dominant tool for accountability to donors and trustees is the logical framework (the logframe), which sets an overall goal and clear targets to be achieved with predetermined indicators for assessing how far the planned activities were undertaken and the outcome targets met. While this is a controversial tool for some [1] the perceived logic and 'rationality' of the logframe, especially for management and bureaucratic purposes, combined with the current focus of aid on 'demonstrating results', keeps it centre stage. For feeding back to supporters and for fundraising data about the reach and achievements of the work are supplemented with stories of change, focused on how the intervention affected the lives of poor women and men.

These processes tend to be extractive, tracking the work of the project and its impact in order to take the story back to continue the cycle of fundraising, advocacy work, and upward accountability. They tend not to involve or enlighten local participants or enhance their engagement in the work. At the same time there is much talk of involving the local people directly affected by the work in the planning, implementation, monitoring and evaluation of the work, recognising that without local ownership the work will not be sustainable. There are also commitments by INGOs to downward accountability, which is felt to be ethically right. However, comparatively little time is put into this: local people tend to be consulted rather than involved, they often do not play a role in deciding if the project being offered is appropriate, or in planning or monitoring the work; they tend to have little control over the project cycle; and it is the exception when they are invited to give feedback on the value and relevance of the work. Unlike the donors/trustees they have little power over, or sanctions, for the INGOs working among them.

### Current practice

The dominance of upward accountability for the use of funds and progress achieved has implications for working in ways that are more participatory and involve reporting back and discussing with communities what has happened. Members of staff are more likely to be trained in logframe development and focused on results than learning how to listen and respond to local needs and priorities. Much time is spent in writing reports for HQ and donors, often based on complex data that need to be collected, leaving little time for staff to engage with the communities, women and men, to understand the issues from their perspective, their priorities and what success might look like for them. Staff can even end up delivering training or inputs to communities that they themselves know to be of limited worth because they are required to work to the plans rather than build their work on local knowledge.

The balance between upward and downward accountability was somewhat different a few years ago when there was more emphasis on engaging people in their own development and local participation in defining the priorities and learning with them. There was, for many agencies, a real concern with ensuring the agency of local women and men in the work, empowering them to take decisions and engage with change processes. This was the time when many methodologies emerged for promoting participation, local ownership, and ensuring both women and men could engage and be heard. Myriad tools and approaches exist and some are discussed below.

Currently, the time and openness for listening to local staff, volunteers, and poor women and men appear limited. Agencies are increasingly likely to arrive with strategies, agendas, and well defined plans including detailed M&E strategies. Timescales are often tight and the demands of genuinely working with people can be demanding and cut across existing assumptions and theories of change. At a recent meeting (2009 in London) of 25 medium-sized UK development NGOs only 3 staff were trained in the use of participatory approaches to planning and M&E while all knew about constructing logframes, setting targets, and developing indicators for measuring results. There was limited awareness that criteria for success as defined by agencies in UK and by men, women, and children on the ground might be divergent or that the expected impact written in the documents may not be easy to achieve. As one senior staff person in a Ministry in Kenya said recently, with a twinkle in his eye, many projects now 'are textbook projects': they look good on paper and they flow logically but they are not always grounded in a good grasp of reality, or an understanding of what really does and does not enable positive change in the lives of the poor.

Unless agencies and staff believe in the need to work closely with people and be accountable to them for the way they work, the plans they bring, the projects they promote then no amount of excellent participatory tools will ensure the engagement of local women and men in the work. These tools have real value, however, once that commitment is there.

### Tools and approaches for listening and accountability to the poor

Staff need to be encouraged to work closely with partners and communities; they need to be rewarded for listening and learning and bringing that learning back into the work, even if that challenges the assumptions and plans or changes the timelines. They will not bring back views and knowledge from the frontline unless the agency is willing to engage with the messiness and complexity of poverty and how it is experienced in different contexts.

If agencies are committed, interesting approaches include ones that recognise that international and even local NGOs are often involved in short-term interventions in the ongoing lives of others. While INGOs can and do provide support and information, ideas and leverage to enable women and men to address some of their challenges, their role is limited, their projects address only aspects of the problems people face, and the language and concepts they bring may be quite alien and take time to understand. This recognition requires humility and a real understanding of the limited role of external agencies in promoting positive change [2].

Other approaches involve the recognition that the people themselves know and understand the realities and constraints of their lives better than anyone else, and while they may lack external perspectives and knowledge of options they often have the best analysis of where the bottlenecks for them lie. Robert Chambers pioneered much of the work in enabling professional development workers to understand that farmers, for example, know their farming systems much more deeply than outsiders and have many creative ideas about improving the situation, but often need some technological or financial support. Recognising the talent, knowledge, and potential of the women and men in communities (as well as their constraints, which are often multiple and inter-related) helps agencies to better understand their own role and also their responsibility to work with and be accountable to local people [3].

Others have identified the critical importance of working closely with beneficiaries to promote review, reflection, and analysis about the work: how well the INGO delivered it, the progress made and where challenges, seen and unforeseen, lie. Standards, e.g. in humanitarian aid like the Humanitarian Accountability Partnership (HAP) [4], and in development work, e.g. around HIV and AIDS that many INGOs have signed up to, require discussion, consultation, and good accountability systems to the poor, including a proper complaints system. They require that beneficiaries (and in the case of HIV and AIDS those that are living positively) be directly involved in the planning and M&E of the work. While a few agencies are now HAP-accredited there is often a gap between aspirations and the practice on the ground: agencies signed up to good-practice standards on HIV still design programmes at times without the involvement of positive people. However, the commitment is there and work continues to restructure staff time and develop systems to ensure practice improves in future [5].



Agencies concerned with issues of gender equality and women's empowerment, which they see as core to addressing the intense poverty of women around the world, point to their lack of access to key resources, their lack of voice and representation, and their unequal position in the society which all need to be addressed. This can only be done when the local context and its cultural and belief systems are understood, and by working closely with women themselves to build their confidence, open up access to education and income earning, and enable them to go out and participate in public decision-making forums as well as increasing their participation and voice within their households. This work cannot be delivered without intense work with the community, including the men, who may find concerns about women's needs and rights alien at the start [6].

These approaches require time and commitment. Other tools to support this work include Participatory Rural Appraisal (PRA) methods for use in both planning and M&E [7]. Some involve exercises such as developing seasonal calendars with local people, developing timelines of their lives, mapping their resources, ranking their assets and challenges, drawing diagrams of power relations in the society and community, and much more. Some take less structured approaches through shared discussions and joint reflection about the work: the most well known 'participatory review and reflection approach' was developed by ActionAid International as part of its ALPS process [8]. The use of 'significant change stories', developed with those directly affected and checked with others in the community, is growing [9]; others collect case histories and stories which flow easily in oral cultures, where people often lack literacy.

Some have developed frameworks of accountability to the poor that include questions about the external NGO involvement and widely publicised ways of complaining about the work and the delivery of it [10]. There are constantly evolving methodologies and currently there is a Europe-wide programme looking at working with complexity and using participatory methods, to ensure the voices of the poor do shape development actions, funded by the Dutch [11].

There is, indeed, no lack of tools. Rather the use of such tools depends on how an agency understands and prioritises its work and allocates time, what messages staff get, and how much training and support is given to enable local staff and partners to spend time listening, engaging, and learning with communities women and men in their daily lives.

#### **The importance of looking at our own practice**

Agencies need to understand their role and to see their activities as only a small part of other people's lives, albeit often a pivotal one. They need to undertake more M&E of themselves to understand how their own performance affected progress. How well did they define the problem? How open were they to community priorities? Were their policies and procedures appropriate or very onerous for the partners? Were the reporting requirements useful to improving the work on the ground as well as for reporting purposes? Were the financial systems supporting the work or about control? And much more. Often INGOs unwittingly do things that do not support good development practice, for example high staff turnover and lack of continuity, top-down relationships with partners, taking blueprint approaches into very different contexts, remitting money late, asking for data and reports that are then not used. Monitoring current ways of working and how effective they are in developing good relationships and good partner capacity to work well with local people is critically important.

#### **Working in ways that involve communities from planning to monitoring**

To work in ways that enable participatory monitoring of the work and a shared understanding of what change is wanted, by whom, and to develop the sustainability of the work through promoting local ownership involves thinking through many issues. These include:

- How to work with and reach women, who are often hidden, 'voiceless', unheard at community and family levels
- How to ensure a full range of voices are heard within the slum, village or location
- How to understand the changes already ongoing in people's lives what is promoting change, what blocks it and

- where the current project fits in the wider flow of people's lives
- How to collect useful and relevant monitoring data (not mountains of written data that will most likely never be used)
- How to keep the processes simple and manageable for staff and partners
- How to train staff and enable them to find the time to listen, learn, and be able to share the learning with their managers, even when the learning contradicts current beliefs and approaches (How can this be rewarded in the organisation?)
- How to find the time for conversations, stories, listening to people, and hearing the concerns and constraints of poor women and men
- How to assess the quality of your own work and the quality of the partnerships you build
- How good is the capacity-building work at every level, down to the poorest women and men

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[11] [www.ikmemergent.net](http://www.ikmemergent.net)

## A DECADE OF INTERVENTION FOR WELFARE IMPROVEMENT OF WORKING EQUINES IN INDIA: LESSONS LEARNT AND TRANSITION IN APPROACH

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### Introduction

In India working equines serve as a source of livelihood for many marginalised urban and rural communities. However, these animals and the traditional equine-owning communities like pot makers, construction workers, and washer men are often socially neglected and deprived of benefits of services, economic development, and welfare schemes.

Improvement in the welfare of working animals has a direct and positive impact on the animals as well as on the livelihood of the owners [1] by reducing their vulnerability, a core element of poverty reduction. More resilience and less stress on the owner's livelihood system can affect the working animal in terms of availability of resources, facilities, and care of the animal.

The plight of working equines and their owners influenced the Brooke a leading UK animal welfare charity dedicated to improving the lives of horses, donkeys, and mules working in the poorest parts of the world to initiate intervention in India. This paper describes the challenges faced and the lessons that Brooke India learned from a decade of experience that led to transition from a service-oriented approach to a holistic, participatory, and community-based approach.

### Methods: a retrospective analysis

The Brooke started its work in India in 1997 in partnership with local NGOs at Bihar and Delhi, primarily providing veterinary treatment services. In 2001, Brooke India was established as a non-profit organisation with funding from Brooke UK. In the past 10 years Brooke India has grown and changed considerably. Three phases of change can be identified relating to organisational structure, working systems, and approach particularly towards community engagement (as summarised in Table 1).

### Phase 1. 2001-4

The Brooke India, through its local partners in India, focused on the direct delivery of animal treatment at fixed locations in Delhi, Hyderabad, and Jaipur by mobile and static clinics, adopting a site-based approach. It took the lead in constructing shade, shelters, and water troughs for animals at a few sites, provided free farriery services and inputs such as saddles, harnesses and hoof picks to equine owners, and a technically competent team was developed.

**Table 1. Transition in organisational approaches, structures, and systems**

Phase period	Service delivery approach	Community engagement approach	Organisational structure, systems, and processes
1. 2001 - 4	<ul style="list-style-type: none"> <li>● Direct treatment</li> <li>● Site-based delivery by mobile teams</li> <li>● Provision of free inputs, e.g. feed supplements, saddles, hoof picks</li> <li>● Mass vaccination and deworming as major preventive strategy</li> </ul>	<ul style="list-style-type: none"> <li>● Conventional transfer of technology approaches and training to 'educate' owners and train farriers</li> <li>● Use of extension posters, flip charts, paintings, and photo album on do's and don'ts of husbandry practices</li> </ul>	<ul style="list-style-type: none"> <li>● Mobile clinics run by veterinary and technical staff of local NGOs operating from Delhi, Jaipur, and Hyderabad</li> <li>● Staff such as dressers and farriers from Remount Veterinary Corp of Indian Army and stud farms</li> <li>● Central programme planning</li> </ul>
2. 2005 - 7	<ul style="list-style-type: none"> <li>● 'On-call emergency service' approach replaces site-based delivery</li> <li>● Outreach services in brick kilns, Tonga stands, village, and vegetable/grain markets in urban and peri-urban areas</li> <li>● Community-based vaccination programmes promoted</li> </ul>	<ul style="list-style-type: none"> <li>● Action planning through equine-owning community</li> <li>● Participatory tools and approaches used to enable equine owners to identify root causes of problems</li> <li>● Bristol Welfare Assessment technique introduced to measure changes in welfare conditions</li> </ul>	<ul style="list-style-type: none"> <li>● Units established in Delhi and 7 districts of Uttar Pradesh with multidisciplinary team comprising district manager, veterinary doctor/assistants, community facilitators and motivators</li> <li>● At HQ a team with experience in development and community engagement established</li> <li>● Programme planning based on lessons learnt and inputs from field staff and beneficiaries</li> </ul>
2. 2008 -	<ul style="list-style-type: none"> <li>● Strengthening local service delivery system</li> <li>● Linkages established with Government Veterinary Hospitals</li> <li>● First aid by local health provider and equine owners</li> <li>● Community-led vaccination replaces Brooke-led programme</li> <li>● Local knowledge and expertise used to develop disease prevention plans</li> </ul>	<ul style="list-style-type: none"> <li>● Formation of equine welfare groups</li> <li>● Systems for participatory monitoring of welfare of animals and action tools evolved; equine owners oriented to identify and address equine-related issues immediately</li> <li>● Greater involvement of women in the programme</li> <li>● The forming of clusters of equine welfare groups at district level</li> </ul>	<ul style="list-style-type: none"> <li>● Scaling-up through partnership with local human development organisations</li> <li>● Programme planning and review with high involvement of equine owners and stakeholders</li> <li>● Country strategic plan developed including gradual phase-out and long-term sustainability strategy</li> </ul>

The approach was resource intensive with a high level of the veterinary doctor's time and capacities focused on primary and first aid treatment. However, the number of equines covered was low and the approach created dependency among animal owners with an expectation of free services and inputs. A community facilitator with a social science background was added to each mobile team in 2004 to provide support for engaging the community.

### **Phase 2. 2005–7**

Based on the experiences and challenges identified in phase 1 the operational strategy and structures were modified. This phase saw the extension of equine welfare activities to 7 districts of western Uttar Pradesh and Delhi through the establishment of equine welfare units.

Initially veterinary doctors were managing these units; however, after a year they were replaced by managers with development sector experience. The composition of the district team changed from a mobile unit with mainly veterinary technical staff to a multidisciplinary team.

Brooke India gradually moved from service delivery at fixed locations to attending emergency calls at the owner's home or work place (a village-based approach). Community development specialists were employed at senior level and all the staff were trained in participatory methods. Educational sessions were replaced by innovative participatory exercises leading to the development of local-level action plans involving equine owners. A major challenge was to change the mindset of the animal-owning communities from being the recipients of Brooke's curative services to practising self-help through preventive practices.

### **Phase 3. 2008–**

This phase started with a further scaling-up of the programmes, in view of the encouraging experience of earlier phases: the extension of equine welfare activities in two new districts in western Uttar Pradesh and through partnership with 6 local NGOs in central Uttar Pradesh. NGOs with long standing experience of working with deprived communities were involved. The focus of the programme is to develop groups of equine owners and encourage collective actions to prevent welfare problems, monitor welfare status, recognise any deterioration in welfare at an early stage, and act immediately to reduce the impact. While Brooke animal health teams attend emergency cases, they also build up capacity of local service providers and link them with Equine Welfare Self-Help Groups. Thus at present Brooke reaches out to more than 110,000 working equines in 25 districts of 5 states in India.

### **Results and discussions: learning during phases of transition**

The process of change from delivery of curative services to delivering a programme for sustainable welfare improvement has generated challenges and the learning process continues for Brooke India as well as for Brooke worldwide.

#### ***Lesson 1. The need for change from a service centric to a more holistic community-based approach***

It was realised that treatment services and training inputs are not adequate for the welfare of working equines. For an effective intervention programme animal owners and other stakeholders need to be involved [2]. The community-based approach helped the Brooke to build the capacity of local equine-owning communities to sustain improved welfare and husbandry. Bringing the required changes in the organisational approach and strategy based on lessons learnt from the field operation was a critical turning point for Brooke India.

#### ***Lesson 2. Creating a participatory organisation culture***

Brooke India made a paradigm shift from the conventional extension to participatory approaches and the staff were oriented and trained in participatory methodology. However, the training did not lead to the desired change in the attitude of the field staff and they struggled to adopt the bottom-up approach effectively: this was probably due to a combination of factors including the top-down hierarchical management structure and insufficient back-up to empower the community to look after its animals. This experience brought the realisation that institutionalising

participatory approaches can not start with the junior staff but must begin at the top with senior management [3]. As research shows, the results of training courses may be limited because bureaucratic organisations often try to introduce participatory approaches without changing their organisational structure and culture [4].

#### ***Lesson 3. Multidisciplinary teams with desired skills and attitudes***

The mobile clinic and district unit teams changed from a team of people from a single discipline to a multidisciplinary team with animal health, animal husbandry, and community engagement experience. This change in composition was a major step towards achieving sustainable welfare improvement. It was observed that institutionalising a participatory approach can face problems of reservation and resistance among some staff but it is important to support and encourage those who promote participatory approaches, creativity, and innovation [4]. With constant field support and reflection sessions, the behaviour and attitude of staff gradually changed. A sustained effort is needed to institutionalize participatory methods to bring required changes in the staff's attitude [5].

