Vaccinator Performance: India and Nepal

A GALVmed Monitoring and Evaluation Study

GALVmed

Protecting Livestock – Improving Human Lives

Executive summary

These studies arose through anecdotal evidence, which indicated that the performance of poultry vaccinators in GALVmed market development projects varied substantially and that the top 25% of vaccinators were delivering more than 50% of the Newcastle Disease (ND) vaccine doses. This suggested that a study focusing on vaccinator performance could potentially reveal characteristics and traits that differentiate top performers from low performers. This would yield valuable insight for GALVmed's commercial partners who rely on poultry vaccinators as critical links in the supply of animal health products to their smallholder customers.

Poultry vaccinators are individuals who have been selected, through GALVmed projects, to receive training (typically lasting around three days) in the administration of ND vaccine. Poultry dewormers are sometimes included in this training. Additionally, the poultry vaccinators are trained to operate independently on a business basis. They must buy the vaccine, typically from a local retailer / agro-veterinary shop (who owns a fridge), then store it in a cool-box for the day while travelling door to door and administering the vaccine for a fee that covers the cost of the vaccine, and their time input, and travel expenses, etc. The preponderance of poultry and the prevalence of ND mean that these vaccinators offer a service that is relevant to most smallholders in sub-Saharan Africa and South Asia. However, the cost of the vaccine and logistical and physical challenges in servicing small flocks of unhoused birds in remote rural areas makes for a difficult business proposition. Learning the traits and practices of the top performing vaccinators would therefore bring valuable insight to this area of GALVmed's market development work.

Two separate studies (involving approximately 200 vaccinators) were undertaken. The studies covered two different project types: one an NGO-led project and the other a commercial initiative through Hester Biosciences Ltd (a large Indian-based vaccine manufacturer). The results of the studies were surprising in that few traits and practices readily and consistently stood out in differentiating top and low performing vaccinators. Factors such as vaccinator gender, age, education, mode of transport and sales margin were examined. In some instances, a clear trend was observable within one of the studies but not consistently across both. This suggests that, contrary to initial expectations, the underlying cause of variation in vaccinator performance is unlikely to be a single easily observable variable. More likely, there will be a range of causal factors and these could well vary from one situation to the next.

It is possible that further and more detailed poultry vaccinator performance studies will be undertaken in the future in order to better understand these causal factors. However, as GALVmed's market development initiatives expand and wider portfolios of smallholder animal health products are used, it is possible that the role of poultry vaccinators will diminish in favour of better skilled veterinary para-professionals. Under this scenario, the need for further poultry vaccinator performance studies would diminish.

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Background

This GALVmed Monitoring and Evaluation (M&E) study looked at vaccinator performance in India and Nepal. The purpose of the study was to gain insight into the characteristics and functions of poultry vaccinators and to reveal the traits that differentiated top from low performers.

Introduction

Many rural households in the developing world practice smallholder poultry production (Kryger, Thomsen, Whyte, & Dissing, 2010 ; Wong et al., 2017). Smallholders using "free range" production systems usually have limited access to veterinary care and make low use of inputs (Nabarro & Wannous, 2014). Few households vaccinate their poultry against devastating diseases such as Newcastle Disease (ND).

Vaccination against ND has been shown to increase poultry ownership and consumption of eggs and to reduce household food insecurity (Kneuppel, Cardona, Msoffe, Demment, & Kaiser, 2010). Despite this potential, a recent GALVmed study found that fewer than twenty percent of flocks in India or Nepal were vaccinated against ND and that the primary barriers to vaccination included poor availability of vaccines and poor knowledge of the advantages of vaccination (Bessell et al., 2017).

An effective distribution network is an essential missing piece in last-mile ND vaccination service delivery. Vaccinators can fill this gap. To remain sustainable, these service providers have to make sufficient profits to earn a living (Martin, 2001). However, little is known about the factors affecting profitability or the characteristics, or traits, which make a vaccinator successful.

Project background

Working through two different models - a commercial initiative and an NGO-led model - GALVmed partnered with a number of organisations in India and Nepal to create a viable supply system for ND vaccines and to set up sustainable local poultry vaccination services using vaccinators (GALVmed, 2015). In the NGO-led model, community vaccinators were trained by six partner NGOs in various locations in India and Nepal: the Society for Upliftment of People with People's Organization and Rural Technology (SUPPORT), Sampark Samaj Sevi Sanstha (SAMPARK), Heifer India, Bhodal Milk Producers Cooperative Society (BMPCS), Heifer Nepal and Helen Keller Nepal. In the commercial initiative, vaccinators were trained by Hester Biosciences Ltd (Hester) in three States in India. Anecdotal evidence from these projects indicated that the performance of vaccinators varied substantially, and that the top 25% of vaccinators were delivering more than 50% of the ND vaccine doses.

To further explore the characteristics and functions of vaccinators, GALVmed M&E conducted two ND vaccinator performance studies in India and Nepal from May to November 2016. These studies sought to further develop GALVmed's understanding of the profile and work of ND vaccinators focusing on the traits shared by top versus low performing vaccinators, contextual factors affecting performance, and influential factors in the supply chain.

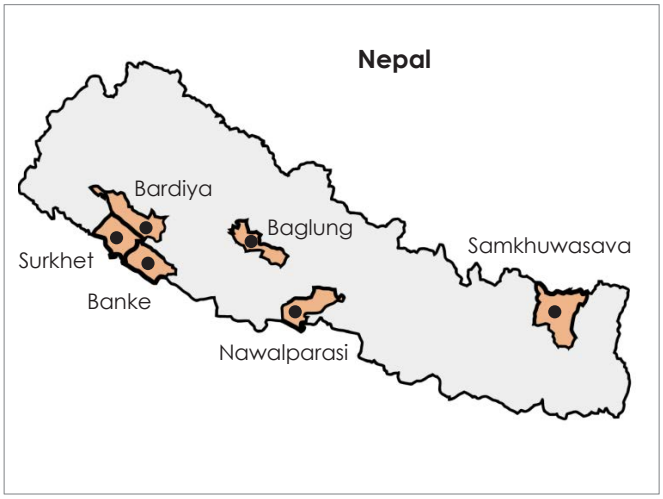
The project areas included in the vaccinator performance studies are shown below.