#### ***Lesson 4. Reflection and learning for continuous refinement of the operational strategy***

It was recognised that organisational changes need adequate effort for capacity building of staff through a process of sharing and reflection. The changes in Phase 2 would not have happened if they were not made consciously and continuously. A long-term commitment of animal-owning communities and animal welfare organisations is crucial to achieve sustainable welfare improvement of working animals [1]. The need to devote time for sharing practices and successes with staff at all levels enabled the team to learn what works and what doesn't. Regular workshops, training, and meetings provided a platform to accord recognition of the good work of field staff, thus motivating them to be creative and innovative. Sharing experiences within the district teams provided mechanisms for continual improvement through peer pressure between teams. These sessions provided senior managers with an informal monitoring system and triggered the staff to continue their search for appropriate tools and methodology for community-led action.

### **Conclusion**

Currently animal welfare organisations are adopting participatory approaches and methodologies to achieve sustained improvement in animal welfare. Experience of the last 10 years indicates that institutionalising such a transition involves much more than training staff in participatory methods. Other crucial elements for institutional change processes include:

1. A holistic community-based approach
2. Sustained effort to create a participatory organisational culture
3. Multidisciplinary teams with desired skills and attitudes
4. Opportunities for sharing and reflection so that the organisation is able to act based on the lessons learnt and move the programme forward

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## PRIORITISING INDICATORS OF LAMENESS AND RELATED PAIN IN WORKING EQUIDS TO BE INCLUDED IN A PRACTICAL FIELD LAMENESS ASSESSMENT TOOL

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### Abstract

A protocol for a very detailed examination of lameness in working equids was developed for use in field situations [1]. This protocol included 1,197 individual measures per animal providing a wide range of information, including gait, conformation, limb and spinal pathologies, and signs of musculoskeletal pain. This detailed examination took in the region of 80 minutes to complete per animal. Two hundred and twenty-four working draft horses from India and Pakistan, and 102 working donkeys from Pakistan were examined using this detailed examination protocol. The results were analysed to identify 30 elements of the examination which were most significantly associated with higher lameness scores and pain in the musculoskeletal system in working horses, and 25 elements in working donkeys. These elements were then used to produce a more concise and practical lameness examination tool for use in the field. This lameness-assessment tool required much less time, approximately 15 minutes to complete, and focused on key pathologies and sites of pain in relation to lameness, thereby eliminating redundant variables and ensuring better time resource allocation for field work. This method could be used in other areas when a large complex issue is being addressed and where large numbers of animals need to be examined within a limited time frame.

### Introduction

Lameness and related pain is highly prevalent in working equids [1, 2, 3]. Lameness is the most economically important medical condition affecting horses [4]. In working equids, time with the veterinarian is limited as they are required for work [3], so the necessity of a brief yet efficient and valid examination is paramount. This paper describes the methods used to develop a lameness assessment tool over the course of a study on working draught horses and donkeys from India and Pakistan carried out in collaboration between the University of Bristol and The Brooke.

An initial objective of the study was to produce a very detailed lameness examination for use in working equids, and, from analysis of data, to develop a more concise lameness-assessment tool incorporating those elements of the detailed examination that were found to be significantly associated with higher lameness scores and pain in the musculoskeletal system. This more concise lameness-assessment tool could then be used in more widespread studies allowing more animals to be examined in a set time period whilst still retaining those elements significantly associated with lameness in working equids. Elements of the assessment tool could be incorporated in veterinary lameness examinations, increasing their accuracy and efficiency.

### Methods and materials

A detailed lameness examination for use in working equids was developed for practicality in the field and initial repeatability between observers [1]. This detailed examination consisted of the collection of 1,197 individual recordings of data from each animal, including individual limb gait assessment, conformation, swellings, wounds and pain on palpation of the limbs and spine, and pain and stiffness on flexion of the joints and spine. The examination could be completed in about 80 minutes once examiners became familiar and experienced in the protocol.

Data were collected from 110 horses employed in transportation of goods in India, 117 horses employed in transportation of people in Pakistan, and 102 donkeys employed in the transportation of goods in Pakistan. Examinations took place between June 2006 and February 2007.

Statistical analysis of the data used generalised linear mixed models (glmmML and glmmPQL, R, version 2.5) to test relationships between pain responses or pathological abnormalities, and lameness scores and conformational abnormalities or foot pain [1]. The level of significance was set at  $P < 0.05$  [5].

### Results

#### Indicators of lameness

Higher lameness scores were significantly associated with 19 recorded data measures including sickle hock conformation, pain on palpation and swelling of specific limb structures, pain and stiffness on flexion of limb joints, resistance to lumbar spinal flexion, abnormal foot placement, pain on percussion of the hoof walls, and increased digital pulses ( $P < 0.05$ ) [1]. In working donkeys, higher lameness scores were significantly associated with forward-at-the-knee conformation, skeletal asymmetry of the hindlimbs and hindquarters, pain on palpation around joints, pain on percussion of the hoof wall, increased digital pulse, pain on flexion of the cervical and thoracolumbar spine ( $P < 0.05$ ) [6].

#### Indicators of pain in the musculoskeletal system

Six conformation abnormalities were significantly associated with pain responses in specific areas of the limbs in horses from both India and Pakistan ( $P < 0.05$ ) [1]. These included toe-out, broken forward hoof-pastern-axis, off-set cannon, forward-at-the-knee and carpal valgus in forelimbs, and upright pasterns in both fore and hindlimbs. An additional 5 pathological findings were associated with pain on percussion of the feet in the areas of the sole, frog and hoof wall: these were flat soles, reduced frog size, separation of the heel bulbs, vertical hoof wall cracks, and increased digital pulse [1]. In working donkeys, pain and stiffness in specific areas of the limbs and spine were associated with forward-at-the-knee, carpal valgus conformations, and broken back hoof-pastern-axis; foot pain and lameness were associated with hoof imbalances, increased digital pulse, and mixed soles. Pain and stiffness on flexion of the carpus and fetlock were associated with swellings in those joints [6].

#### Lameness assessment tool

The above significant findings associated with higher lameness scores and pain in the musculoskeletal system were used to produce a more concise and practical lameness assessment tool. The tool included some additional pieces of information that were desirable for the basis of the further study; these included identification of the animal, work type, location and date examined, owner's contact details. This meant that the initial detailed lameness examination of 1,197 data measures was reduced to 194 and could be completed within 15 minutes once the examiner was familiar and experienced with the tool.

### Discussion

Lameness examinations of horses are described elsewhere [7] and involve many different and lengthy components taking up much time. The initial detailed lameness examination developed in this study for working equids provided a vast amount of information on lameness and musculoskeletal pathologies in working equids [1], with 1,197 individual measures per animal. However, the length of time to complete the examination (approximately 80 minutes) limited the number of animals that could be observed in a day and also meant that some owners were unwilling to allow their animal to be out of work for such a time. Analysis of these data found many of the measures recorded not to be significantly associated with lameness or pain of the musculoskeletal system in this population and therefore could be rejected in favour of more strongly associated measures. The resulting selection produced a lameness-assessment tool comprising 194 individual measures per animal which could be completed in a much reduced time, from 80 to 15 minutes.

As well as providing a concise lameness-assessment tool, the findings produce a list of conformation traits and clinical examination findings which are more likely to be found in lamer working equids and could act as indicators to an attending clinician or health worker working in the field. Several of these significant findings have been reported in the literature elsewhere in relation to lameness [8, 9, 10, 11, 12], but others are more specific to draught equids in developing countries. Elements of this lameness tool can also be taken to field to improve the efficiency and accuracy of veterinary lameness examinations; it should not, however, replace a full clinical examination.

### Conclusion

Similar methods can be used in other studies where complex issues need to be addressed but where there are time constraints. It allows only the most significant indicators to be used in a tool, rejecting those that are less significant and therefore potentially redundant, maximising the use of time and resources. Potential uses for the tool are in collecting baseline data or surveys, recording changes over time in interventions areas, as well as informing veterinary practice.

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## ASSESSMENT OF THE IMPACT OF A CHARITY TRAINING PROGRAMME ON THE HEALTH AND WELFARE OF WORKING HORSES IN LESOTHO

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### Introduction

While it is generally assumed that the presence of equine charities in developing countries has a positive effect on the health and welfare of working equids, little objective and scientifically substantiated information is available on the impact of such projects in targeted communities, especially where baseline data exist. The aim of this study was to measure the short-term impact of a training programme initiated by a UK-based equine charity in Lesotho in 2007 on the health and welfare of horses and on their owners' knowledge and husbandry practices.

### Methods

Two surveys were undertaken; 1 prior to implementation of the first modular training programme and 1 approximately 9 months after its completion. For each survey, around 300 randomly selected horses were clinically examined, their tack was assessed and their owners interviewed to assess knowledge and practice of equine husbandry. Physical examinations were undertaken outdoors with no restraint other than any headcollar or bridle which the horse wore on arrival. Body condition score (BCS) was assessed using a score of 0 (emaciated) to 5 (obese). Horse age was estimated according to dentition. Oral examination was undertaken manually, without a gag. Thoracic auscultation was undertaken to assess cardiac rate/rhythm and audible respiratory noise. Ocular examination was undertaken visually without access to shade and without the use of eye drops, fluorescein, or ophthalmoscope. Assessment of tick infestation was recorded according to a scale of none; mild (up to a total of 3 ticks in 1 or more locations); moderate (4-10 ticks in 1 or more locations); or severe (more than 10 ticks in 1 or more locations). Wounds were recorded by location. Manual vertebral palpation was undertaken along the length of the horse's spine; pain response and bony/soft tissue lesions and wounds were recorded. Lameness assessed at walk for approximately 20 steps was scored on a scale of 0 (sound) to 5 (non-weightbearing). Each limb was palpated at rest and lesions noted. Each foot was assessed for medio-lateral and dorsopalmar/plantar balance, horn length, frog and sole condition, and the presence/absence of a shoe. Subject to owner consent, blood and faecal samples were obtained for routine haematology, biochemistry, and faecal worm egg counts respectively; samples were processed in a temporary field laboratory set up for the purposes of this study. Tack, as available at the time of the horse examination, was reviewed and assessed for condition, cleanliness, and fit according to a standardised protocol. The structured interview followed a standardised questionnaire which had been pretested in Lesotho and was administered face-to-face in local language by a bilingual, trained local interviewer. The questionnaire included a combination of open and closed questions on owner demographics, horse ownership and use, together with current and desired feeding practices, tack ownership, fit assessment and care, sourcing of equine health care advice and products, preventive medicine knowledge and activities, mouth health management, and current and desired foot-care practices. Differences between the findings of the two surveys were assessed for significance using Chi-squared and t-tests.

### Results

Most horses (ca. 80% in both surveys) provided ridden transport and were used approximately 2 hours each working day. An increase in the frequency of forefoot shoeing was seen (14% in survey 1 vs. 22% in survey 2,  $p=0.02$ ) whilst hindfoot shoeing remained unchanged (7% in both surveys). Owners appreciated the enhanced skills of the charity's trained farriers, but affordability of shoeing remained an issue for most owners (ca. 60% in both



surveys). Availability of tack, both bridles (ca. 65% in both surveys) and saddles (ca. 50% in both surveys), remained suboptimal and no significant improvement in the condition or fit of tack was noted. Tack-associated injuries (58% in survey 1 vs. 75% in survey 2) and pain on spinal palpation (53% in survey 1 vs. 67% in survey 2) were common; in both surveys, the 2 most frequently noted sites of injury were spine and withers. Horses' mean BCS remained suboptimal (2.5 and 2.2 respectively) and owners recognised that their animals' diet was unbalanced (ca. 60% in both surveys). In surveys 1 and 2, 21% of horses had low red blood cell counts. Infestation with *Strongyle* endoparasites was endemic (ca. 90% in both surveys) and ticks were found on most horses (ca. 60% in both surveys).

### Conclusions

Some short-term positive impact, in particular in respect of owners' appreciation of the need for skilled farriery, has been achieved but key equine health and welfare issues remain to be addressed. Results of this work and subsequent longer term follow-up studies could be used to identify priority areas for future training activities and additional community-based interventions.

### Acknowledgements

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## MEASURING IMPACT ON EQUINE WELFARE FROM THE ANIMAL AND OWNER PERSPECTIVE

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### Abstract

*Monitoring change in welfare is necessary to assess the impact of specific interventions and it can be assessed using a number of tools, looking at both animal and human perspectives. Both of these are needed to understand the likelihood of changes being sustainable, since owners of working equines need to perceive benefits to their livelihoods as well as to equine welfare. This paper describes how a number of tools are being used in the Brooke Hospital for Animals Ethiopia Programme to measure welfare changes in its pilot programme.*

### Introduction

The Brooke in Ethiopia started a pilot programme in 2008 aiming to improve the welfare of equines through better management practices, and supporting the development of sustainable equine health services.

A major challenge for the programme has been developing ways to monitor changes in welfare and assess the impact of interventions, not only in terms of improved welfare, but also taking owners' and users' perspectives into consideration to ensure sustainable change. Equines in Ethiopia are all working animals, therefore proposed changes in management need to be realistic and affordable to owners and users. Through the programme, a combination of monitoring and impact assessment tools is being tested, aiming to capture animal and owner perspectives. Equine management interventions are targeting small groups of equines, to identify key lessons for their wider introduction. This paper describes the tools and demonstrates their use through two cases studies.

### Monitoring and impact assessment methods

Four tools are being used for assessing equine welfare, documenting owners' experiences, and monitoring changes resulting from specific interventions from animal and owner points of view, as well as uptake of targeted practices.

### Bristol Welfare Assessment (BWA)

The Bristol Welfare Assessment [1] is a tool that was developed jointly by the Brooke and the University of Bristol in the United Kingdom: it uses 35 animal-based indicators (ABIs) to capture welfare from the animal point of view. It gives a broad view of welfare status of different populations or groups of equines. Welfare assessments undertaken at the start of the programme classified the target animals into 3 welfare categories: high, medium, and low risk. From this data, high-risk animals were targeted for interventions, including the 2 groups in this paper: garri horses (cart horses for transporting people) and stone-carrying donkeys.

### Animal- and resource-based indicators (ABIs, RBIs)

Animal-based indicators can provide specific information on a particular welfare issue: for example, a group of ABIs can be selected which are representative of the target disease or condition. A small number of ABIs which are specific to the problem makes monitoring and assessing change due to the intervention relatively easy, also allowing owners to become involved in monitoring. RBIs are an adjunct to ABIs and can provide additional information, though alone they may not reflect improvements in welfare. RBIs include resources, services, environment, and stockmanship/owner behaviour.

### Knowledge, attitude, and practice studies

Knowledge, attitudes, and practices of owners, users, and service providers can be assessed using a range of



participatory tools. This is an entry point to identifying communities and groups interested in working on equine welfare with the Brooke, and to support community action planning using community prioritised issues. Results of the studies are triangulated with the BWA results through community discussions, in order to identify priority welfare issues from both animal and owners perspective. This also has the benefit of bringing issues to the attention of both owners and the Brooke, that each may not have previously considered.

#### **Participatory Monitoring and Impact Assessment (PIA)**

PIA [2] is a tool from the development sector that aims to increase the involvement of local people in the assessment of projects, and is a means of overcoming some of the limitations of activity oriented process monitoring. A key aim of PIA is to analyse achievements, relevance to beneficiaries, improvements required in the intervention, and sustainability of particular activities. It is being piloted in the Brooke Ethiopia programme to look at changes in equine health services, disease prevalence, and welfare improvements from improved husbandry practices.

#### **Case study 1**

A 12-month farriery pilot project targeting 33 garri horses was started in April 2009. The result of a population-level BWA demonstrated a high prevalence of hoof and hoof-related problems in these animals. Farriers traditionally use car tyres as shoes, but with little shaping to fit the hoof, no hoof cleaning, and limited trimming. The pilot study aimed to improve hoof care and reduce lameness due to one or a combination of causes: overgrown hooves, nail bind, brushing lesions, foot infections, and injuries sustained from falling over due to poor gait. Car tyres continued to be used for making shoes. Two local farriers were trained and provided with hoof kits.

Baseline information was collected for each animal using measurement of specific animal-based indicators, on a quarterly basis during the year. Participatory group discussions were conducted twice over a 7-month period and additional interviews were held with the owners/users, farriers, the government partner, and other stakeholders. The final ABI measurements were taken in March 2010 and a final participatory impact assessment was conducted in May 2010, including a cost-benefit analysis of the service.

#### **Results**

Information collected from the ABI assessments and the PIA has demonstrated changes in key targets. The ABIs have highlighted a reduction in severity and number of brushing lesions, improvement in hoof shape and horn quality, and a reduction in nail holes, cracked hoof walls and lameness. There is increased frequency of shoeing. See Table 1.