Map of project areas in India

India

Heifer: Odisha, Mayurbhanj
BMPCS: Odisha, Mayurbhanj
SUPPORT: Jharkhand, Hazaribagh
SAMPARK: Madhya Pradesh, Jhabua
Hester: Odisha, Chhattisgarh & Jharkhand

Map of project areas in Nepal



Nepal

Heifer: Banke, Bardiya, Surkhet
Helen Keller: Baglung, Nawalparasi, Samkhuwasava

Study design

Questionnaire

Semi-structured survey questionnaires (Appendix 1 - Hester commercial questionnaire; Appendix 2 - NGO questionnaire) comprised a mix of structured open and closed questions addressing the general profile of vaccinators, characteristics of vaccinators, vaccinator business models, the status of poultry within the areas in which vaccinators worked, smallholder customer profiles, and perceptions of working as a vaccinator. The questionnaires were written in English and translated into local languages. Each questionnaire took up to 60 minutes to administer. A sample of survey forms were appraised by a supervisor during data collection.

Sampling

In both studies, the selection of vaccinators was based on the number of monthly doses sold by the vaccinators using data provided by the project partners. Top performing vaccinators were selected because they were delivering high rates of vaccination, were consistently vaccinating on a monthly basis, and sold a relatively large percentage of the partner's total number of doses. Low performing vaccinators were selected based on the fact that they delivered far fewer total doses but were vaccinating reasonably consistently. Low performing vaccinators therefore do not necessarily represent the poorest performers or dropouts.

The selection of low performing vaccinators was applied slightly differently across the studies. In the Hester study, low performers were selected based on a number of criteria: that they were in operation for at least 4 months, and had vaccinated below both the mean and median total doses per vaccinator in their respective states. By comparison, low performers in the NGO study represented 5% of all vaccinators who were regularly vaccinating a small number of poultry and were still vaccinating at the time of the study.

Overall, 211 vaccinators were surveyed - 80 of these were vaccinators from the NGO-led model and 131 were vaccinators from the Hester commercial initiative. For the NGO study, surveys were conducted by representatives from each of the NGO partners. Surveys for the Hester study component were conducted by Hester Veterinary Sales Executives (VSEs).

Data processing and statistical analysis

Data was collected on paper forms, before being manually entered into electronic format. Descriptive analysis was completed in Microsoft Excel. Outliers were removed on a single-metric basis (rather than declaring entire records void).

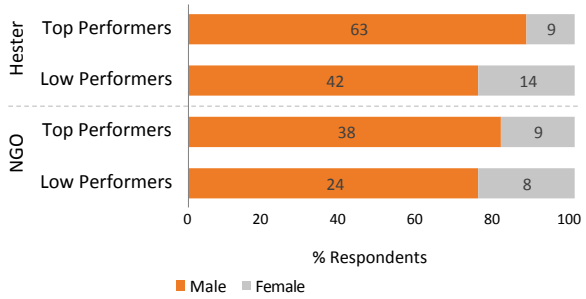
Findings

This section first provides an overview of the demographics and characteristics of top and low performing vaccinators and then turns to the factors affecting vaccinator performance, the sales performance of vaccinators, the income derived from ND vaccine sales, and other animal health services performed.

Demographics

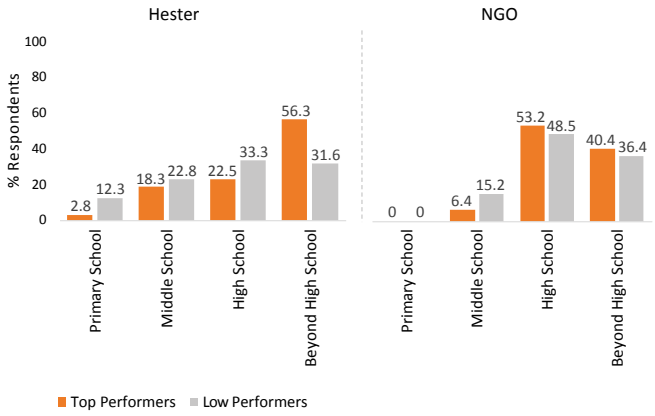
Gender was not a major factor differentially affecting performance in either of the studies (Figure 1). Top performers were 88% male compared to 12% female in the Hester study and 81% male compared to 19% female in the NGO study. Low performers were 75% male and 25% female in both studies.

Figure 1. *Vaccinator gender*



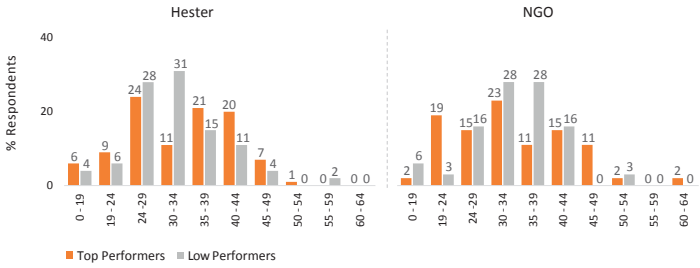
In the Hester study, top performing vaccinators were almost twice as likely to have a "beyond secondary" education than low performing vaccinators (Figure 2). This was not the case in the NGO study where almost equal numbers of low and top performers had a beyond secondary education. In the Hester study, most (79%) top performing vaccinators had a high school or higher education compared to two-thirds (65%) of the low performing vaccinators. In the NGO study, vaccinators were better qualified overall with almost all (94%) top performing vaccinators and most (85%) low performing vaccinators having a high school or higher education. Overall, vaccinators were typically well educated regardless of their performance. The substantial performance differences do not appear to be accounted for by educational differences.

Figure 2. *Vaccinator level of education*



Across both studies, the vaccinators' ages were fairly normally distributed with most vaccinators falling within the 20 - 50 year old age range (Figure 3). More than half of the top performing vaccinators fell within the 0 – 34 age range (50% in the Hester study and 59.5% in the NGO study). Similarly, more than half of the low performing vaccinators also fell within this range (68.5% in the Hester study and 53.1% in the NGO study). Therefore we can discount age as contributing significantly to the success of vaccinators.

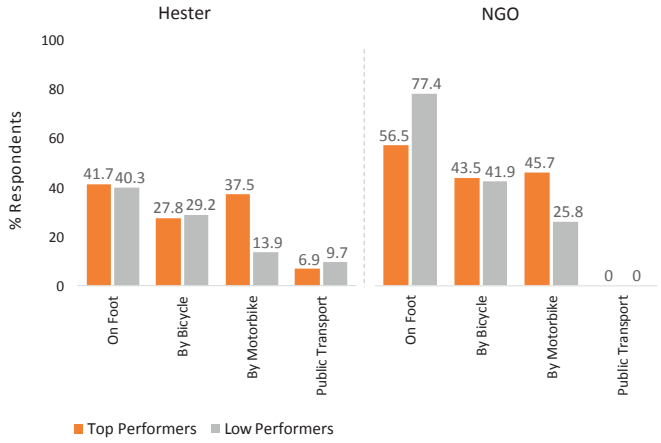
Figure 3. *Vaccinator age*



Vaccinator characteristics

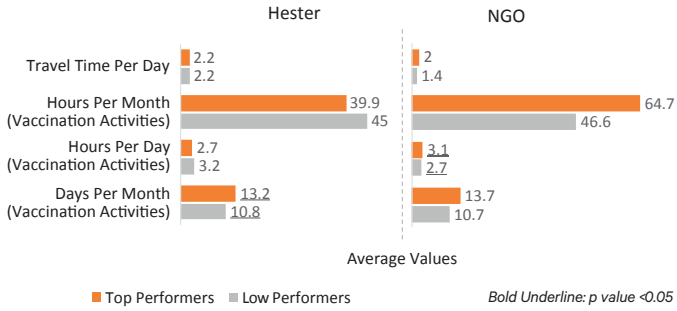
Many vaccinators – whether top or low performers – reported travelling to smallholder households on foot, commensurate with the fact that these vaccinators tended to live in the areas within which they worked (Figure 4). Almost equal percentages of top and low performing vaccinators reported travelling by bicycle. As shown in Figure 4, more vaccinators travelled via motorbike in the top performing vaccinator group than the low performing group in both studies (37.5% versus 13.9% in the Hester study and 45.7% versus 25.8% in the NGO study). This could potentially be due to top performing vaccinators investing in a motorbike to expand their business or top performers performing well due to the fact that they owned or had access to a motorbike. Very few vaccinators in the Hester study, and no vaccinators in the NGO study, made use of public transport services.

Figure 4. *Vaccinator mode of transportation*



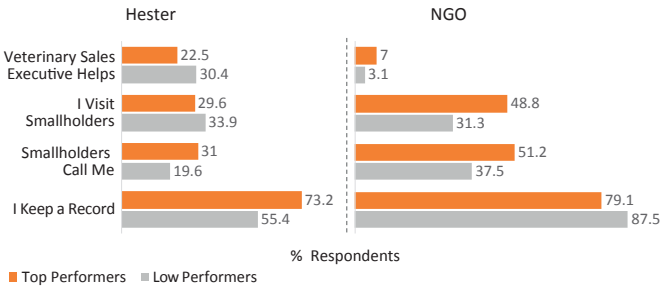
The time spent on vaccination activities was, for the most part, not statistically significant between top and low performing vaccinators. Figure 5 shows that there was a small statistically significant effect on the number of days per month spent on vaccination activities in the Hester study (13.2 days per month spent by top performers versus 10.8 days per month spent by low performers, respectively). There was another small statistically significant effect on the total hours per day spent on vaccination in the NGO study, with top performing vaccinators spending slightly more time (3.1 hours per day) on these activities than low performing vaccinators (2.7 hours per day). However, these results do not point to a key differentiator between top and low performing groups.

Figure 5. *Monthly time commitments*



When asked the question "How do you know when your ND-related service will be required in a particular household?", top performing vaccinators were more likely to be contacted by smallholders for the next round of vaccinations than low performing vaccinators were (Figure 6). Almost a third (31%) of the top performing Hester vaccinators and half (51%) of the top performing NGO vaccinators reported that they had been contacted by smallholders directly (Figure 6). However, the differences between top and low performing vaccinators were not substantial with 20% of the low performing Hester vaccinators and 37% of the low performing NGO vaccinators also reporting being contacted by smallholders. No other trends are apparent.

Figure 6. *Vaccinator knowledge of when to return to households*

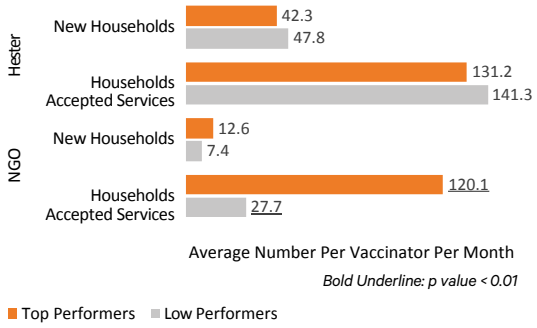


In the NGO and Hester studies, vaccinators were asked how many households they approached to provide ND services in the previous month, how many households accepted ND-related services, and how many households that accepted ND services were new customers (Figure 7). The Hester study returned larger numbers of households that accepted services than the number of households approached, suggesting that the question may have been misinterpreted by the vaccinators in this study. Therefore Figure 7 only shows the average number of households per month that accepted ND-related services and the average number of these households that were new.

In the NGO study, more households were approached per top performing vaccinator than per low performing vaccinator and, in turn, the rate of acceptance of ND services was higher for top performing vaccinators (120 households on average per month per vaccinator) than low performing vaccinators (28 households on average per month per vaccinator). The rate of acceptance was statistically significant between the groups. The number of new households was also higher in the top performing NGO vaccinator group than the low performing group (13 households versus 7 households in the previous month per vaccinator). However, this difference was not statistically significant.

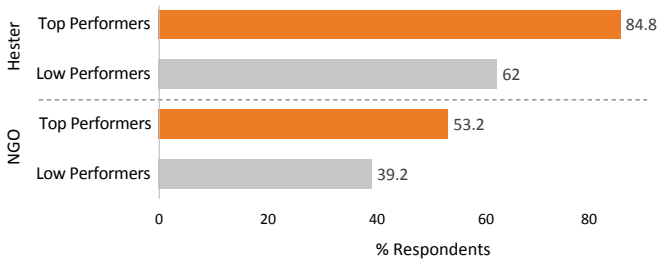
The picture is different in the Hester study, possibly due in part to misinterpretation of the survey question. Top performing vaccinators had even less success than low performing vaccinators in the rate of acceptance of ND services (131 versus 141 households per month), although this difference was not statistically significant. Similarly, the number of new households was lower in the top performing group than the low performing group (42 households versus 48 households per month). Again, this difference was not statistically significant.