**Table 1. Some results from the quarterly ABI assessments**

ABI	1st assessment	2nd assessment	3rd assessment	4th assessment
Presence of brushing lesions	33 horses	30 horses	29 horses	21 horses
Abnormality of hoof pastern angle (forward broken)	56 legs	41 legs	14 legs	7 legs
Abnormality of hoof pastern angle (backward broken)	45 legs	38 legs	33 legs	16 legs
Holes in hoof wall from large nails (indicator of horn quality)	21 horses	7 horses	0 horses	0 horses
Cracks in hoof wall (indicator of horn quality)	15 horses	3 horses	6 horses	5 horses (minor cracks)
Wavy lines on hoof wall (indicator of horn quality)	26 horses	25 horses	28 horses	13 horses (minor lines)
Abnormal gait	26 horses	23 horses	16 horses	12 horses

When these results are compared to owner interviews from the PIA, it is evident that the owners are also seeing changes in the ABIs and attributing these improvements to the new farriery techniques. The PIA data is currently under analysis, but provisional results indicate that horses are falling less, their gait is more balanced, and fewer horses are lame. These results are supported by the fact that 38 additional owners, who were not in the pilot study, are using the new farriery services, despite the slightly higher price charged by the farriers for this service. Five other farriers are requesting training in improved techniques as they see the opportunity for increasing their services and income, and the 2 trained farriers have taken away some of their customers who prefer the improved service. The Brooke is now working with the farriers to identify local equipment for the hoof kits because standard hoof care equipment is not available in the country and would be unaffordable.

#### **Case study 2**

Thirty-six stone-carrying donkeys, classified as high-risk animals, were the target for this study. Working closely together, the Brooke and the owners identified key areas of donkey management that they wanted to improve, by triangulating the knowledge, attitude, and practice study results with the BWA. Poor body condition and wounds were seen as being priority focus areas from both sets of results. The ABIs and RBIs which were needed to assess the desired change for these problems were set through community dialogue sessions. Owners agreed on a simple system of assessing body condition (good, medium, and poor) and wounds for changes that they wanted to see in their animals. Owners then explained the possible causes of the problems, such as poor feed quality and overworking, from which RBIs were set. A feeding and wound management intervention was designed with the owners, which used cheap available local products (bran, cooking oil, and water) and a feeding protocol, and owners were shown how to manage wounds. Each animal was photographed at the start and end of the trial. The group selected 5 animals to be monitored every 2 weeks, when ABIs and RBIs were measured together by the owners and the Brooke staff. See Table 2. Four animals were in poor condition and one was in good condition, acting as a control.

#### **Results**

**Table 2. Monitoring checklist for ABIs and RBIs developed by the owners**

	Indicators	Check points		
1	<b>Body condition</b>	----- <b>Good</b> • Covered ribs, backbone, point of hip • Straight neckline	----- <b>Medium</b> • Visible ribs, backbone, point of hip	----- <b>Poor</b> • Prominent ribs, backbone, point of hip • Skin tight • Concave neckline
2	<b>Feeding trough at home</b>	----- <b>Very good</b> • Yes • Regularly cleaned • Separate trough per equine	----- <b>Good</b> • Yes • Regularly cleaned • Used for group of equines	----- <b>Poor</b> • Yes • Not clean (dusty, leftover feed, etc.)
		----- <b>No</b> • Equine feeds on the ground	----- <b>No</b> • Equine feeds on unclean plastic sheets, etc.	
3	<b>Watering frequency per day</b>	----- Once	----- Twice	----- Three times
4	<b>Watering trough</b>	----- Cleaned	----- Not cleaned • With feed and other residue	
5	<b>Feeding frequency per day</b>	----- Once	----- Twice	----- Three times
6	<b>Improved feed mix</b>	----- <b>Yes</b> • Wheat bran plus edible oil	----- <b>No</b> Without oil	
7	<b>Additional feed provided</b>	----- <b>Yes</b> List along with the amount	----- <b>No</b>	

Five of the selected animals showed body condition improvement from 1 to 2 scores higher, as measured by Brooke staff and the owners using ABIs. Wounds were either nearly or completely healed. Increase in frequency of feeding and watering, providing feed mixes, cleaning of feed and water troughs, and treatment of wounds and internal parasites were also seen.

All ABIs and RBIs were measured by owners as well as Brooke staff, and individual and group meetings were held to understand owners' impressions of the intervention. They commented that the practices were simple but the impact on their animals was high.

### Conclusion

These studies were testing interventions and welfare and impact measurement tools upon very small groups of equines. Ongoing monitoring of both owner practice and welfare change is necessary to assess sustainability of these activities. Helping the group to develop their own monitoring system, for example, by using experiences from the Brooke India Programme on participatory community action [3], will support owners to make long-term changes by themselves. Scaling-up of successful interventions will be the next step, together with identifying simple and reliable methods of measuring changes in welfare for much larger populations of animals.

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## WHAT IMPACT DOES SKILLS TRAINING HAVE? A TRACER STUDY OF STUDENTS OF A SADDLERY, FARRIERY, AND BUSINESS SKILLS TRAINING PROGRAMME CONDUCTED IN LESOTHO IN 2007

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### Introduction

A UK-based equine charity advocates education, rather than palliative measures, as a long-term solution to horse welfare. Education is seen to be critical to achieving horse welfare solutions. An article, entitled 'The beliefs we stand for', states:

Education achieves horse welfare solutions. Patching up abused horses, or rescuing them, are palliative measures. We do this, but we believe our most effective work is teaching people how to treat their animals properly, and (new concept) changing their mental attitude to believing that such treatment is good for its own sake as well as giving an economic advantage. [1]

The charity has initiated farriery, saddlery, and business skills training programmes in several developing countries, including in Lesotho in 2007. There are 10 weeks of training in total (9 weeks of farriery or saddlery training, and 1 week of business skills training), offered in 2- to 3-week blocks over the course of a year. In between training blocks, trainees complete assignments designed to further support their learning. It is anticipated that through this approach, a positive impact will be achieved, not only on the welfare of horses, but also on the well-being of vulnerable families who depend on those horses for a living. This study examined the extent to which these objectives were achieved in Lesotho, through tracing the first cohort of 21 students some 18-24 months after they completed the course. The focus of this study was the students' experience of the training and the impact it had on them; no animal-based criteria were assessed. It examined the students' motivation for doing the training, their subsequent livelihoods and the challenges they experienced with regards to implementing their acquired knowledge and skills.

### Research design and methods

This in-depth qualitative enquiry employed a variety of methods to collect data, including:

1. Questionnaires administered to all students prior to the start of the training: these provided relevant demographic and personal data, including information on students' ages, background, educational levels, employment experience and status, and students' expectations of the training courses
2. Semi-structured interviews conducted with all students in the third week of the training, and again 18-24 months after completing the training; where relevant, interviews were also conducted with students' employers
3. Observations made during site visits to students' homes or places of work
4. Relevant documents (students' written evaluations of the training as well as trainers' progress reports on the students) and photographs

Information gained from the above sources was analysed qualitatively and the findings were reported in narrative form, making use of students' own words where appropriate.

### Findings

- The research revealed that 24 months after the training, 38% of students trained were still working consistently with their acquired skills (i.e. they were using their skills on *at least* a monthly basis although some students

were using their skills on a daily or weekly basis); 43% of students were using their skills intermittently (i.e. less than a monthly basis); and 19% had not used their skills within the last 612 months.

- Trainees cited a range of motives for participating in the training, including a desire to improve their horsemanship-related skills and generate income, a desire for some kind of professional benefit or advancement, and a desire to improve the welfare of horses.
- Almost all (95%) of the trainees felt that the programme had had **personal benefits**. These included (1) an increased sense of their own value as a result of learning skills that empowered them to be better providers; (2) an increased sense of self-worth fostered by clients' (and others') positive feedback on their skills and work; and (3) increased confidence in themselves and their abilities.
- Seventy-six percent of trainees felt that the training had had a **positive professional impact**, reporting an increased sense of competency leading to an enhanced sense of their value as professionals and of their professional identity. Trainees also reported increased motivation and enhanced capacity in the workplace.
- Twenty nine percent reported a **significant difference to their earned income**. While the inconsistency and inaccuracy in trainees' records made it difficult to report accurate figures of income earned before and after the training, trainees defined significant difference in terms of what they were able to achieve before and after the training. 'I am getting money to survive through the skills that I learned and can live comfortably through this income. I have been able to pay for my children's school fees and go to Driving School.'
- Nineteen percent of students commented that the training had impacted positively on the **welfare of horses**.
- Key challenges experienced included insufficient or irregular income, difficulty accessing good-quality materials locally, an inability to set aside money for materials, and a lack of commitment to improved practices from government sectors as well as the general public (individual horse owners and horse users). This lack of commitment seems to be driven largely by a reluctance to invest financially in the services of saddlers and farriers and an ignorance of the potential benefits of these services.

### Conclusions

The study provides insights into the value and challenges of skills training provided by charities in the context of improving the welfare of horses and alleviating the vulnerability of horse owners in Lesotho. Key issues that require further consideration relate to how students may be further supported and monitored after completing the training. Particular areas where students require support are (1) accessing materials; (2) securing capital; and (3) developing the capacity to manage a small business. These challenges suggest that for training to be genuinely sustainable in terms of improving the welfare of both horses and humans in the longer term, further attention and resources need to be devoted to post-training support. This could include (1) logistical support to source materials; (2) organisational support to establish trade associations; and (3) education and training support related to management of small businesses and further skills development.

### Acknowledgements

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## IMPROVING WORKING DONKEY (*EQUUS ASINUS*) WELFARE IN MALI, WEST AFRICA: MEASURING BEHAVIOR, HEART RATE VARIABILITY, ASSOCIATED WITH DRIVING METHODS AND PRESSURE ASSOCIATED WITH HARNESS AND CART QUALITY

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### Abstract

*Working conditions for donkeys in West Africa are often harsh. In collaboration with SPANA (Society for the Protection of Animals Abroad), we conducted 2 studies: the first compared behavioral and physiological measures of donkeys (n=10) driven in 2 standard Malian ways (1- halter and reins, 2- no halter and with stick); the second study assessed pressure associated with harness and cart quality. No significant differences were found in heart rate variability (HRV) or behavior between driving methods in study 1. Significant differences in back/wither pressure (p<0.05) were found for harness type (p=0.02) and cartload (p=0.009). These studies suggest alternative methods for working and harnessing donkeys in developing parts of the world.*

### Introduction

Donkey use in West Africa has increased largely due to extended periods of drought that have made it harder to feed and care for oxen. However, many of the same implements once used for oxen are now being used for donkeys, and this has created problems such as oversized carts and improper harness [1]. Unfortunately, due to a myriad of problems, donkeys are often unable to work at their full potential. The loss of a donkey or the time it cannot work creates many hardships for the people it serves.

Diarra et al. carried out a survey to identify reason(s) why donkeys (n=2,500) cannot work [2]. The survey indicated that most donkeys were equipped with a poor harness (n=2,033; 76%); traveled long distances (>20km/day) (n=2,086; 79%); worked many hours (>6hrs/day, n=1,782; 82%); carried/pulled loads over 500kg (n=1,344; 51%); and received inadequate nutrition [2]. Pearson et al. have indicated a need for further understanding of donkey management and working practices (e.g. harnessing and training) [3]. A decrease in harsh training/driving methods has great potential to improve the welfare and longevity of working donkeys.

An earlier study we conducted in the U.S. showed that donkeys (n=10) could be trained to pull a cart with either halter or a donkey motivator: 70% were pulling a cart in less than 20 days [4, 5]. The motivator was shown to work effectively in previous studies to motivate the donkey to move forward without adverse affects [6, 5]. It was hypothesized that donkeys driven with a halter in Mali would exhibit fewer signs of behavioral and physiological stress. Our second Malian experiment focused on assessing another major problem facing many working donkeys: inadequate harness and carts. We hypothesized that donkeys with satisfactory harnesses would have less back/wither pressure applied and therefore exhibit fewer lesions of their withers/back.

### Materials and method

#### Animals

Ten intact male donkeys were driven with either a halter with line(s) (HM, n=4, Figure 1), or only with a stick (SM, n=6, Figure 2), and post-hoc treatment for SM group, donkey motivator, Figure 3). The average age of the HM group was 8.6 years and of the SM group, 9.25 years.



**Figure 1. Halter method (HM): donkey being driven with the halter to control and guide it in pulling the cart**



**Figure 2. Stick method (SM): donkey is guided and driven by the stick because it will move away from the contact made by the stick**



**Figure 3. Donkey motivator post-hoc treatment for SM group**



**Materials and methods**

A behavioral assessment test was conducted before driving, measuring the following parameters:

1. general attitude (alert or apathetic)
2. response to observer approaching neck (no response, friendly approach, avoidance, aggression)
3. walk around donkey (no response, moves away, tucks tail, aggression),
4. ear test (allows, tolerates, avoids),
5. response to unfamiliar person (approaches, no approach, spooks) [7, 8, 9]

After the assessment test, each donkey was fitted with a Polar Equine RS 800 G3 heart rate monitor (Polar Electro Europe BV, Fleurier, Switzerland). Ultrasound transmission gel (Aquasonic 100, Parker Laboratories, Inc., Fairfield, NJ) was applied to the donkey's girth and wither areas near the location of the electrode strips on the monitors. Pressure film (Extreme Low Pressure 4 LW Fuji Film, Tokyo, Japan), approximately 21cm x 31cm, was placed over the withers and underneath the harness back pad.

The donkey was then harnessed and hitched to the cart and driven for 5 minutes. Harnesses and carts were graded as satisfactory or unsatisfactory (criteria developed by the authors along with other information [10, 11, 12, 13]):

- satisfactory harness - soft, nonabrasive back padding and collar material
- unsatisfactory harness - abrasive material
- satisfactory cart - balanced shafts, shafts come to point of shoulder, inflated tires and balanced over axles
- unsatisfactory cart - uneven/unbalanced shafts, above/below point of shoulders, flat tires, unbalanced over axle

After driving, the harness was removed and the film was photographed, labeled, and removed. The film was scanned (Imager Scanner II, Amersham Bioscience, Piscataway, NJ) and analyzed for intensity of dots using ImageQuant TL Software (Amersham Bioscience, Piscataway, NJ).

**Statistical analysis**

The logistic regression model PROC GLIMMIX was used for statistical analysis to model the relationship between various behaviors and driving treatment (HM or SM). The ANOVA model was used when testing the relationship between treatment and heart rate variability (HRV) data. Normality of the residual and equal residual variance was checked. The logistic regression model was used when testing the pressure data in relation to the type of harness, cart, and weight. The average intensity was the predicted variable. The *p*-value for significance was 0.05.

**Results**

When measuring behavioural responses for HM and SM groups there were no significant differences in treatment effect for all behaviours (see Table 1). There were no significant differences in HRV parameters for either group (see Table 2).

**Table 1. Behavioural response group A (HM, n=4) and group B (SM, n=6) in Malian donkeys at the SPANA clinic in Bamako, Mali**

Behavioral response	p-value
To unfamiliar person	0.94
General attitude	0.97
To observer approaching neck	0.97
Ear test	0.97

**Table 2. Heart rate variability (HRV) responses for donkeys (n=10) in HM or SM group on test day at the SPANA clinic in Bamako, Mali (significant at p-value< 0.05)**

	MHR (bpm) <sup>a</sup>	SDRR (ms) <sup>b</sup>	rMSSD (ms) <sup>c</sup>	LFd (n.u.)	HFe (n.u.)
HM group (n=4 )	73±4.04	176.41±42.50	60.43±32.82	2078.14±1476.88	1377.14±1568.50
SM group (n=6)	71.75±9.87	198.4±86.03	63.52±7.74	1420.92±958.18	1019.04±515.91
p-value	0.81	0.64	0.49	0.45	0.84

<sup>a</sup> Mean heart rate in beats per minute (MHR, bpm), the average beat to beat per minute over a period of time reflecting both sympathetic and parasympathetic nerve activity/responses [14, 15, 16]

<sup>b</sup> Standard deviation from beat interval to interval (SDRR) is used to quantify the overall heart rate variability [14, 15, 16]

<sup>c</sup> Square root of mean beat interval to interval (rMSSD), reflecting short-term variations in heart rate related to parasympathetic nervous responses, e.g. breathing, physical activity [14, 15, 16]

<sup>d</sup> Low frequency in normalized units (LF, n.u.), measuring the sympathetic nerve response/zone [14, 15, 16]

<sup>e</sup> High frequency in normalized units (HF, n.u.), measuring vagal activity (parasympathetic activity) such as breathing or stress. A positive emotion can increase HF or negative emotion can decrease HF [14, 15, 16]

A significant difference was found when measuring the average intensity of pressure placed on the donkeys' withers when equipped with unsatisfactory quality harness and carts loaded with greater than 400kg of weight (harness type:  $p=0.02$ , weight:  $p=0.009$ ). Unsatisfactory quality harness and heavier loads resulted in increased pressure as verified by the Fuji pressure film. There was no significant difference in average pressure intensity when testing extra back padding or type of cart (satisfactory vs. unsatisfactory) (extra padding:  $p=0.23$ , cart type:  $p=0.27$ ) (see Table 3, Fig. 4, and Fig. 5).

**Table 3. Comparing average intensity of Fuji pressure film when testing harness and cart type, cart with/without added weight (400kg), and extra saddle padding over the withers with Malian donkeys at the SPANA clinic in Bamako, Mali**

Variable	n=satisfactory	n=unsatisfactory	p-value
Harness type	4	1	0.02 <sup>a</sup>
Cart type	9	6	0.27
	n=no weight	n=weight	
Cart with weight	3	2	0.009 <sup>a</sup>
	n=no extra padding	n=extra padding	
Extra-saddle padding	6	4	0.23

<sup>a</sup>significant at p-value< 0.05

**Figure 4. Extreme Low Pressure 4 LW Fuji Film showing low intensity results. This film was developed from a donkey with a good cart and harness. The film shows very little pink coloring. The pink color is a response to pressure placed on the film. Less pink indicates less pressure placed on the donkey's withers/back.**



**Figure 5. Extreme Low Pressure 4 LW Fuji Film showing higher intensity results. This film was developed from a donkey with a cart loaded with 400kg of maize. The film shows a high intensity pink concentrated in the front of the donkey, near the withers.**



**Discussion**

We had expected to see greater differences in behavioral responses between donkeys driven with HM versus SM. However, these donkeys were in good physical condition, as compared to the general population in Bamako. It is possible that this population was above average in care and physical condition and subsequently showed fewer signs of behavioral stress associated with either treatment. It should also be noted that no donkeys were actually struck with the stick during our study, versus our anecdotal observations of other Malian donkeys.

No differences were found in heart rate variability parameters when comparing HM versus SM. Studies have shown a decrease in HRV in horses during exercise on a treadmill [17, 18, 19]. Our study was measuring heart rate during exercise: this could have reduced the HRV. Also, it is possible that a difference may have become more apparent in these parameters if taken over multiple sampling periods. Researchers have shown that a donkey's heart rate can vary according to diurnal variations and environmental and physical conditions [20, 21]. It has been



shown that donkeys in Nigeria during the rainy season had a mean resting heart rate of 36 to 72 bpm over a 10-hour period [22]. The conditions in the Nigerian study were similar to those in this study: 14:00 hrs, 32.7C, and 89 % humidity with the exception of measuring heart rate while exercising. One study reported the mean heart rates for donkeys (n=10) after packing 93.91.5kg for 19.10.6km to be 71.03.4bpm [23]. Our study recorded similar mean heart rates at 14:00 hrs, 734.04bpm (HM group) and 71.759.87bpm (SM group).

In our second experiment, we documented that pressure is associated with the type of harness and weight pulled by the donkey. Harness type/design have long been a problem for working equids in the developing world [24, 12, 25]. It is widely accepted that the most debilitating injuries are due to poor harnesses [12]. Many have reported a high proportion of poor harnesses among working donkeys in Africa [10, 2, 25, 3, 1]. Improving harnessing methods, such as adding nonabrasive padding, has the potential to decrease pressure applied on the withers/back and increases a working donkey's longevity. In addition, not overloading donkeys and maintaining the carts, e.g. keeping tires inflated, can decrease pressure placed on the withers. Many researchers have engaged in harness-making workshops throughout Africa to show owners how to make affordable harnesses. Sharing such knowledge with veterinarians and paraprofessionals has tremendous potential for enhancing welfare of working equids [11, 24, 10, 13].

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## VALIDATING THE USE OF PHOTOGRAPHIC AND VIDEO MATERIAL FOR MONITORING AND EVALUATION, OBSERVER STANDARDISATION AND TRAINING IN EQUINE WELFARE PROGRAMMES

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### Abstract

Photographic/video material provides a potential valuable resource for the monitoring and evaluation (M&E) of equine welfare interventions and in observer training and standardisation. This study investigated whether there were differences in assessment of variables observed directly in the field, or indirectly via photographs or video.

A range of behavioural (animals/human) and physical variables (animal/resource) was selected from Brooke work. Direct assessments were made in the field by 5 experienced, standardised observers and photographic/video footages taken simultaneously. At a later date, observers assessed these materials and comparisons drawn between direct and indirect assessments.

Assessments of photographic material showing body condition score, age, and lesion severity agreed strongly with direct assessments made in the field ( $K > 0.68$ ). Video assessments had good agreement for beating, collar placement, girth tightness, and body condition ( $K > 0.69$ ) and moderate agreement for animal attitude, padding placement, and response to approach ( $K > 0.548$ ).

Significant levels of agreement in some variables suggest that photographic/video material may be useful for M&E/standardisation purposes, when effectively validated. Further work is required to determine whether subtle changes in variables over time can be identified reliably via indirect assessment.

### Introduction

The Brooke is an international working equine welfare organisation working in developing countries. Brooke works with local communities to improve equine welfare through evidence-based interventions. Brooke collects data related to animal health and welfare, animal/owner behaviour, knowledge, attitude, and practice in programmatic and research work. These data are frequently collected through field survey techniques.

Photographic/video material can play a role in supporting programmatic work particularly in monitoring and evaluation (M&E) and research by providing crucial records of such things as animal condition, behaviour, resource availability, and changes over time. Video may improve the accuracy of behavioural observations by enabling repeated observation of behaviour. Photographs and videos may be used for standardisation between observers or over time. Observer standardisation for field data collection is crucial to ensure validity, accuracy, and reliability of research and M&E data.

Prior to implementation of photographic/video assessments, validation is important to ensure confidence in findings. The relationship between the direct assessment of a variable, such as animal body condition score (BCS) or lesion size, and the indirect assessment made from observation of photographic/video material is important to ascertain. Such assessments can then be used for programmatic decision-making with confidence that they reflect the live situation.

The study reported here aimed to test the validity of photographs and videos for representing a variety of variables

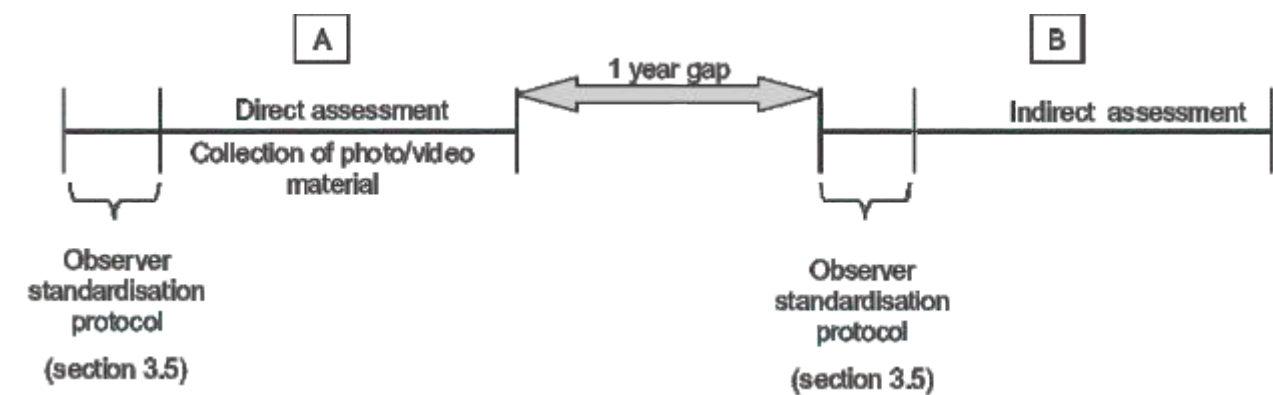
relevant to working equine welfare. The research examined whether observers assessed variables equivalently when viewing animals directly and indirectly.

### Methodology

#### Study timeline

Animals were assessed directly in the field and photographs and videos taken at the same time (A, Figure 1). One year later, variables were assessed from photograph and/or video material (indirect assessment) (B, Figure 1). Observers assessed each variable individually, shared results, and discussed differences. A group consensus was then taken

Figure 1. Study timeline



#### Participants and animals

Research was carried out in Abo Hommus, Egypt. Ten horses, 21 donkeys, and 1 mule were included. All were working animals, pulling 2-wheeled wooden goods carts. Owner's consent was gained prior to inclusion in the study.

#### Observers

Five observers were used to assess all variables: 4 were trained in The Brooke welfare assessment protocol and all had more than 1 year of experience in field survey data collection.

#### Variables

Fourteen variables commonly used in Brooke research projects and/or working equine welfare assessment [1] were selected. The variables tested using both photographs and videos are shown in Table 1, which also includes data type and method of assessment. Precise definitions of each variable were documented and shared with observers to improve reliability. Owner and animal behaviour was observed during unharnessing (see variables in Table 1) and when interacting with handlers. Other observations were made whilst the animal was standing with a handler.

Table 1. Variables used in the study with a brief description of the measurement methodology, data type (C=categorical, OC=ordinal categorical, N=numerical), and documentation method (V=video, P=photograph).

Variable	Method of assessment	Observations	Data	Indirect method & no. replicates( )
Voice used	Behavioural observation during routine unharnessing	Yes or no	C	V (14)
Beating		Yes or no	C	V (14)
Padding		Padding positioning	C	V (14)
Collar		Collar positioning	C	V (14)
Animal reaction		Kicks, bites, walks away, no reaction, head movement	C	V (14)
Animal attitude	Behavioural observation	Alert, apathetic, depressed	C	V (24)
Reaction to approach		Handler approaches: animal moves, turns head away, does not move, turns head towards observer, is aggressive	C	V (28)
Walk side		Handler walks along side: animal shows signs of interest, no sign of interest	C	V (29)
Girth tightness	Resource observation	Tight or not tight	C	V (16) + P (16)
Body condition score	Physical observation	10-point scale: 1=very thin to 5=very fat	OC	V (32) + P (32)
Age		Dental examination <5 years, 5–15, 16+ years	OC	P (22)
Lesion severity		Superficial, skin broken, deep	OC	P (34)
Lesion size	Physical measurement	Length at longest point and width in centimeters (both values included)	N	P (34)

**Standardisation protocol**

Standardisation was carried out to ensure inter-observer reliability, i.e. all observers were assessing variables in the same way. A 2-day protocol was carried out prior to direct and indirect data collection periods. Standardisation included in-depth discussion on variable definitions, field observation, and repeated observation until observers were consistently recording the same results.

**Collection of photograph and video material**

Protocols for the collection of photographic and video material were developed, ensuring consistency in angle, number of shots, environment, and duration (video). Observers determined criteria for accuracy. For example, age (assessed through examination of the teeth) required 3 close-up photographs - view of front, side, and tooth tables.

**Statistical analysis**

The strength of group agreement between direct and indirect assessments was investigated using a Fleiss Kappa for nominal categorical variables (see Table 2) and weighted Kappa for ordinal categorical variables. The strength of agreement was determined as in Altman [2].

Bland-Altman analysis [3] was used to indicate the level of agreement in numerical variables. Discrepancies between assessment techniques with magnitudes greater than the mean difference  $\pm 2$  standard deviations were considered to indicate a significant lack of agreement.

**Results**

**Photographic material**

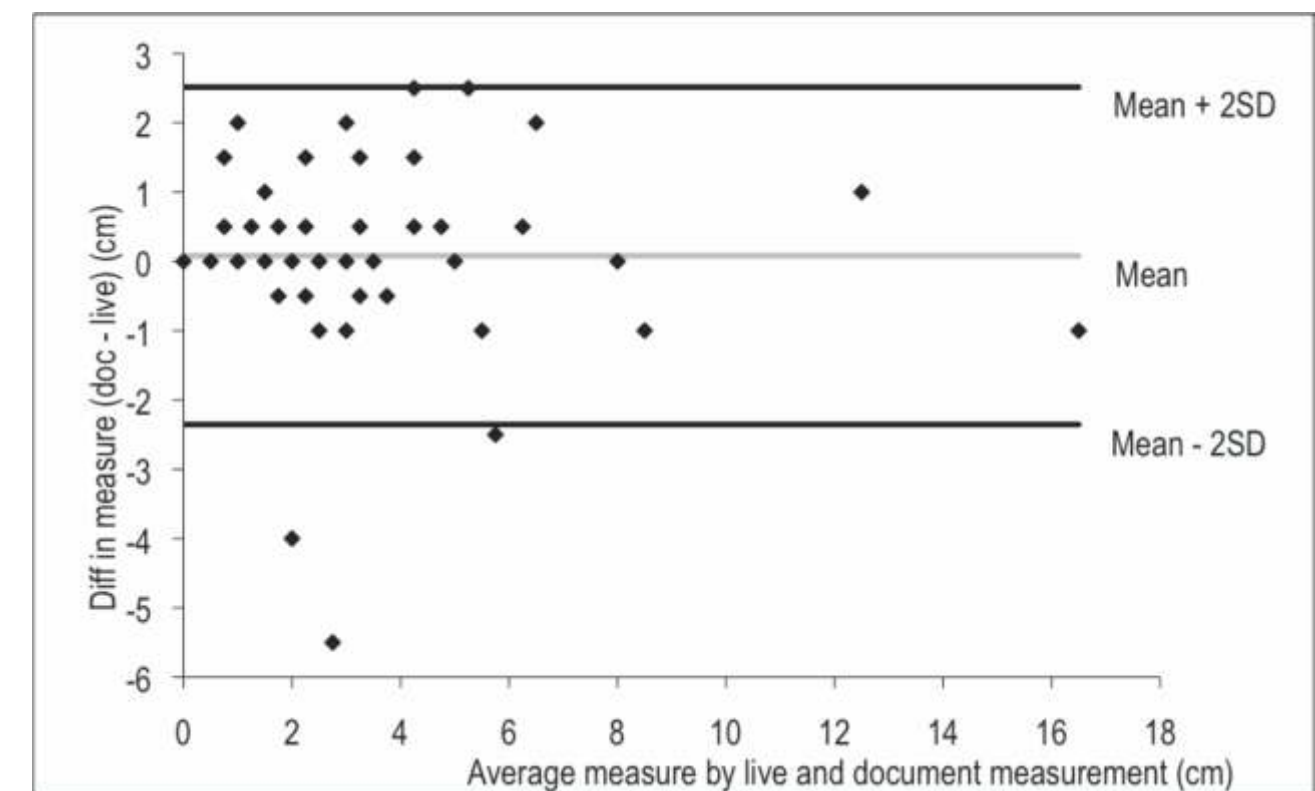
Photographic variables body condition score, age, and lesion severity showed good or very good levels of agreement between direct and indirect assessment ( $K > 0.68$  - Table 2).

**Table 2. Level of agreement between group scoring of variables from direct and indirect photographic assessment**

Variable	Kappa	Strength of agreement [2]	Test used
Body condition score	0.68	Good	Weighted Kappa
Age	0.76	Good	Weighted Kappa
Lesion severity	0.9	Very good	Weighted Kappa
Girth tightness	0.418	Moderate	Kappa

Bland-Altman analysis suggested a significant lack of agreement between direct and indirect assessment of lesion length with discrepancies of up to 5.5cm (Figure 2) and 3 values falling outside the mean  $\pm 2$  standard deviations range.

**Figure 2. BlandAltman plot showing the difference between direct and indirect measurements of lesion length against mean direct/indirect measurement. The mean difference and mean difference  $\pm 2$  standard deviations of the differences are identified.**



Further examination of data identified 2 occasions where cases were assessed as qualifying as lesion in 1 assessment and not qualifying in the other. These cases explained the most extreme differences in measures of 5.5cm and 4cm. Removal of these cases changed mean and standard deviation values, and analysis continued to suggest a significant lack of agreement even though maximum discrepancy was reduced to 2.5cm. This discrepancy would be considered clinically relevant in this scenario and therefore the result confirms the lack of agreement.

#### Video material

The strength of agreement between direct and indirect assessments ranged from fair to good when video materials were assessed ( $K < 0.789 > 0.345$ ). The values for each variable are shown in Table 3.

**Table 3. Level of agreement between group scoring of variables from direct and video indirect assessments**

Variable	Kappa	Strength of agreement [2]	Test used
Unharness – voice use	0.364	Fair	Kappa
Unharness – beating	0.745	Good	Kappa
Unharness – padding placement	0.569	Moderate	Kappa
Unharness – collar placement	0.789	Good	Kappa
Unharness – animal reaction	0.413	Moderate	Kappa
Girth tightness	0.714	Good	Kappa
Animal attitude	0.556	Moderate	Kappa
Reaction to approach	0.548	Moderate	Kappa
Walk side	0.345	Fair	Kappa
Body condition score	0.69	Good	Weighted Kappa

#### Discussion

Body condition score showed a good level of agreement between direct (live) and both photographic and video material. During collection of photographic and video material, it was noted that the position of the animal in relation to the sun (shade, facing sun, sun to side) affected photographic appearance. Further work is required to establish the effects of this on indirect assessments; however, it is recommended that this variable be standardised if BCS is to be monitored/assessed using either photographs or videos.

Bland-Altman analysis indicated that agreement in measurement of lesion size was weak between the 2 methods. These problems were potentially due to the difficulty in identifying lesion boundaries from a 1-dimensional picture. Agreement could be improved if a definition of lesion boundaries was developed with photographic assessment specifically.

Animal age had a good level of agreement between direct and indirect assessments. Observers did find that some photographs appeared confusing, i.e. characteristics of the front view were in conflict with the tooth table view.