Figure 7. *Households visited*



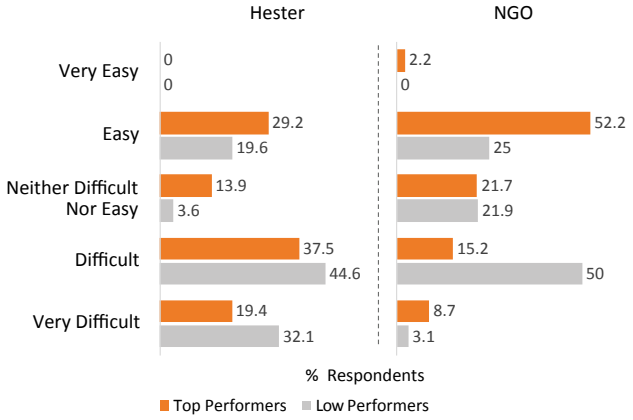
Vaccinators were asked whether they had any other occupation apart from being a vaccinator. In both studies, top performing vaccinators were more likely than low performing vaccinators to have an additional occupation (Figure 8). However, many low performing vaccinators also had an additional occupation. In the Hester study, most (85%) top vaccinators and almost two-thirds (62%) of low performing vaccinators had an additional occupation while in the NGO study half (53%) of the top performing vaccinators and over a third (39%) of low performing vaccinators had additional employment. These findings suggest that there is no substantial difference between vaccinators with an alternate occupation and those without.

Figure 8. *Additional occupation*



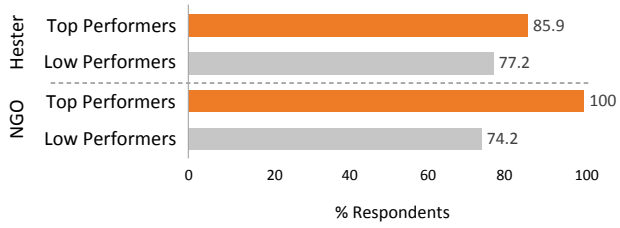
When asked about the logistical feasibility of accessing customers (Figure 9), top performers in the NGO study were twice as likely to find it easier to access customers compared to low performers (52% versus 25%, respectively). Although more top performers found it easier to access customers than low performers in the Hester study, the difference was not as stark as the NGO study (29% versus 20%, respectively).

Figure 9. *Ease in accessing customers*



Per Figure 10, in the NGO study, all top performing vaccinators reported planning to continue working as ND vaccinators compared to three quarters (74%) of low performing vaccinators. Similarly, most (86%) top performing vaccinators in the Hester study and approximately three quarters (77%) of the low performing vaccinators planned to continue providing ND vaccination services. In both studies, and across the top and low performing vaccinator groups, commitment to continuing working as a vaccinator was high suggesting that – as a proxy for motivation – intention to continue vaccinating was not a major factor affecting performance.

Figure 10. *Plans to continue vaccination services*

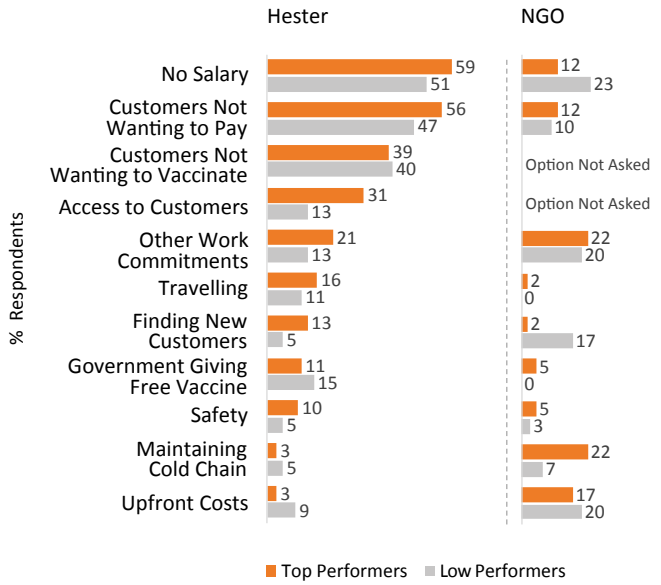


Obstacles to performance

Vaccinators across both studies cited a number of obstacles to performance (Figure 11). In the NGO study, working long hours elsewhere (other work commitments) and the upfront costs of purchasing ND vaccines were major obstacles for both top and low performing vaccinators with 22% of top performing vaccinators and 20% of low performing vaccinators citing this as an issue. Low performing vaccinators in the NGO study struggled with not receiving a salary (23% versus 12% of top performing vaccinators) and with finding new customers (17% versus 2% of top performing vaccinators). Top performing vaccinators in the NGO study were more likely to find it difficult to maintain the cold chain than low performing vaccinators were potentially because they tended to work longer hours than low performing vaccinators did (see Figure 5). Another possibility is that top performing vaccinators may have found it difficult to maintain the cold chain as they tended to travel further away to find new business.

The obstacles to performance were different in the Hester study. No salary and customer reluctance to pay for ND vaccines were obstacles for around half of all top and low performing vaccinators. Unwillingness to vaccinate was the third most cited obstacle to delivery in top and low performing vaccinator groups, with 40% of low performers and 39% of top performers noting this as an issue. In contrast with the NGO study, and contrary to expectation, low performing vaccinators in the Hester study were much less likely than top performers to experience difficulties finding new customers (5% versus 13% of top performers), to access households (13% versus 31% of top performers), or to work long hours elsewhere (13% versus 21% of top performers).

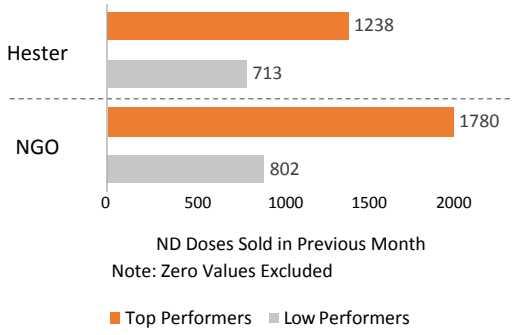
Figure 11. *Obstacles to delivery of vaccines*



ND vaccine sales

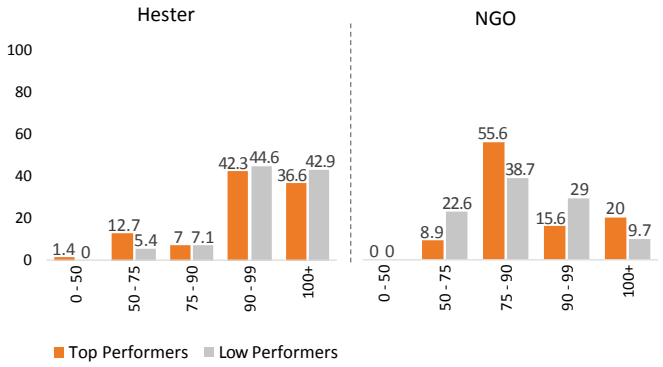
In the Hester study, the mean number of doses of ND vaccine sold by vaccinators in the top performing group almost doubled the mean number of doses sold by vaccinators in the low performing group (1,238 doses versus 713 doses) (Figure 12). In the NGO study, the mean number of doses sold by top performers was more than twice that of low performers (1,780 doses versus 802 doses). These figures reflect the study selection criteria, but also show the magnitude of the difference in doses sold between top and low performing vaccinators. They also demonstrate the differences in sales volumes between vaccinators in the NGO study compared to vaccinators in the Hester study.

Figure 12. *Mean doses of ND sold in the previous month*



In the Hester study, most top performing vaccinators (78.9%) and low performing vaccinators (87.5%) delivered more than 90% of the 100 doses per vial of ND vaccine (Figure 13). In the NGO study, the percentage of doses delivered per vial was slightly smaller, with 20% of top performing vaccinators delivering only 70 – 80% of the doses per vial and 29.1% of low performing vaccinators delivering only 60 – 80% of the doses per vial. Only in the NGO study was there a small number of low performing vaccinators who did not achieve good dose numbers from a single vial. Overall, it seems likely that the percentage of doses sold per vial was not a major factor distinguishing top from low performing vaccinators.

Figure 13. *Percentage doses delivered per 100 dose vial*

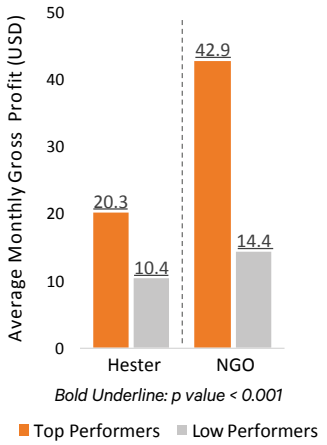


Income / profit

In the NGO and Hester vaccinator studies, gross profit was calculated as product costs subtracted from sales revenue. Per Figure 14, there was a clear, and statistically significant, difference in average monthly gross profit between top performing and low performing vaccinators within the studies, and between top performing NGO vaccinators and top performing Hester vaccinators across the studies. The top NGO vaccinators substantially outperformed the Hester vaccinators in relation to average monthly gross profit.

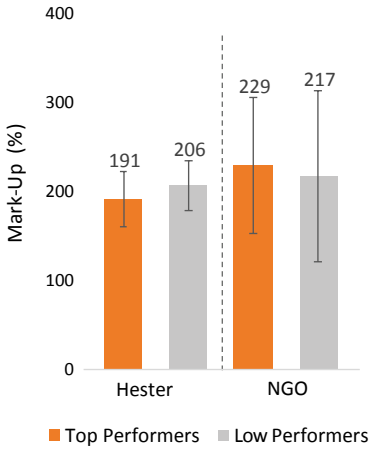
In the Hester study, average monthly gross profit was INR 1,356.00 (USD 20.34 / NPR 2,187.10) in the top performing group compared to half this amount – INR 693.32 (USD 10.40 / NPR 1,118.28) – in the low performing group. In the NGO study, average monthly gross profit of top vaccinators was more than double that of the top Hester vaccinators at INR 2,861.33 (USD 42.92 / NPR 4,615.05) while low performing vaccinators made approximately a third of this amount – INR 944.00 (USD 14.36 / NPR 1,544.09).

Figure 14. *Average monthly gross profit*



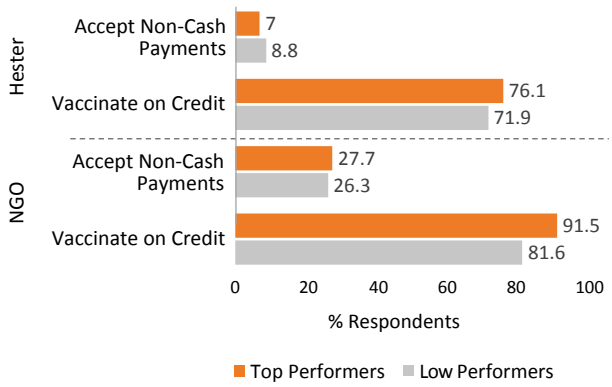
Mark-ups were calculated as gross profit divided by vial costs. Figure 15 shows that the mark-ups were similar for top and low performing vaccinators in both the NGO study (229% for top performers versus 217% for low performing vaccinators) and the Hester study (191% for top performers versus 206% for low performing vaccinators). This suggests that the profits seen in the NGO study were derived from a higher volume of sales as opposed to product mark-ups.

Figure 15. *Product mark-ups*



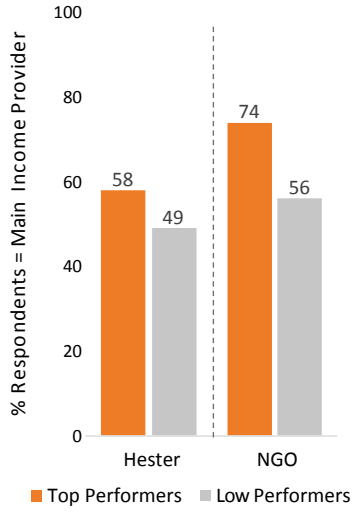
There were no obvious differences between top and low performing vaccinators in either of the studies when it came to acceptance of non-cash payments and vaccinations on credit (Figure 16). Most vaccinators accepted credit and some accepted a form of non-cash payment.