Weaker levels of agreement were found in behavioural variables ranging from fair to good. Assessment of use of voice was difficult due to recordings being made in a noisy environment. Variables such as walk side (see Table 1), where subtle behavioural responses were observed, showed a weaker level of agreement compared to more obvious behaviours such as beating.

#### Conclusion

A number of variables showed good or very good levels of agreement between direct and indirect assessments, suggesting that these techniques could be used interchangeably. Variables with either moderate or fair levels of agreement have potential; however, further work is advised to understand the reasons for these differences and negate for them.

Work is needed to determine whether or not small changes in variables such as body condition can be identified through photographs/videos with the same level of accuracy as direct, live assessments. This information would be key to successful use of these resources for M&E purposes.

The study concludes that photographic and video materials can be used reliably as indicators of the 'real life' situation in the field for a range of variables. Care should be taken before using these tools to validate new variables and determine the level of accuracy at which changes in variables can be identified through examination of these materials.

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## A BASELINE SURVEY OF THE HEALTH AND WELFARE OF WORKING HORSES IN LESOTHO: FINDINGS OF CLINICAL AND TACK EXAMINATION

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### Introduction

A cross-sectional survey of equine health and welfare in south-west and western Lesotho was undertaken between April and June 2007. The aim of this study was to describe health parameters of horses prior to implementation of a training programme by a UK-based equine charity.

### Methods

Randomly selected horses in the region from which training programme students were recruited were clinically examined using a standardised protocol. Subject to owner consent, blood and faecal samples were obtained for routine haematology, biochemistry, and faecal worm egg counts respectively; samples were processed in a temporary field laboratory set up for the purposes of this study. Each horse was examined according to a standardised comprehensive pre-tested protocol by a veterinary-trained member of the research team. Examinations were undertaken outdoors with no restraint other than any headcollar or bridle which the horse wore on arrival. Body condition score (BCS) was assessed using a score of 0 (emaciated) to 5 (obese). Horse age was estimated according to dentition. Oral examination was undertaken manually, without a gag. Thoracic auscultation was undertaken to assess cardiac rate/rhythm and audible respiratory noise. Ocular examination was undertaken visually without access to shade and without the use of eye drops, fluorescein, or ophthalmoscope. Assessment of tick infestation was recorded according to a scale of none; mild (up to a total of 3 ticks in 1 or more locations); moderate (4-10 ticks in 1 or more locations); or severe (more than 10 ticks in 1 or more locations). Wounds were recorded by location. Manual vertebral palpation was undertaken along the length of the horse's spine; pain response and bony/soft tissue lesions and wounds were recorded. Lameness assessed at walk for approximately 20 steps was scored on a scale of 0 (sound) to 5 (non-weightbearing). Each limb was palpated at rest and lesions noted. Each foot was assessed for medio-lateral and dorsopalmar/plantar balance, horn length, frog and sole condition, and the presence/absence of a shoe. Tack, as available at the time of the horse examination, was reviewed and assessed for condition, cleanliness, and fit according to a standardised protocol.

### Results

A total of 312 horses were clinically examined. Their mean BCS was 2.5 (sd 0.8, range 0.5-4.5) and mean age was 10 years (range 2-25). The majority of horses examined (71%) were male and approximately three-quarters (74%) were entire. Mucous membranes were pale in 6% of horses and 4% were dehydrated according to a skin pinch test. Around half (52%) of the horses had eye abnormalities; these were primarily ocular discharge, but also corneal scarring (5%) and blindness (3%). Dental examination revealed that the majority of horses (93%) had sharp molar points. Non-limb wounds were seen in 68% of horses, most of these being tack-associated and found on withers, spine, or head. A pain response was elicited on palpation of the spine in 53% of horses. Thirteen per cent of horses were lame and 20% had foot injuries. Around 14% of horses were shod on one or both front feet; around 7% were shod on one or both hind feet. Poor fore foot balance was noted on approximately half (52%) of horses, and 45% of feet were overgrown. Ticks were present in 59% of horses, 36% of which were moderately or heavily infested. Strongyle eggs were found in 88% of faecal samples, 49% of which showed evidence of heavy infestation (>1,000epg); 22% contained *Parascaris equorum* eggs; 6% contained *Oxyuris equi* eggs. Low red blood cell counts were recorded in 21% of horses; a raised haematocrit count was found in 17% of horses; 21% of

horses had increased total protein. Just under half the horses (44%) had hyperglobulinaemia and 46% were hypoglycaemic. The majority of horses (69%) were wearing a bridle but a saddle was only available for half (51%) of them. Almost all bridles (90%) were equipped with a curb bit; half of the bits (50%) were in poor condition and 45% were ill fitting. Approximately half (47%) of the bridles examined were in poor condition and the majority were noted to be dirty and poorly fitting (65% and 69% respectively). Most of the saddles (85%) were in poor condition with 77% noted to be dirty and/or poorly fitting.

### Conclusions

Working horses in Lesotho have a range of physical problems, many of which could be addressed through owner education and availability of local equine trade skills. Access to affordable veterinary care is required. Findings of this study could be used to inform and direct training programmes to maximise benefits to equine welfare. Results also serve as a baseline against which to monitor effects of educational or other interventions.

### Acknowledgements

World Horse Welfare, Lesotho Department of Livestock, Ministry of Agriculture and Food Security.

## A BASELINE SURVEY OF HEALTH AND WELFARE OF WORKING HORSES IN LESOTHO: OWNER KNOWLEDGE AND HUSBANDRY PRACTICES

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### Introduction

A cross-sectional survey of equine health and welfare in south-west and western Lesotho was undertaken between April and June 2007. The aim of this study was to describe owner knowledge of equine health care and current husbandry practices prior to the implementation of a training programme by a UK-based equine charity.

### Methods

Owners of horses in randomly selected villages in the region from which training programme students were recruited were interviewed about horse care and knowledge. The structured interview followed a standardised questionnaire which had been pre-tested in Lesotho, administered face-to-face in the local language by a bilingual, trained local interviewer. The questionnaire included a combination of open and closed questions on owner demographics, horse ownership, and use, together with current and desired feeding practices, tack ownership, fit assessment and care, sourcing of equine health care advice and products, preventive medicine knowledge and activities, mouth health management, and current and desired foot care practices.

### Results

Data were gathered from a total of 287 horse owners, over 90% of whom were male and typically owned between 1 and 3 horses. Horses were primarily reported to be used as transport (79%) but were also used for police patrol work (9%), working in the fields (5%), tourist trekking (5%), and pulling a cart (3%). The mean frequency of use was 2.7 days per week for an average of 2.1 hours per day. Of the owners surveyed, 85% primarily fed their horses on maize stalks; whilst 62% of owners recognised their horse's diet was unbalanced, few had a clear understanding of the principles of good nutrition. Over half of owners (58%) shared tack between horses but owner knowledge regarding appropriate assessment of tack fit was inconsistent, and few owners reported assessing fit prior to use. Many owners reported using oil to maintain tack but few cited cleaning as part of tack care. Most owners stated that they would either consult a local animal health care worker (who typically have little or no equine specialist husbandry and health care knowledge or access to equine drugs) or another horse owner for advice when their horse was sick. 'Not eating' was the most commonly cited indication of a horse being unwell (74% of owners) but signs of severe disease were often not recognised appropriately, with many reporting colic signs as an indication of worm infestation. Thirty-one per cent of owners thought their horse was currently 'unhealthy'. Many owners could not readily distinguish preventive from curative health care, with incidental injections of antibiotics being reported as 'vaccinations'. Most owners (94%) reported using anthelmintics but only 19% used proprietary products (other products cited included herbal medicine, sulphur granules, and copper sulphate crystals) with treatment generally applied fewer than 4 times per year. Ticks were treated by 64% of owners, but 56% said their horse currently had ticks. There was limited knowledge of equine mouth care and 23% of owners treated perceived mouth problems by making gum incisions with a knife, with or without the application of salt. When asked what appropriate foot care comprised the most commonly reported component (92% of owners) was shoeing, but only 24% of owners had their horse shod; 54% of these owners undertook this themselves. There was limited understanding of the required frequency of reshoeing and the majority of owners cited affordability as the limiting factor for shoeing their horse.

### Conclusions

Lesotho horse owners have variable husbandry knowledge, and targeted owner education, in the context of limited access to veterinary care and scarce resources, is needed. Findings of this study could be used to inform and direct training programmes to maximise benefits to equine welfare. Results also serve as a baseline against which to monitor effects of educational or other interventions.

### Acknowledgements

World Horse Welfare, Lesotho Department of Livestock, Ministry of Agriculture and Food Security

## AN INNOVATIVE APPROACH FOR BETTER UNDERSTANDING THE SIGNS OF PAIN IN DONKEYS: THE ASSOCIATIONS OF PAIN-RELATED PATHOLOGY WITH CLINICAL AND BEHAVIOURAL INDICATORS

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### Abstract

*Better understanding the signs of pain in donkeys will help improve their welfare by allowing more effective application of pain relief when it is needed. Pain is common in working donkeys but it has been poorly investigated. Behaviour on its own poses limitations because donkeys do not always show obvious signs of pain. This paper proposes and outlines an approach to using pain-relevant pathologies to enhance our understanding of the clinical and behavioural signs of pain.*

### Introduction

Acute and chronic pains affect the work capacity and welfare of donkeys. Improving our ability to identify pain in donkeys is recognised as a major priority for improving their welfare [1]. This project has been developed to tackle the problem.

Behavioural changes in an individual are often the main measure of pain in animals, but they have limitations. The pain-relevant behaviours are sometimes species-specific, and they can occur in other circumstances (e.g. fear or illness) and so they are not always pain specific. Thus an approach needs to be developed to determine whether a pain-related behaviour is in fact due to pain, rather than depression, fear, discomfort, or some other perception that is not directly related to pain. One alternative is to look for palliation when applying analgesia. Scientifically this is a sound approach but it has 2 weaknesses. Some analgesics interfere with locomotion or capacity to perform the specific pain-related physical behaviour that is being examined, and this complicates interpretation of pain-response tests involving physical behaviour. It also requires ethical justification and approval when it comes to applying painful procedures in control animals.

On account of the ethical complications and limitations of the first approach, a second alternative is being developed. It assesses behaviour in individual cases which are destined to be euthanised, according to their post-mortem pain-related pathology. An equivalent approach has been used with success in humans whilst relying on radiology and ultrasound assessment of pathology severity in the live subject. Pain severity was related to the severity and/or extent of the underlying pathology in a range of conditions [2]. To our knowledge this approach has never been applied in donkeys and it forms the basis of the present project.

### Methodology and delivery

Individual and group meetings were engaged between clinicians and pathologist with great experience in donkey (The Donkey Sanctuary) and horse (Royal Veterinary College) veterinary care. A 'master table of potential pain indicators in donkeys during clinical examination' (MTPI) was developed. In addition a list of 'pathological processes associated with pain in animals' (PPAP) was prepared.

The development of both table and list followed an in-house 'Delphi methodology' in which group communication was structured so that the group of individuals, as a whole, dealt with the problem and forecast a solution [3]. In this

situation the problem was 'pain assessment and associated indicators in donkeys'. Once the table and list were in place, they were restructured into 2 main recording sheets or forms.

The first form deals with ante-mortem information:

- A. General donkey details
- B. Condition (e.g. disease) and/or system affected (e.g. respiratory or cardiovascular)
- C. Overall pain assessment based on subjective clinical observations. The assessment is done using a VAS (visual analogue scale) from 0 (no pain) to 100mm (the worst pain)
- D. Pain classification and description (e.g. acute, chronic, persistent, other)
- E. Observed behaviour/indicators in the donkey; the observed indicators follow from the generated table MTPI
- F. Analgesia administered up to the time of death and effectiveness

All this information is recorded by the clinician in charge of the case and collated on a single database.

The second form deals with findings made by the pathologist at the time of post-mortem. The form achieves:

- A. An overall pain assessment (using a VAS as previously described) based on pathological observations
- B. The classification of pain-related lesions by organ or tissue. The pain related lesions generated for the PPAP list follow first principles:
  - a. Trauma
  - b. Acute inflammation
  - c. Over-distension of a tubular or hollow organ (e.g. secondary to obstruction or torsion)
  - d. Perforation or rupture of a tubular or hollow organ (e.g. secondary to ulceration or a foreign body)
  - e. Stripping or ulceration of mucosal surfaces
  - f. Formation and breakdown of serosal adhesions within body cavities
  - g. Swelling within a confined space (e.g. compartment syndrome, pedal abscess, cerebral swelling)
  - h. Exposure of sub-chondral bone in joints
- C. A severity ranking (0=none present, 1=mild, 2=moderate, 3=severe) of the observed lesions, and related comments

These forms are being applied to The Donkey Sanctuary population in the UK. It is envisioned that a refined form will be applied on working equines in other parts of the world (e.g. Mexico), and this will help widen our understanding of the relationships between pain-related pathologies and pain indicators.

Depending on the sample size and subsequent power of the analysis the forms aim to address the following objectives:

1. Relate ante-mortem behaviour to ante-mortem clinical conditions (specific or by body system)
2. Relate ante-mortem behaviour/indicators to clinician-assigned overall pain score (ante-mortem)
3. Relate ante-mortem behaviour/indicators to clinician-assigned pain scores (ante-mortem) for specific conditions
4. Describe post-mortem findings and severity of lesions
5. Correlate ante-mortem pain scores assigned by clinicians to post-mortem pain scores assigned by the pathologist
6. Relate ante-mortem behaviour/indicators to pathologist-assigned post-mortem pain scores
7. Relate ante-mortem behaviour/indicators to post-mortem findings (specific and/or by body system).
8. Derive a composite pain score based on severity scores of post-mortem lesions
9. Relate ante-mortem behaviour/indicators to composite (data-derived) post-mortem pain score



**Discussion and conclusion**

It is anticipated that characterising and understanding the observed pathology in different tissues of the donkeys will contribute to a better understanding of the nociception and thus pain experienced by donkeys. Furthermore, it will contribute to a better understanding of the relationships between pain and the subtle behavioural repertoire of the donkey.

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**QUALITATIVE EVALUATION: A STRATEGY TO MEASURE CHANGES****V. R. Corona**

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**Introduction**

During the evolution of programs, evaluation is one of the most important stages. It can be performed quantitatively and qualitatively. The essence of our program lies within the modification of short- and long-term behaviour. Qualitative evaluation is the most suitable to measure the impact on the treatment and management of equids, describing and interpreting the changes in order to understand reality, improve practice and understand the process and results. The quantitative side is also necessary since data can be interpreted through analysis and statistics. However, we cannot forget that if our main objective is the understanding of the behavior of our subjects this being related to the environment and all its implications the most appropriate evaluation will always be qualitative. This is where the strengths, weaknesses, needs, and social demands raised by the group currently working on the project are revealed. It is a collective process in which both facilitators and beneficiaries involved in the analysis of information attempt to make the best decisions about change strategies, modify practices and procedures and take other decisions about the program that is being implemented.

This paper describes the intervention and the results obtained in an assessment carried out by the Donkey Sanctuary Mexico team in one of the municipalities in Guerrero.

Guerrero is one of the states of Mexico where DS Mexico works. It is divided into 7 regions including Costa Chica, made up of 15 municipalities. We carried out a qualitative assessment of the Donkey Sanctuary program in 4 communities: Azoyu, El Puente, Arcelia, and Zapotitlan. Equids are fundamental to the life of the people in each of these communities: they contribute to economic activities such as hauling firewood, water, and building materials, transportation, and ploughing.

The impact of the program was measured between June 2007 and March 2010, first approaching with quick diagnostic activities in the community, asking about the number of horses and donkeys and the work that they do. When we asked about how the program had influenced the community life there was seen to be a major change as a result of the performance and actions of the project.

**Materials and methods**

The evaluation of the program was qualitative, using interviews as the fundamental technique with which to encompass the scope and the achievement of goals. As well as these we looked at the actions that took place, outcomes and impacts on the behaviour of people who work with equids.

Moreover, working with groups in meetings allowed us to hear the specific needs and the solutions that people had found. They also proposed strategies to work with support from the Donkey Sanctuary in the near future, in order to achieve self-sufficiency.

**Figure 1. Meeting with local people from Zapotitlan**

Furthermore, the observations were complemented by other techniques, a complex procedure consisting of using all the senses of those equipped to observe the facts, and to present the social realities of people with their horses in the real context in which they operate. This functioned as a medium of great significance, due to the ability to recognize events, phenomena and peculiar characteristics in the behaviour of the owners. This time, the level of involvement of the people in the program and the community contributed to our research very much.

One assessment is presented here. I have chosen Azoyu because it was the community where the Donkey Sanctuary started to work a few years ago. The assessments in the other three communities will not be disregarded.