Figure 16. *Acceptance of vaccinations on credit/non-cash payments*



In both the NGO and Hester studies, top performing vaccinators tended to be the main income providers in their households with almost three quarters (74%) of top performing NGO vaccinators and over half (58%) of the top performing Hester vaccinators having this responsibility (Figure 17). However, many low performing vaccinators fit within this category too – i.e. 56% of low performing NGO vaccinators and 49% of low performing Hester vaccinators. Whether or not a vaccinator was the main income provider was not a key differentiator between top and low performers.

Figure 17. *Percentage of vaccinators who are the main income provider in their household*

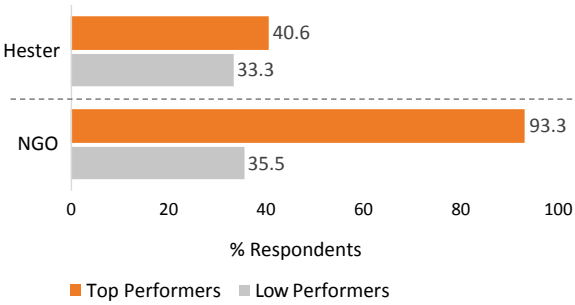


Other services

In the NGO study, just over a third (35%) of low performing vaccinators and nearly all (93%) top performing vaccinators provided healthcare services to small ruminants in addition to ND vaccination services (Figure 18).

In the Hester study, top performers were also more likely to provide small ruminant healthcare services although the difference was not as marked. Overall, 40% of top performing Hester vaccinators provided these services compared to 33% of low performers. The latter finding partly reflects the fact that the Hester study focused primarily on ND vaccination supply whereas the NGO-led study included other small ruminant services in addition to ND vaccination services.

Figure 18. *Provision of small ruminant services*



Conclusions

Performance differences were clearly detected between top and low performing groups of both NGO and Hester vaccinator samples. Comparing across studies revealed the top NGO vaccinators were outperforming their Hester equivalents. With NGO partners typically working intensely at a smaller scale (with increased community involvement) rather than achieving the vast scale of a commercial operation, this difference is unsurprising when comparing at the level of an individual vaccinator.

An additional factor to be considered in the difference between NGO and Hester top performers is the delivery of services to small ruminants by the NGO vaccinators. It could be speculated that the reason for this is due to local partnerships between local government veterinary officers and the NGOs (again, far more difficult to achieve in a large-scale operation). Regardless of the reason, it highlights that the best success can be obtained by vaccinators offering smallholders a range of products and services rather than a very restricted portfolio. A wider scope would also undoubtedly increase the potential customer base, improving revenue-generating opportunities and, as such, the overall viability of the distribution model.

Motorbike usage was also found to be higher amongst the top performers. Given the wider customer base that would be accessible via a motorbike (especially given the time-limited efficacy of the vaccine when outside of a fridge) this is somewhat predictable. Yet the question that remains unanswered is whether the access to a motorbike was available before starting to work as an ND vaccinator – or whether such access was proactively sought for the sole purpose of improving their ND sales. Ensuring access (via either ownership or renting) to motorised transport could therefore potentially help boost sales performance in future GALVmed initiatives.

However, apart from the above points, there were very few additional differences emerging from the studies. Many factors (such as education, gender, age, time commitment, & profit margin) showed no difference between low and top performers. Factors extremely difficult to gauge in the survey (such as customer density, vaccinator work ethic, and vaccinator community acceptance) may be overriding the metrics measured in the survey.

Overall, both the NGO and Hester studies detected substantial performance differences between vaccinators predetermined to be either low or top performers. However, there was limited consensus in the underlying reasons for such clear differences - especially when attempting to observe cross-study trends. Yet there were still critical insights gained. These should be considered in future initiatives as GALVmed continues to optimize the delivery of animal health products to smallholders.

Acknowledgements

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Appendix 1

Hester Commercial Questionnaire

Name of VSE / Enumerator:	**Date:**
_____	__ __ /__ __ /__ __ __ __ **(dd/mm/yyyy)**
VSE Headquarters:	
_____	
Vaccinator Name:	**Vaccinator Telephone Number:**
_____	_____

Q1: Group

○ A ○ B

Q2: Are you still working as a vaccinator?

○ Yes ○ No

Q3: Gender

○ Yes ○ No

Q4: Age of the respondent

|_____| Years old

Q5: Highest Completed Education

○ No formal schooling ○ High School

○ Primary School ○ Higher secondary school or above

○ Middle School

Q6: Are you the main income provider in your household?

○ Yes ○ No

Q7: Does your work as a Newcastle Disease Vaccinator provide the majority of the income for your household?

○ Yes ○ No

☐ *Multiple choice* ○ *Unique choice* |____| *Numerical Answer*

Q8: Who recruited you to become a vaccinator?

- ○ Hester Retailer
- ○ NGO, which collaborates with Hester
- ○ Hester VSE
- ○ Other

Q9: If you chose "Other" in the question above, who recruited you as a vaccinator?

Q10: Why did you become a vaccinator?

- ☐ I was looking for employment
- ☐ I wanted to learn a new skill
- ☐ I needed an additional income
- ☐ Other

Q11: If you chose "Other" in the question above, why did you become a vaccinator?

Q12: Are you involved or getting support from any NGO or self help group?

- ○ Yes
- ○ No

Q13: If yes, which one?

Q14: How many days of animal health service training have you received from Hester?

|_____| Days of Training

Q15: How many times per year do you receive ND vaccinator refresher training?

|_____| Times per year

Q16: Apart from being a vaccinator, do you have any other occupation?

Q17: If yes, how much income does this other source typically provide each month?

|_____| Local Currency

Q18: When working as a vaccinator, do you work with another person?

- ○ Yes – husband or wife
- ○ Yes - friend
- ○ Yes – Family member
- ○ No

Q19: If yes, is this person also a vaccinator?

- ○ Yes
- ○ No

Q20: How many days per month do you typically spend on ND vaccination activities?

|_____| Days per month

Q21: How many hours per day do you typically spend on ND vaccination activities, EXCLUDING travel?

|_____| Hours per day

Q22: How many hours per day do you typically spend travelling for ND vaccination related activities?

|_____| hours per day

Q23: At what time of the day do you usually vaccinate?

- ○ Early morning
- ○ Evening
- ○ Middle of the day
- ○ Any time of the day

Q24: Is it difficult to travel to your customers?

- ○ Very difficult
- ○ Easy
- ○ Difficult
- ○ Very easy
- ○ Neither difficult nor easy

Q25: Why is it difficult to travel to your customers?

- ☐ Customers live very far away from my home
- ☐ Households are far apart from each other
- ☐ I am afraid for my safety
- ☐ The customers are not at home when I visit them and I have to come back
- ☐ I do not own a bicycle
- ☐ Other
- ☐ Terrain is difficult to travel to the customers

Q26: If you chose "other" in the question above, why is it difficult to travel to you customers?

Q27: How do you travel between households for ND vaccination related activities?

- ☐ On foot
- ☐ By motorbike
- ☐ By bicycle
- ☐ By public transport

Q28: Where do you buy ND vaccine?

- ☐ VSE
- ☐ Another Vaccinator
- ☐ Agrovet Shop
- ☐ Other
- ☐ Medicine Shop

Q29: If you chose "Other" in the question above, where do you buy the vaccine?

Q30: How far do you have to travel to buy the vaccine?

|_____| Kilometres

Q31: What type of ND vaccine do you typically buy?

- ○ LaSota Thermostable
- ○ R2B
- ○ LaSota Regular (Non – Thermostable)
- ○ Other

Q32: What vial size (number of doses) do you typically buy?

|_____| Doses per vial

Q33: How much does one vial of the size above cost you?

|_____| Local Currency

Q34: Typically, how many doses do you manage to administer from one vial?

|_____| Doses

Q35: Do you use any other types of ND vaccine?

- ☐ LaSota Thermostable
- ☐ R2B
- ☐ LaSota Regular (Non – Thermostable)
- ☐ Other

Q36: If you chose "other" in the question above, which vaccine do you use?

Q37: Do you typically administer dewormer to poultry?

○ Yes ○ No

Q38: How much do you charge for administering one dose of ND vaccine?

|_____| Local currency per dose

Q39: How much do you charge for administering one dose of dewormer?

|_____| Local currency per dose

Q40: Do you also provide vaccination against Fowl Pox?

○ Yes ○ No

Q41: If yes, how much do you charge for one dose of Fowl pox vaccine?

|_____| Local currency per dose

Q42: Do you also provide poultry husbandry advice?

○ Yes ○ No

Q43: Do you accept non-cash payment?

○ Yes ○ No

Q44: If yes, what kind of non-cash payment do you accept?

Q45: Do you vaccinate on credit?

○ Yes ○ No

Q46: If you vaccinate on credit, how long does it usually take the farmer to pay you back?

Q47: Do you sell ND vaccine vials to others without administering the vaccine?

○ Yes ○ No

Q48: How much income do you typically earn from poultry healthcare services per month?

|_____| Local Currency

Q49: Do you also provide healthcare for small ruminants?

○ Yes ○ No

Q50: What kind of healthcare for small ruminants do you provide?

Q51: How many small ruminants do you typically treat each month?

|_____| Small Ruminants

Q52: How much do you typically earn from small ruminant health care each month?

|_____| Local currency per month

Q53: In the last month, how many poultry did you vaccinate against ND?

|_____| Poultry

Q54: In the last month, how many households did you approach in order to provide ND related services?

|_____| Households

Q55: In the last month, how many of these households accepted ND related services?

|_____| Households agreed to vaccinate

Q56: In the last month, how many of these households that accepted ND related services were NEW households?

|_____| New households

Q57: In the last month, how many individual villages did you visit in order to provide ND related services?

|_____| Villages visited

Q58: In the last month, how many individual hamlets/wards did you visit in order to provide ND related services?

|_____| Hamlets visited

Q59: How many villages were assigned to you at the beginning of the project?

|_____| Villages

Q60: In how many villages, which have not been assigned to you, do you provide ND related services?

|_____| Villages

Q61: After how many months do you typically return to the same household for ND vaccination?

|_____| Months

Q62: Do you arrange in advance when you will be visiting a customer to provide ND vaccinations and other services?

○ Yes ○ No

Q63: Do you compete with other ND vaccinators in your area?

- ○ Yes
- ○ No

Q64: How many poultry does a typical household in your area have, on average?

|_____| Poultry

Q65: Which poultry diseases are common in your area?

- ☐ Newcastle Disease
- ☐ Parasites (Internal, External)
- ☐ Fowl Pox
- ☐ Other

Q66: If you chose "Other", what other poultry disease are common in your area?

Q67: How difficult is it for you to convince new customers to start vaccinating their birds against ND?

- ○ Very difficult
- ○ Easy
- ○ Difficult
- ○ Very easy
- ○ Neither difficult nor easy

Q68: What kind of awareness campaigns were organised in your ND vaccination area?

Q69: In your opinion why does a farmer decide NOT to vaccinate against ND?

- ☐ They think vaccine should be free
- ☐ They do not trust the vaccinator
- ☐ They do not believe that the vaccine works
- ☐ Other
- ☐ They think the vaccine kills their birds

Q70: If you chose "other" in the question above, why does a farmer decide NOT to vaccinate against ND?

Q71: How do you know when your ND related service will be required in a particular household?

- ☐ VSE helps me with this
- ☐ I visit other farmers and ask
- ☐ I keep a record
- ☐ Other
- ☐ Farmers call me

Q72: If you chose "other" in the question above, how do you know when your service will be required in a particular household?

Q73: Are you planning to continue working as an ND vaccinator?

- ○ Yes
- ○ No

Q74: Do you think that vaccinating is a reliable source of income for you?

- ○ Yes
- ○ No

Q75: Does your community appreciate you working as a vaccinator?

- ○ Yes
- ○ No

Q76: What difficulties have you encountered while working as an ND vaccinator?

Q77: What are the obstacles in achieving more vaccinations?