Seventeen people participated in the meeting at the Livestock Association, Azoyu. The education team, the veterinarian, the farrier and 3 social service students worked together. Information was collected systematically and separated into the following categories:

- General aspects about the equids in the community
- Knowledge about animal welfare
- Knowledge about 5 freedoms for animal welfare
- Treat and management of equids
- Body condition of equids before the arrival of DS Mexico
- Body condition of equids after the arrival of DS Mexico
- Resources to attend equids in cases of wounds or disease
- Strengths, opportunities, weaknesses, and threats
- Behavioural changes of owners
- Improvement in the quality of life of the people of the community
- Quality of service

#### **Results of the qualitative evaluation: Azoyu**

The average number of equids per family is 3 donkeys and a horse. The activities which they take part in include: transporting firewood, transporting poles for fencing, transporting loads of corn and tillage. All these activities are of equal importance, but the transportation of firewood generates the highest income. The time they devote to this activity is divided into three kinds of work days: everyday, seasonal drought and rain (3 months each) and is carried out for four days per week. The participants at the meeting described equids as cooperating in work with owners so they try to rest their animals when they might be tired.

The community's knowledge about animal welfare needs cannot be defined simply. Participants at the meeting used many words. Three people used words meaning 'healthy', 'food', and 'attention'. Another mentioned that animal welfare implies offering working animals care and no problems. However, the most important idea that people put forward was that the working animals are living beings. Equally, they are conceived as working tools. Taking into account these two ideas, we realised there was great empathy between animals and owners. Until the DS Mexico arrived in the community and started its activities, the owners did not look for alternatives to satisfy their animals' needs.

In terms of the animal's 5 freedoms, people asked themselves about them. There is a good relation between animals and humans, and people know that all living beings require the same things to survive.

According to people interviewed, the average body condition of equids before the DS Mexico arrived was 2.25. The most prevalent disease was 'hormiguillo', a parasitic illness.

The solutions which people used to heal wounds and diseases included natural remedies, medicines, and chemical substances which owners bought, for example water with salt against colic and diesel against white line disease. To a lesser extent, the vet came to the community, but he was expensive in terms of consultation and transportation.

Since the intervention of the DS Mexico program, there have been changes in the body condition of working animals and a decrease in disease. Owners have seen body condition change from 2.25 to 3.5 (an optimal condition), presenting an improvement of 1.25. No animal has experienced a decrease in its body condition; body condition is stronger, as the owners can see during their daily work. Basically the weight gain is the main change that the owners have perceived; also the hair color and texture have become brighter.

Also important to the qualitative aspect is the change in human behavior regarding how to treat animals, including basic action to keep equids clean, such as sweeping and cleaning the shelters. The most meaningful example is when the owners stop familial or personal activities in order to attend to their animals.

Participants mentioned the quality of service given by the clinics: it was good as shown in the result of improved body condition. The support that the clinics have given to the community has been of great help. The clinic has not only helped to cure donkeys, but has also provided information about the management and care of equids. This contributes to the owner's assistants, the working animals, when the clinic isn't there. The members of DS Mexico have also clarified aspects related to medicine that is sometimes used on the basis of tips from neighbors or friends; this fact has prevented animal deaths and animal diseases.

#### **Discussion**

According to the summary presented, we found:

- Improvement of the body condition of working animals
- A change of view about working animals: now they are seen as inseparable friends who must be cared for, as they contribute to the quality of life of communities, because when they have a good physical health, they increase families' incomes
- A change of owners' habits: they now work their animals for short periods of time, and allow them rest without being beaten or maltreated

Through the discussion process we were able to plan areas of action according to the needs of the population and introduce changes to the ongoing program:

- Training on management for owners of working animals

- Preventive medicine in working animals
- 5 freedoms for animal welfare
- Community organization for assistance to working animals

As we can see through this example of Azoyu, the evaluation phase is not static within programs; it must be cyclical and repeated continuously. We must employ skills that allow us to identify when changes are required, not in a demagogic manner but more through a democratic process involving the community.

## PARTICIPATORY WELFARE NEEDS ASSESSMENT: A COMMUNITY-DRIVEN APPROACH TOWARDS IMPROVING THE WELFARE OF WORKING EQUINES

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### Introduction

In most human development projects participatory approaches are being applied successfully, for example in health promotion and improvement in sanitation practices [1]. Similarly it is found to be effective in agriculture [2], livestock [3], and the animal health sector [4]. Since 2004 there has been a growing realisation by Brooke India, an animal welfare charity funded by the Brooke UK, that its programmatic approach, consisting of providing free treatment and resources such as harnesses, together with the 'education' of animal owners, was not leading to lasting improvement in animal welfare. The Brooke India team saw a limited adoption of the welfare messages by the owners and the clinical records showed repeated cases of wounds, dehydration, and eye, hoof, and skin problems in animals from the same location.

Based on the successes in other sectors, Brooke India decided to use similar participatory approaches, to enable equine-owning communities to analyse the welfare of their animals and to make sustainable welfare improvements. Staff with significant community development experience were recruited and trained in Participatory Rural Appraisal (PRA). A variety of PRA tools such as village mapping, seasonality analysis, and matrix ranking were adopted and adapted to engage owners. The **owners and stakeholders acquired an awareness of the welfare of their animals**; however, the animal's perception or 'voice of the animal' went unheard, and the PRA programme did not lead to the desired action of the animal owners improving animal welfare.

This triggered the Brooke India team to initiate, with support of the Brooke UK, a pilot project to develop and test a methodology for welfare assessment by the community itself. This paper describes the development of this method called Participatory Welfare Needs Assessment and the results and lesson learned.

### Materials and methods

In 2006 a pilot project started to develop an innovative participatory methodology. The project started off in 40 villages with about 650 animals. This was gradually increased to 78 villages with 1,335 animals. Each district unit designed a process and tested it together with the community. Over a period of almost 3 years the 8 district teams involved came together on a quarterly basis to share their processes and discuss successes and failures.

As a starting point the teams looked at a system of welfare assessment developed in collaboration with Bristol University. Based on the principles of this assessment tool the teams designed a welfare needs assessment tool. This led to incorporating animal issues in analysis; however, the use of a structured, prescribed format limited creativity and innovation. The animal owners did not have ownership of the process and they were not able to put their new issue/ideas into the assessment. These limitations led to the search for a methodology that could be practised by the animal owners and resulted in the development of the Participatory Welfare Needs Assessment methodology.

Participatory Welfare Needs Assessment (PWNA) is a group-based process in which the community itself identifies the physical signs and behaviour of the working equines relating to both physical and mental welfare.



Four process steps can be identified, although for each community the detailed process may differ regarding tools used and timeframe. The four PWNA steps are:

#### **1. Analysing how animals feel and what they need for their well-being**

This step enables the group to build a common understanding of welfare based on animal needs and feelings and enables them to recognise how aspects of good and poor welfare are expressed in an animal's appearance and behaviour. Specific tools are developed by the group, for example a tool called 'If I were a horse', which enables animal owners to see the world from their animals' point of view and identify the welfare issues.

#### **2. Generating a list of animal, resources, and management practice indicators and agreeing on how they will be scored**

The issues identified in the first step are summarised into animal, resources, and management practice indicators [5] in a format that enables assessment of animal welfare by the animal owners themselves.

#### **3. Observing animals and recording their welfare status**

In this step the group of animal owners visits the animal of each group member at their homestead and observes along the list of indicators agreed in step 2. All findings are recorded and summarised giving a clear picture of the welfare of individual animals and of the resource and management issues that affect the animals belonging to the group.

#### **4. Analysing the present welfare status of animals belonging to the group**

The group discusses and analyses the welfare issues of individual animals and the issues summarised in step 3. A time-bound action plan is made by the group for individual as well as collective action.

In 2009 the success of PWNA meant the pilot project was scaled up to mainstream programmes and PWNA is currently being used to assess 29,499 animals on a regular basis in the communities of more than 1,379 villages and brick kilns.

#### **Results and discussions**

The development of PWNA was a process of experimentation with and by the community. It required commitment, innovation, and creativity of the community facilitators. Using PWNA we and, more importantly, the owners have seen a visible improvement in the welfare of their animals, such as an increase in the body condition (score) of the animals, a reduction of wounds (especially deep wounds), good coat health, clean eyes with no sign of watering and redness, and a reduction of hoof-related problems. The owners in the equine welfare groups have agreed not to work their animals before two and half years of age and the group members monitor each other to make sure this does not happen. Use of harmful practices such as application of engine oil and kerosene on wounds has stopped. Eighty percent of equine owners in the villages which are ready for phasing out are members of an 'equine welfare group' and meet regularly to monitor their animals and agree on collective and individual action to improve the welfare of their animals with limited or no external support from Brooke India. The process builds on local people's capabilities: the wisdom of the owners is the basis of the method. The process is relatively simple for both owner and staff.

The search for a process or system for animal-centred analysis by the community has generated many learning points. The most important are:

1. In an early stage of the process the field experiences confirmed that unless animal owners clearly identify welfare issues and various causes of sufferings themselves, they do not act towards bringing the necessary changes in handling and management practices. The FAO expert meeting held in 2008 [6] states: 'Animal welfare assessment should be done in full participation of the people involved in a process that also attempts to understand the perceptions and traditional practices of participants and the social and material assets that they

can bring to bear in solving animal welfare problems.' A system to improve the welfare of working equids therefore needs a high level of participation of the owners, carers, and users of the working animals.

2. PWNA is not only useful in assessing welfare status of animals by the animal owners: it also provides a monitoring tool when repeated over a period of time. In many communities the tool is used on a quarterly basis. This allows the group to see the changing trend of welfare, according to the season, the animals' workload, and other factors in their living and working conditions and environment. It enables owners to recognise when animal welfare is getting worse and to take action quickly, either as an individual or collectively. Hence the system includes a mechanism for tracking the change in welfare status over time. This also enables the owners to have confidence in their ability to recognise negative changes in welfare, motivates the group to act quickly to improve welfare, and provides peer pressure to improve animal management practices.
3. The collective nature of the PWNA process is essential to motivate animal owners to act to improve the welfare of their animals. The observation by the group of each other's animals creates peer pressure to act. In many units the groups of equine owners started to reward the owners with the best animal, based on the list of indicators developed in the PWNA process. The group process also promotes mutual learning and strengthens the capacity to solve problems together, thus strengthening each group's self-reliance [7]. This helps to bring incremental improvements in welfare status [6].

#### **Conclusions**

Improving the welfare of working animals in the long term requires animal owners and carers to lead the process, by having the following capacities:

1. Prevention of welfare problems before they start
2. Early recognition of negative changes in their animals' welfare
3. Prompt and effective action in order to reduce the impact
4. Achievement of incremental improvements in welfare status

Systems such as the Participatory Welfare Needs Assessment, developed by Brooke India, demonstrate how this can be done successfully with the community. PWNA as part of a process for community action is described in more detail in a guidebook for facilitators in this field, called 'Sharing the Load', to be published in 2010 [8].

#### **Acknowledgment**

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## USING WELFARE ASSESSMENT TO MEASURE THE IMPACT OF COMMUNITY-BASED INTERVENTIONS IN BIJNOR, INDIA

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### Abstract

The Brooke India piloted Welfare Assessment (WA) as a tool in Monitoring & Evaluation (M&E) to measure the impact of its programme activities in Bijnor, a district of Uttar Pradesh state situated 160 km to the north-east of New Delhi. The study reported in this paper was carried out in 5 villages where the Brooke began working in April and May 2008. In order to measure the impact of these interventions, welfare assessments were carried out on equines in these villages in March 2009 (87 equines) and July 2009 (79 equines). In addition, information on the activities carried out since 2008 has been recorded and a 'pre and post activity' exercise – a Participatory Rural Appraisal (PRA) tool – was conducted in all 5 selected villages during July/August 2009 to find out the changes that had taken place in those villages. The data of WA and the pre and post activity exercise were analysed individually before triangulation of the results of both the studies was done by the Brooke India and village representatives. The results demonstrated that an increased number of animals manifested abnormal mucous membrane colour in July (from 32 in March to 47 in July): this could be associated with Surra which is more prevalent during this season. Again heat stress cases increased (from no animals in March to 7 in July): this may be correlated with extremely hot and humid weather. Welfare assessment results indicate that body condition score (BCS) decreases when there is less fodder available and the animal is worked more under harsh working conditions. The number of animals with a very thin body condition score (BCS 1) increased from 2 in March to 7 in July, and the number of animals with a medium (BCS 3) and medium-to-fat score (BCS 3.5) decreased from 16 in March to 5 in July.

### Introduction

The WA tool was developed and tested by the Brooke UK in collaboration with Bristol University to assess the welfare state of the working equine [1]. It is an animal-based comprehensive tool consisting of 33 indicators including demographic descriptors, behavioural indicators, general and physical health indicators, and lameness indicators. This tool has been used in combination with survey questionnaires to evaluate changes in owners and their animals resulting from grooming projects [2].

Since 2003, the Brooke India has been using the WA tool to create the baseline data in all operational areas and also to direct the course of action based on its output in the form of equine welfare problems. Later on, after implementation of programme activities, WA is repeated in those areas to record the change of the animal welfare status.

The Brooke India started its operations in Bijnor district during August 2007 but animal welfare activities were initiated during April-May 2008. Bijnor is one of the districts of Uttar Pradesh state in India located 160 km north-east of New Delhi. Bijnor has a total of 9,306 working equine population. The activities were mostly collective community actions such as Tetanus Toxoid (TT) vaccination, purchase of feed, hair clipping machinery, and farriery tools, levelling of terrain at a brick kiln, participatory welfare needs assessment (PWNA), and linking with stakeholders such as government veterinarian, local health provider (allopathic and traditional), medical store, and cart maker. In March 2009 an animal welfare baseline was created in 24 villages in the district. Until then the welfare assessment tool was used for creating an animal welfare baseline and had not been used for measuring the impact of project intervention. But it was necessary to measure the impact of welfare activities. In order to overcome the organizational gap in M&E, the WA tool was used. During July 2009 the follow-up WA was carried out in 5 villages: Goyali, Janderpur, Pawati, Rawati, and Shakarampur Gilada where the baseline had already been created.

The objective of this pilot case study was to test and promote welfare assessment as an M&E tool in measuring the welfare changes in animals due to the Brooke's intervention.

### Methodology

The pilot study was carried out in 5 villages (Goyali, Janderpur, Pawati, Rawati, and Shakarampur Gilada), each in a separate block in the district of Bijnor. Each village has at least 10 equines and 10 equine owners.

A total of 87 and 79 equines were assessed in March 2009 and July 2009 respectively. During March and July 2009 WA, it was common for 63 equines to be assessed: the remaining equines were sold, migrated for work to another location, died (and euthanized), or the owner was absent during the time of data collection. The sampling strategy employed while planning the WA was to sample animals of all the available owners at each intensive site (census sampling).

To measure the impact of welfare activities carried out by the district unit, a pre and post activity exercise (a Participatory Rural Appraisal tool) was conducted in all selected 5 villages during July/August 2009.

One community meeting for each of these 5 villages was conducted to carry out the pre and post activity exercises. On average 12 equine owners (total 60) participated in each of the pre and post activity exercises. The exercises were facilitated by the facilitators of Bijnor district. Thirty indicators – such as regular cleaning of hooves, grooming, bathing their animals, application of discarded engine oil on wounds, group formation, vaccinating their animals against tetanus, proper farriery, practice of contacting the local health provider – were decided by the owners. For each indicator a scale of 1-10 (1=lowest value, 10=highest value) was considered to rank each activity.

Analysis of the welfare assessment data and pre and post activity exercise data was carried out separately. Then the results of both exercises were triangulated, that is the results of the welfare assessment were linked with Brooke intervention activities. During triangulation, both Brooke India team members as well as equine owners took part.

### Results and discussion

The welfare issues that showed definite changes in the 5 villages resulting from baseline and follow-up assessments were considered for further analysis and discussion. The welfare issues are abnormal mucous membrane, heat stress, and BCS.

### Mucous membrane

The number of animals with an abnormal mucous membrane colour increased from 32 in March to 47 in July (see Table 1).

Table 1

Village name	Goyali	Janderpur	Pawati	Rawati	Shakarampur Gilada
No. of animals with abnormal mucous membrane colour					
March 2009	3	10	6	8	5
July 2009	7	12	8	11	9



There is a likelihood of abnormal mucous membrane (mm) being associated with trypanosomiasis (*Surra*) which is a debilitating disease of equines commonly seen in northern India during the monsoons. A typical symptom of trypanosomiasis is an abnormal mucous membrane: either pale or anemic [3]. The cases of abnormal mucous membrane identified through assessment were also confirmed for trypanosomiasis using the treatment records of the district vet.

**Heat stress**

The number of animals with heat stress increased in all villages between the 2 assessments. In March no animal had shown signs of heat stress whereas in July cases increased to 7 (see Table 2).

**Table 2**

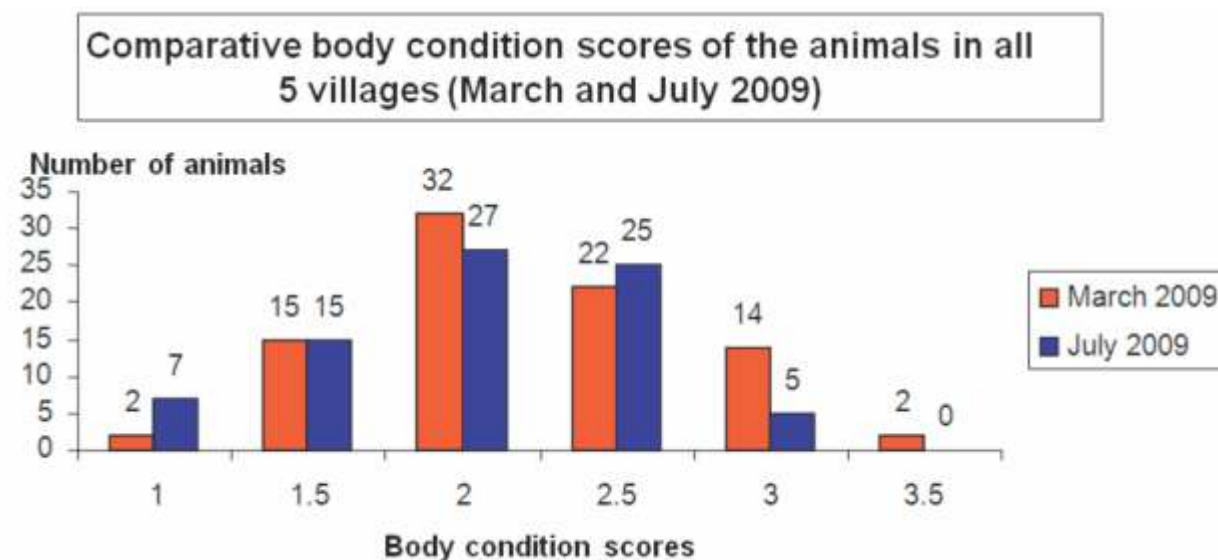
Village name	Goyali	Janderpur	Rawati	Shakarampur Gilada
No. of animals showing signs of heat stress				
March 2009	0	0	0	0
July 2009	2	1	2	2

This increasing trend may be attributed to hot and humid weather, and animals working for prolonged hours [4]. During the WA data collection we recorded the temperature and relative humidity. In March 2009 the temperature ranged from 28 to 35° Celsius and the relative humidity ranged from 50 to 55 %; in July 2009 the temperature ranged from 36 to 40° Celsius and the relative humidity ranged from 65 to 75 %.

**Body condition score**

The number of animals with a low BCS (BCS 1) increased from 2 in March to 7 in July, and the number of animals with a medium (BCS 3) and upper-medium BCS (BCS 3.5) decreased from 16 in March to 5 in July (see Graph 1).

**Graph 1**



As can be seen in the graph, the number of animals in higher condition scores decreased in July which is known to be a time when the availability of fodder decreases and an animal's workload increases. Results of the pre and post activity exercise indicate changes in owner knowledge and practices and have been compared with the actual and expected results from the activities carried out using records from the Bijnor team. Improvements have been noticed in animal management and preventative practices, such as saddle cleaning, harness checking, cart balancing, and ensuring the correct air pressure in cart tyres. This may be related to the decrease in the wounds of girth and belly region: the number of animals with wounds in this region was 10 in March compared to 6 in July. Other activities such as regular grooming, bathing and massaging could be related to the coat health of the animals being improved, but the adverse and dusty working conditions of the brick kilns meant there was no improvement in the coat health of the animals in July compared with March.

**Conclusions**

This study has provided the Brooke with information on a number of issues which can be used in future to further enhance our work. Many animals with which we work change owners relatively quickly. This may mean it is difficult to identify the impact we are having on the welfare of these animals. The short interval between welfare assessments and identification of individual animals meant that migration of animals did not affect the results. It had previously been assumed that BCS changes over the long term, but this has been contradicted by the WA results which show changes in BCS over a 4-month period. In addition, seasonally associated welfare changes such as mucous membrane colour and levels of heat stress indicate that, in an ideal world, impact evaluations should be carried out at 1-year intervals and in the same season.

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## DESIGNING PROGRAMMES FOR SUSTAINABLE ANIMAL WELFARE IMPROVEMENT

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### Introduction

Recently the animal welfare sector has started to recognise the need for programmes which lead to a more sustainable improvement in welfare than the traditional free or subsidised health delivery model. Research into welfare issues affecting working equine animals has revealed that many prevalent problems, such as dehydration, lameness, and wounds, cannot be prevented by simple, short-term interventions [1]. A primary focus on health service delivery might not lead us to reach our goal of improving animal welfare in both the short and long term.

The global financial crisis has brought increasing realisation that external inputs from western or northern agencies may change rapidly as income fluctuates and appears less secure. This has resulted in a desire to increase the effectiveness of animal welfare programmes and to demonstrate the long-term viability of programme outcomes. A lasting improvement in one population of animals would enable us to move on to support populations in need in other regions or countries, thus increasing our impact and reach.

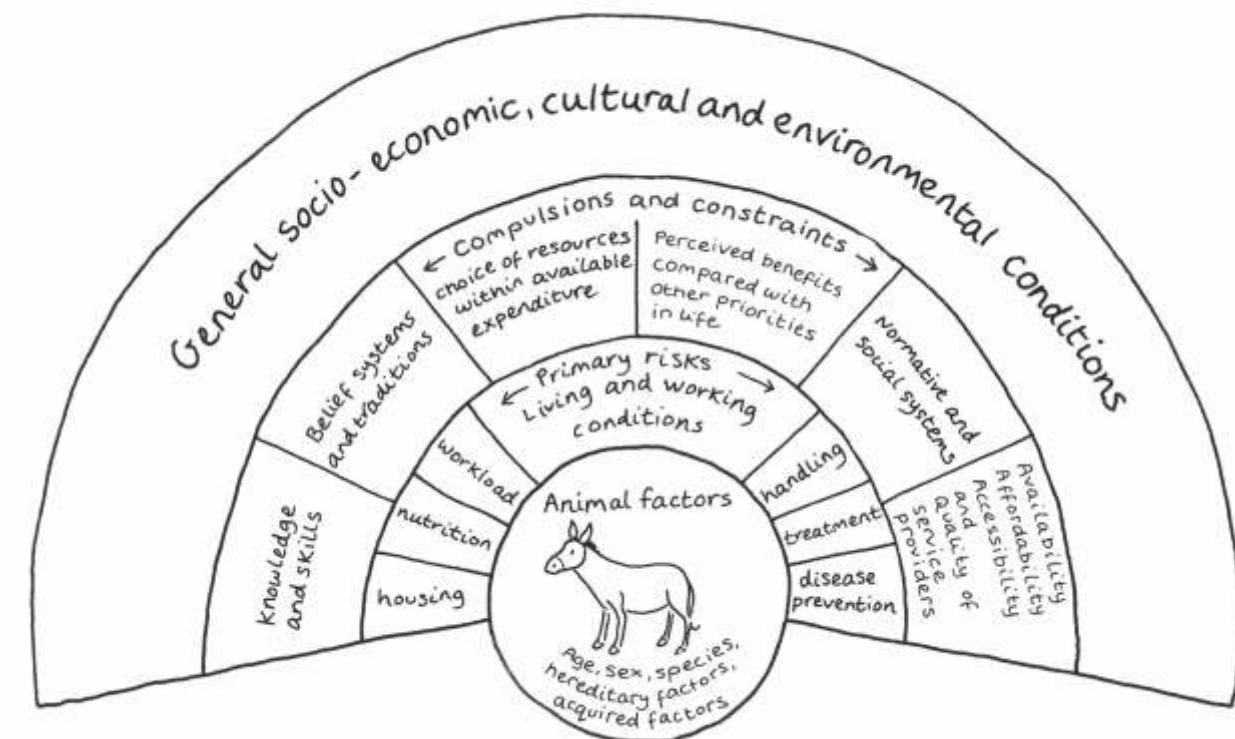
This paper brings together our experiences with working equine welfare, community development, and promotion of public health, in order to define sustainable welfare improvement, discuss how it is influenced, and outline the programmatic approaches to achieve it.

### Sustainable welfare for working animals: what it is and how it is influenced

Sustainability can imply persistence and the capacity to continue for a long time, or resilience and the ability to bounce back after unexpected difficulties [2]. Two aspects of sustainability have been defined [3 and 4]. One concerns the external environment, including how resources are used, enhanced, and maintained for future generations. The second is the internal environment: whether an individual, household, or family is able to cope with the inevitable stress and shocks faced in their lives; and their ability 'to perceive, predict, adapt to, and exploit changes in the physical, social and economic environment'. In applying the same principles to sustainable improvement in working animal welfare, we are aiming for a situation where animals experience a level of welfare which enables them to cope with stress and shocks, including diseases and seasonal food shortages, and gives them the resilience to deal with changes in their physical and social (internal) environment. In order to achieve this, owners, users, and carers need to be able to provide the resources and services (external environment) to preserve this welfare state in animals they keep now, and maintain it for animals that may be owned in the future.

Some resources, services, and management practices are within the direct control of their owners, such as which health provider to use, or whether an animal is beaten. However, many factors cannot be influenced by an individual acting alone because they are part of a wider living and working environment or socio-economic system. For example, individual ghari cart owners in Butajira, Ethiopia could not influence driving conditions, feed prices, or the work practices of other owners. By forming a Horse Owners' Association and acting collectively they were able to repair the roads where their horses worked, provide better animal feed through bulk purchase, and set regulations to avoid overloading. This demonstrates that in order to be successful in improving working animal welfare, a multi-factorial approach is necessary, focusing on the animal, the people dealing with it, and the systems within which they live and work, as illustrated by the adapted health promotion model shown in Figure 1.

Figure 1. Determinants of working animal welfare [5]



### Programmes for sustainable welfare improvement

Since the 1970s, the human development sector has recognised that community participation and ownership of decision-making, particularly of decisions which affect livelihoods, are pre-requisites for sustained social change [6]. In order to implement lasting improvement in human welfare, governments and non-governmental organisations have moved away from delivering instructions and blueprint solutions, towards programmes which support and build the capacity of the community to develop their own answers to problems [7]. Clinical records from countries such as Egypt and India demonstrated that the same animals returned for veterinary treatment of the same problems over long periods of time, suggesting that advice given at the point of treatment was not sufficient to prevent welfare problems. This agrees with work [8] that shows that approaches that rely solely on providing information often have little or no effect on changing human behaviour. In the international development sector, information delivery approaches such as the Training and Visit model have been superseded widely by the group of methods commonly known as Participatory Learning and Action (PLA) [2]. Employing any form of collective structure is more likely to lead to a sustainable outcome than individuals trying to act alone [9]. Over the last 4 years, Brooke India has taken a PLA approach to animal welfare improvement, building **sustainable support structures** in the form of local groups for collective action. Being part of a group promotes mutual learning and develops participants' capacity to solve problems together, thus strengthening their self-reliance [10] and solving some of the welfare problems that are beyond the influence or control of individuals. The Brooke India programme now uses this approach in around 1,400 communities with the owners of almost 30,000 animals. Collective welfare monitoring has demonstrated measurable improvements in many animal husbandry practices and welfare issues, including wounds, body condition, and disease prevention.

We have found a lot of existing knowledge about animal health and husbandry available within every community where we work. Many welfare problems have been solved by unlocking and sharing this knowledge through discussion around the Participatory Action Tools for Animal Welfare [5]. These facilitate the processes of: (1) group formation; (2) in-depth collective analysis of primary and secondary risks to welfare (see Figure 1); (3) community-led planning for action to remove, reduce, or mitigate for these risks; and (4) regular, collective monitoring of welfare status. For example, in Khanjarpur village in Uttar Pradesh, a group of owners solved the problem of persistent wither wounds in their horses, using their own observations to identify and correct a mismatch between animal size and saddle design through two rounds of root cause analysis and testing of local solutions.

In our search for lasting improvement in working animal welfare, we make use of existing local resources and animal-related service providers in the programme areas. Discussions with field staff and communities in India and Ethiopia concluded that although owners and their families make the biggest long-term difference to their animals' lives, service-providers such as government and private vets, community-based animal health workers, farriers, feed sellers, and harness-makers play an important role. Everywhere we work, local resources and service providers exist and are already used by communities to a greater or lesser extent. By strengthening and working through these service providers rather than setting up new parallel systems, we try to ensure that horses, mules, and donkeys receive accessible, affordable, appropriate and good-quality services for the lifetime of the animal and for other animals in the future. We and others [11] found that services which are provided externally, or started without extensive community consultation and investigation into the local context, often do not last once financial support is reduced or withdrawn. Discussions with service providers such as farriers and community-based animal health providers have indicated that where they formerly provided services to working animals, the presence of a parallel system has made this part of their business non-viable. Resources and services can be sustainable for the long term only if they are viable businesses demanded and paid for by animal owners, or provided by government or other local institutions in response to collective requests from communities.

We have learned that effective PLA for working animal welfare is more complex than external provision of veterinary and husbandry advice, so success requires skilled and experienced facilitators. The PLA approach has succeeded in Brooke India because the organisational culture is supportive and strategies are in place to deal with the flexibility and longer timescales required, compared with a delivery-orientated approach.

### Conclusions

Our experiences have changed the way in which we design programmes for sustainable improvement in the welfare of working animals, which differ substantially from that of primarily delivery-oriented programmes:

- The welfare needs of working animals are seen in the context of their whole living and working environment, as well as in relation to the delivery of health services.
- We have benefited from adopting approaches which have been applied successfully in promotion of public health and in the agricultural extension sector.
- An investment in employing and retaining experienced community development facilitators has resulted in innovative and far-reaching programmes for sustainable working equine welfare improvement.
- We emphasise working through existing local service providers to build their capacity, increase demand for their services, and link them with communities, helping to ensure their long-term viability as a resource for sustained improvement in working animal welfare.

We suggest that organisations which aim to deliver lasting improvement in welfare should adopt a programme strategy consisting of two synergistic core approaches:

1. Community-driven improvement and collective monitoring of equine welfare
2. Working through and building the capacity of existing local service providers

By strengthening the technical (and sometimes business) capacity of local providers to deliver good-quality services for working animals, and using participatory methods with groups of owners to increase recognition and demand for good animal welfare and quality services, these two core approaches complement and enhance each other.

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## MEASURING IMPACT ON ANIMAL WELFARE AND HUMAN LIVELIHOOD: WHAT TO MEASURE AND HOW TO MEASURE IT

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### Abstract

*This paper gives details of how I persuaded donkey owners in the brick kilns of Solapur to stop the practice of nostril-cutting. This was achieved by carrying out research on the reasons and beliefs behind the practice, and gathering evidence to demonstrate that a donkey with its nostrils cut suffers greatly and works more slowly as a result, damaging the owner's livelihood. The evidence was presented to the owners, most of whom decided for themselves to stop the practice.*

### Introduction

Nostril-cutting is an age-old traditional practice, which owners believe helps a donkey to breathe and enables it to work better. Before 2006, I used to see between 60 and 70 cases of nostril-slitting at every working site I visited.

It is carried out during the summer period, in a very cruel way the donkey is forced down on to the ground, tied with rope, and held down by several men. No painkiller is used while the nostril wounds are inflicted with a blade, which is sometimes rusty. As well as the wounds themselves, the donkey may suffer additional injuries from its struggles on the stony ground. The nostril wounds are extremely painful for the donkey for about 2 weeks, and afterwards it suffers from flies and itching. The wounds often become infected.

The owners I was working with were from the lowest class and very poor. They had low literacy levels and depended on their donkeys for their major source of income working for a daily wage in the brick kiln.

My planned approach was to introduce the Donkey Sanctuary India, and explain how we could be of good use to the donkey owners, by helping them take care of their bread-winning partners, the donkeys.

### Materials and methods

#### Research

I made a list of those donkey owners who cut their donkey's nostrils in each area, and found out the traditional reasons why they did this. I also found out the technique used for cutting the nostrils. I looked at the type of work the donkeys were used for. I also found out which donkey owners in each area did not cut the nostrils, and what type of work their donkeys were doing.

#### Evidence

For 2 weeks, 2 groups of donkeys were observed working, 1 with their nostrils cut and the other without. I drew up different charts for each group, showing the donkeys' ability to work, the speed of their work, the quantity of bricks they were carrying, how they were breathing, and their body condition.

#### Results

The comparison showed that donkeys with cut nostrils did not work any faster than those without, and were not able to carry any more bricks. The speed of each donkey's work depended on their body condition and fitness. The nostril cutting did not lead to any improvements in the donkey's work.

However, some negative effects of nostril-cutting were observed. Because the donkeys were in pain, they worked

more slowly. Those with wounds that were itching tended to rub their faces on the bricks, preventing the wounds from healing. Some donkeys' wounds were found to have maggots in them. The donkeys' faces were swollen and they had problems chewing their food, so they lost weight and had no energy to work. Some also developed a temperature.

I then held 3 sessions with groups of 'good' donkey owners who did not cut the nostrils and 'bad' donkey owners, who did. In the first session I presented them with the research I had done and the evidence I had gathered. I talked to them about how God had created each animal and it is not good to interfere with his creation. I explained how cutting the nostrils can lead to infection, making the donkey unwell and unable to work, leading to the owner losing money. I also compared donkeys to horses, asking the owners to think about how horses are strong and fast enough to run races and pull carts even though their nostrils are not cut.

Some of the owners whose donkeys had been used in the research were then asked to tell all the other owners about the effects on their income. Owners who did cut their donkeys' nostrils ('bad' owners) were asked how often their donkeys developed infections or abscesses as a result, and how often they had to call the vet to treat them. They were asked how much loss they suffered when the donkeys were unable to work. Selected 'good' owners (who did not cut their donkeys' nostrils) were then asked to spell out the income they generated from their donkeys, and they also questioned the bad owners about whether they realised they were causing severe pain to their hard-working donkeys.

The second session focused on the pain suffered by the donkeys. I brought donkeys with cut nostrils to the group so that they could see how the donkeys were expressing their pain.

In the third session we targeted the owners who were still having problems understanding our message, and gave them extra information about donkey welfare.

The owners were given time to develop their own views and reach their own decisions on nostril-cutting. The 'bad' owners came to acknowledge that it was a cruel act which should be eliminated. But in case they did not adopt the changes and reverted to their former habits, we arranged for a group of 'good' donkey owners to monitor them and report back on those who were still continuing the practice. Those who did so were given further education and guidance to help them accept the change.

### Conclusion

In 2006, before I started the education and awareness-raising programme, I saw 600 cases of nostril-slitting. In 2008, after 2 years of work to eliminate the practice, I saw just 3 cases. So I achieved my goal of stopping this cruel practice.





## PARTICIPATORY PLANNING, MONITORING, AND EVALUATION: A CASE STUDY, INDIA

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### Abstract

Community development is a major programme of the Brooke India: it is designed to mobilise and strengthen equine-owning communities and focus on sustenance of the activities and approaches related to equine welfare. The Brooke India selected Rathoura village, in Baghpat district, Uttar Pradesh as an intensive intervention village in 20078 based on the equine population and its low welfare status with prevalence of wounds, lameness, and dehydration. Various community engagement programmes enabled the community to participate actively in intervention for equine welfare. Proactiveness of the community could also be seen through the initiation of the Participatory Welfare Needs Assessment (PWNA) process, comprising participatory planning, monitoring, and evaluating equine welfare. This has enabled the community to develop a set of indicators for taking responsibility and thereby carrying out proper intervention. The process of planning, monitoring, and evaluation has resulted in the achievement of holistic equine welfare to a significant level in this village.

### Introduction

Rathoura village lies in Chaprolli block and is located 38 kilometres from the district headquarters. The village comprises a total of 52 equine owners with 61 equines: 52 horses, 6 mules, and 3 foals. The main source of livelihood of the owners is working in brick kilns; they also transport goods and people by cart during the brick kiln off-season. However, people belonging to the Dhobi community have marginal land holdings which provide them with some additional food security.

### Methods

Participatory tools mobility mapping, Knowledge, Attitude and Practice (KAP), and a transect walk were used to identify issues related to different aspects of equine management and resources. The transect walk [1] was very useful in planning the intervention and identifying areas for special consideration. Based on this walk, a chart was drawn up containing indicators such as cleanliness, wounds, saddle, fodder, etc.

Discussions about the indicators identified on the transect walk led to some owners raising the question of how an indicator can be assessed correctly if there are several aspects to it. For example, stable cleaning means, among other things, the floor should be levelled, faeces should be 1 metre away from the animal, and the manger should be odourless. The owners discussed this at length and finally decided to break each indicator into appropriate segments. This discussion brought more clarity and sensitivity about every issue. Subsequently, cause and effect analysis was done on 14 issues identified with the participatory tools.

Continuing the process, and keeping in mind causes, what to do, when to do it, who will do it, owners themselves prepared the Village-level Work Plan (VLWP) with indicators such as dehydration, lip lesion, wither wound, girth/belly wound, wound on chest and shoulder, etc. After developing the VLWP, the indicators were further divided into sub-indicators for monitoring and evaluation (see Table 1).

**Table 1. Indicators and sub-indicators**

S. No.	Issue	Indicators of high standard	
1.	Dehydration	a	Observed by pulling skin near neck
		b	Healthy equine
2.	Lip lesion	a	No cut mark on lip
		b	No red spot on lip
3.	Wither wound	a	No cut on wither skin
		b	No red spot/flesh on body
		c	No beating spot on wither
4.	Girth/belly wound	a	No cut on skin
		b	No swelling on girth
		c	No red spot (flesh) on body
		d	No beating spot on body
5.	Wound on chest/ shoulder	a	Hairless skin
		b	No cut on skin
		c	No red spot (flesh) on chest/shoulder
6.	Cleaning of hoof	a	Hoofs of all four legs are clean
7.	Eye	a	No eye redness
		b	No watery discharge
		c	No dirty eye
8.	Cleaning of stable	a	Floor should be clean / not soaked
		b	Faeces should be 1 metre away from equine
		c	Floor should be level
		d	Mud floor
		e	No bad smell in feeding trough
9.	Grooming	a	No dirty coat
		b	Shining hair
		c	No ticks on body
10.	Timely work from equine	a	Alert equine
		b	Equine eats full diet
		c	Good health
11.	Lameness	a	By making the equine walk
12.	Free roaming	a	Equine does not run away on unhobbling

After this, the owners started to monitor and evaluate every issue specifically using the PWNA process. They prepared a 'traffic light' monitoring tool (giving a green dot for no problem, a blue dot for a problem of medium severity and a red dot for a severe problem) to use with the transect walk. Good planning followed by effective monitoring and evaluation [2] played a major role in enhancing the effectiveness of intervention and helped owners to focus on improving the health of their equines. The owners divided the village into 4 parts and handed over the monitoring responsibility for each part to an owners' committee in order to cover all the equines.

### Results and discussion

During monitoring, the committee discussed the findings and encouraged owners to improve the welfare of their equines by adopting the PWNA process. Consequently, the owners developed a better understanding of the welfare of equines and started to be more compassionate towards their equines. The process of participatory planning, monitoring, and evaluation has resulted in the achievement of holistic equine welfare to a significant level.

### A process of participatory monitoring and evaluation (M&E)

After monitoring through PWNA processes, owners thoroughly discussed the process and decided to move forward by adopting a scoring system. They divided the welfare issues, giving each a weighting according to its importance.

- When monitoring was initially started, the owners had a limited understanding about welfare but through this process their understanding increased and peer pressure compelled them to put their ideas into action for the betterment of equines.
- By the process described earlier, the owners divided each welfare issue into 3 categories of severity, namely good, medium and poor, and this new process helped them to analyse each issue in detail.
- This process helped the community to identify the equines (and their owners) who required more attention in comparison with those with a better welfare status.
- The process created a competitive environment for equine welfare in the village because the owners got immediate results of their equine's status.

### Impact of participatory M&E

Participatory monitoring and evaluation resulted in a positive impact on each and every issue in 3 PWNA processes. These impacts have been triangulated with treatment data analysis as well as other observations and are given in Table 2. The percentage scores are derived from 3 PWNAs, based on the average collective score of owners regarding specific indicators. The trend is for the scores to increase in all types of indicator; in other words there is a reduction in the incidence of specific problems in the animals.

**Table 2. Animal welfare status during 3 PWNAs, and triangulation with treatment data and observation/discussion**

Status during 3 PWNAs				Triangulation with treatment data (*) and observation/discussion
Issue	%			
	1st PWNA	2nd PWNA	3rd PWNA	
Dehydration	50.00	57.00	81.50	Dehydration has reduced significantly as owners have started to give drinking water to equines regularly during work
Lip lesion	70.50	86.50	97.50	Wounds have decreased: 7* in 2007–8, 4 in 2008–9, 4 in 2009–10. Reduction in wither wounds may be attributed to use of better quality saddle material, changing the bindi (U-shaped padding), and a cotton/ rubber tube strap
Wither wound	70.00	77.33	71.00	
Girth/belly wound	73.00	87.00	91.75	
Wound on Chest/shoulder	64.00	71.00	90.67	
Cleaning of hoof	27.00	45.00	64.00	There were significant improvements in hoof cleaning as most of the owners started to clean the stables regularly
Eye	24.00	83.33	89.33	Ocular cases* have decreased: 2 in 2007–8, 0 in 2008–9, 0 in 2009–10
Cleaning of stable	60.20	63.80	82.60	Owners started to clean the stables clean and put down dry sand.
Grooming	57.33	62.00	72.67	Grooming practice has improved significantly.
Timely work from equine	64.00	69.67	81.67	
Lameness	68.00	64.00	73.00	Cases of lameness have decreased: 11 in 2007–8, 10 in 2008–9, 6 in 2009–10. There is now regulation against overloading at the 3 brick kilns where the owners and animals work. Load capacity has been decided and is regularly monitored by the owners; those owners who do not follow the rules are fined.
Free roaming	82.00	82.00	91.00	

Monitoring and evaluation was not limited to this. It progressed further as the owners themselves analysed the 3 traffic light exercises of PWNA and particularly considered those owners whose animals had welfare problems in all three exercises (see Table 3). The owners divided the total scores into 5 different categories and scales in order to observe changes easily, create competition amongst themselves and induce continuous corrective action. Such analysis helped them to identify the focus areas and specific needs of equines in each welfare category.

**Table 3. Analysis of the 3 traffic lights of PWNA according to owner**

Category	Scale	1st PWNA		2nd PWNA		3rd PWNA	
		No. of owners	Name of owner	No. of owners	Name of owner	No. of owners	Name of owner
Very poor	0–20	0		1	Ramesh	0	
Poor	21–40	1	Pal	0		1	Ramesh
Satisfactory	41–60	3	Anand	2	Pal	1	Pal
			Rajkumar		Sanjay		
			Ramesh				
Moderate	61–80	1	Sanjay	6	Nanu 1	2	Nanu 2
					Nanu 2		Manjura
					Anand		
					Manjura		
					Sukha		
					Bablu		
Good	81–100	7	Nanu 1	3	Rajkumar	8	Nanu 1
			Nanu 2				Anand
			Samedin		Samedin		Samedin
			Manjura				Sukha
			Sukha				Rajkumar
			Bablu				Bablu
			Ram Kumar		Ram Kumar		Ram Kumar
		Sanjay					
		12		12		12	

Table 3 shows changes between the 3 PWNAs in animals belonging to each owner. Anand has steadily shown a positive change by moving from the satisfactory category in the 1st PWNA, to moderate in the 2nd PWNA, and subsequently to good in the 3rd PWNA. Rajkumar moved from the satisfactory category in the 1st PWNA, to good in the 2nd PWNA, and maintained this status in the 3rd PWNA. Sanjay showed a negative change in the 2nd PWNA by moving from the moderate category in the 1st PWNA to satisfactory in the 2nd PWNA, but showed considerable improvement in the 3rd PWNA by moving to the good category. Samedin and Ram Kumar have consistently remained in the good category during all 3 PWNAs. Nanu 2 and Manjura showed a negative change by moving from the good category in the 1st PWNA to moderate in the 2nd PWNA, and remaining there in the 3rd PWNA.

**Changes observed other than those covered in the PWNA process**

*Equine related changes*

- The total number of treatments has been reduced to 20 in the year 200910 from 48 and 59 in 20089 and 20078 respectively.
- The number of colic and respiratory cases has been reduced by a significant level: for colic, 4 in 200910 compared with 6 in 20089, and 13 in 20078; and for respiratory, 0 in 200910 compared with 5 in 20089, and 9 in 20078.

*Management practice related changes*

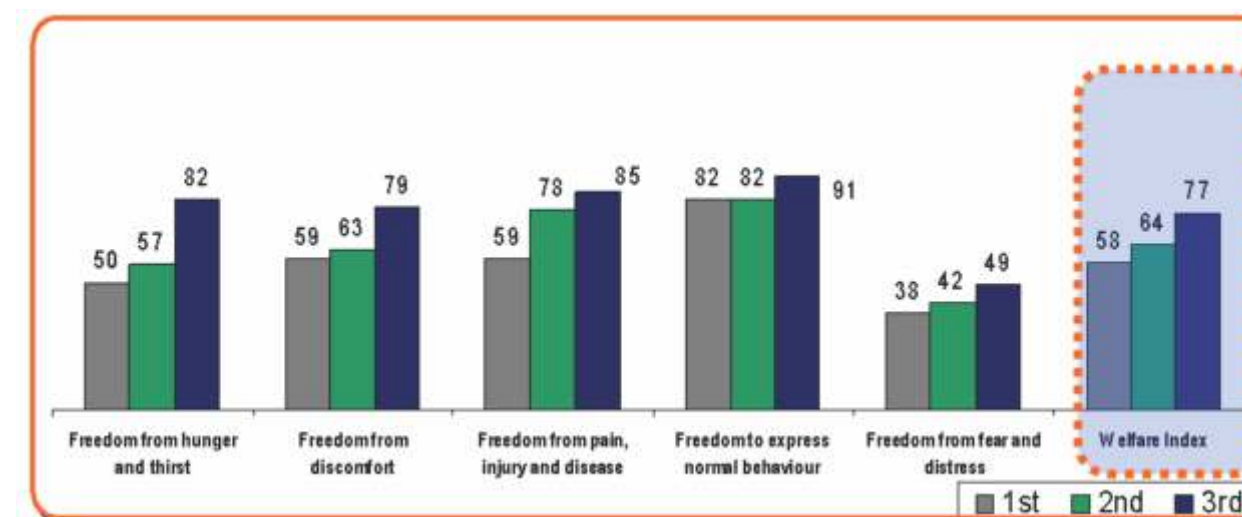
- Previously equines were given no proper rest during work, but the owners have now initiated adequate rest periods.

*Resource related changes*

- Regarding farriery work, the owners used to wait until a shoe came off before replacing it; they now remove worn-out shoes and new shoes are fitted on a regular basis to front or hind feet jointly.
- Cart maintenance has also improved as most owners have started to check their carts, specifically for balance, air pressure, and nut-bolts.
- Almost all owners have replaced wooden stumps for tethering with rubber tyres or half-buried rope. This happened after they heard of 3 equines dying in adjoining villages after sustaining fatal injuries by falling on wooden stumps.

Overall changes in each welfare issue were calculated on a scale of 0-10 using the traffic light tool (red dot for most severe=0, green dot for no =10) using the average score for owners across the 3 PWNAs. These scores were further categorised into the 5 Freedoms of equine welfare: freedom from hunger and thirst, freedom from discomfort, freedom from pain, injury, and disease, freedom to express normal behaviour, and freedom from fear and distress. A Welfare Index has been calculated based on the average scores in the 3 PWNAs of all freedoms (see Graph 1).

**Graph 1. Percentage changes in 5 freedoms of equine welfare and welfare index**





**Conclusions**

- The owners' level of compassion towards their equines increased significantly, leading to corrective action on issues affecting the well-being of the animals.
- By initiating and actively undertaking the entire programme of participatory planning, monitoring and evaluation the owners have experienced an empowering process.

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**ANIMAL WELFARE FOR WORKING EQUIDS: A CASE OF CULTURAL IMPERIALISM?****P. Sandøe**

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**Introduction**

Concern about animal welfare has so far mainly been a preoccupation of rich countries in the West. However, until fairly recently the dominant view in the West was to assume without question that animals are there for us to use. Therefore there were very few ethical limits to animal use indeed. This changed in the early nineteenth century when movements and legislation aiming to prevent cruelty to animals first appeared. Next, the idea of animal welfare emerged; this was after the Second World War. The focus here changed from protecting animals from meaningless cruelty to shielding them from the adverse side-effects of intensive animal production and other forms of animal use. Of late, new attitudes to companion animals have developed, and this has given rise to the idea that animals deserve not only protection but also respect [1].

Throughout these developments in the moral agenda on animal treatment in the West, horses have appeared towards the top of the list. Thus cruelty against working horses appeared in the early anti-cruelty legislation while other species of animals were exempted. After the Second World War, in the more prosperous western countries, horses were rendered redundant by tractors and other agricultural machinery. Later they reappeared as companion animals. As a consequence, in these countries horses nowadays tend to enjoy more extensive protection than other farm animals. For example, in the United States, where very limited protection for farm animals exists, a ban on horse slaughter has now been put in place.

With globalization the West has become increasingly aware of animal welfare in the developing world; and a growing number of animal welfare and animal rights NGOs take an interest in animal welfare issues in developing world countries. This is likely to affect other issues such as trade and aid. However, in many countries in the developing world animal welfare does not seem to play the same role as it does in the West. The animal welfare legislation that *is* in place in this part of the developing world is very often a legacy of imperial occupation; and against this background one might ask whether the western interest in animal welfare standards in the developing world can be seen as a case of cultural imperialism. This question is the focus of the present presentation. Before addressing the argument directly I will try to outline how concern about animal welfare in the West might affect developing world countries.

**How concern about animal welfare in the West may affect developing countries**

Western concerns about animal welfare could affect animal use in the developing world in 3 ways. First, through international organizations such as the OIE international agreements may be made which impose minimal welfare standards on poor countries. However, experience within the EU suggests that any such standards will be limited and difficult to enforce.

Second, companies in wealthy parts of the world importing products from the developing world might work to their own animal welfare standards. Often these will be driven forward by media reports and lobbying by international welfare and animal rights organizations. The standards might be introduced as part of a product specification. Just as there are specifications governing such matters as the use of child labour, company rules may limit the ways in which working equids can be used and treated.

Third, in several ways requirements on animal welfare might come to be tied up with *aid* to the developing world. This is most likely to happen where a project funded by aid involves animal use. Suppose it were to emerge, for example, in the western media, that (what by our standards counts as) severe cruelty to animals was taking place