- ☐ Work long hours elsewhere
- ☐ No salary from Hester
- ☐ Safety
- ☐ Customer does not want to vaccinate
- ☐ Difficult access to the households (bad roads, customers far away…)
- ☐ Customer does not want to pay for vaccinations
- ☐ Too long travel to the households
- ☐ Free government vaccines offered in area
- ☐ Finding new customers willing to vaccinate
- ☐ Vaccine retailed is far away
- ☐ Maintaining the cold chain
- ☐ Cost of buying the ND vials up front
- ☐ Vaccine Shortage
- ☐ Other

Q78: What is the biggest obstacle in achieving more vaccinations?

- ○ Work long hours elsewhere
- ○ Safety
- ○ Difficult access to the households (bad roads, customers far away…)
- ○ Too long travel to the households
- ○ Finding new customers willing to vaccinate
- ○ Maintaining the cold chain
- ○ Vaccine Shortage
- ○ No salary from Hester
- ○ Customer does not want to vaccinate
- ○ Customer does not want to pay for vaccinations
- ○ Free government vaccines offered in area
- ○ Vaccine retailed is far away
- ○ Cost of buying the ND vials up front
- ○ Other

Q79: Why do you not visit more households to try and sell the vaccine?

Q80: While working as a vaccinator, did you receive any support from your local veterinary office? (advice, collaboration, disease status information)

- ○ Yes
- ○ No

Q81: If not, would you be interested in such support?

- ○ Yes
- ○ No

Q82: Would you be interested in any additional training?

- ☐ Entrepreneurship & Management
- ☐ Course on Poultry Husbandry
- ☐ Course on Poultry Diseases
- ☐ Course on Other Poultry Vaccinations
- ☐ Course on Animal husbandry (for example goat, pig, sheep, ducks or cattle)
- ☐ Course on Animal Diseases (for example goat, pig, sheep, ducks or cattle)
- ☐ Course on Animal vaccination (for example goat, pig, sheep, ducks or cattle)
- ☐ Other

Q83: If you chose "other" in the question above, what additional training would you be interested in?

Appendix 2

NGO Questionnaire

Name of Surveyor/Organisation:	**Date:**
_____	__ __ /__ __ /__ __ __ __ **(dd/mm/yyyy)**
Vaccinator Name:	**Vaccinator Telephone Number:**
_____	_____
Vaccinator Address:	

General profile

Q1: Group

O A O B

Q2: Are you still working as a vaccinator?

O Yes O No

Q3: Gender of Respondent

O Male O Female

Q4: Age of Respondent

|_____| Years Old

Q5: Highest Completed Education

O No formal schooling O Primary School O Middle School

O High School O Higher Secondary School or Above

Q6: How many adults live in your household?

|_____| Adults

Q7: How many girls under the age of 15 live in your household?

|_____| Girls

☐ *Multiple choice* O *Unique choice* |____| *Numerical Answer*

Q8: How many boys under the age of 15 live in your household?

|_____| Boys

Q9: How many chickens do you keep (including young)?

|_____| Chickens

Q10: How many ducks do you keep (including young)?

|_____| Ducks

Q11: How many goats do you keep (including young)?

|_____| Goats

Q12: How many pigs do you keep (including young)?

|_____| Pigs

Q13: How many sheep do you keep (including young)?

|_____| Sheep

Q14: How many cattle do you keep (including young)?

|_____| Cattle

Q15: How many buffalo do you keep (including young)?

|_____| Buffalo

Q16: How many and what other livestock do you keep? (number of additional animals)

Q17: Are you the main income provider in your household?

O Yes O No

Characterisation of the person as a vaccinator

Q18: In what year did you first train as a vaccinator?

|_____| Year

Q19: How many days of animal health service training have you received from GALVmed?

|_____| Days of Training

Q20: How many days of animal health service training have you received from an organisation other than GALVmed?

|_____| Days of Training

Q21: How many times per year do you receive vaccinator refresher training?

|_____| Times per Year

Q22: Apart from being a vaccinator, do you have any other occupation?

Q23: How much income does this other source typically provide each month?

|_____| Local Currency

Q24: When working as a vaccinator, do you work with another person?

O Yes - Husband or Wife O Yes - Friend
O Yes - Family Member O No

Q25: If yes, is this person also a vaccinator?

O Yes O No

Q26: How many days per month do you typically spend on ND vaccination activities?

|_____| Days per Month

Q27: How many hours per day do you typically spend on ND vaccination activities, EXCLUDING travel?

|_____| Hours per Day

Q28: How many hours per day do you typically spend travelling for ND vaccination related activities?

|_____| Hours per Day

Q29: At what time of the day do you usually vaccinate?

O Early Morning O Middle of the Day
O Evening O Any Time of the Day

Q30: How difficult is it to get to your customers?

O Very Difficult O Difficult
O Easy O Very Easy O Neither Difficult nor Easy

Q31: How do you travel between households for ND vaccination related activities?

☐ On Foot ☐ By Bicycle

☐ By Motorbike ☐ By Public Transport

Business model (if not working as a vaccinator any longer, answer for the last active month)

Q32: Where do you buy ND vaccine?

☐ Agrovet Shop ☐ Medicine Shop

☐ Another vaccinator ☐ Other

Q33: If you chose "Other" in the question above, where do you buy the vaccine?

Q34: How far do you have to travel to buy the vaccine?

|_____| Kilometres

Q35: What type of ND vaccine do you typically buy?

O LaSota Thermostable O LaSota Regular (Non Thermostable)

O I-2 Thermostable O R2B

Q36: What vial size (number of doses) do you typically buy from your supplier?

|_____| Doses per Vial

Q37: How much does one vial cost you?

|_____| Local Currency

Q38: Typically, how many doses do you manage to administer from one vial?

|_____| Doses

Q39: Do you use any other types of ND vaccine?

Q40: Do you typically administer dewormer to poultry?

O Yes O No

Q41: If you charge for dewormer & ND vaccination together, how much do you charge for administering one dose of vaccine & dewormer?

_____| Local Currency per Bird

Q42: If you charge for dewormer & ND vaccination separately, how much do you charge for administering one dose of vaccine?

|_____| Local Currency per Bird

Q43: If you charge for dewormer & ND vaccination separately, how much do you charge for administering one dose of dewormer?

|_____| Local Currency per Bird

Q44: Typically, how much would you charge to vaccinate & deworm 20 birds?

|_____| Local Currency per 20 Birds

Q45: Do you also provide vaccination against Fowl pox?

O Yes O No

Q46: If yes, how much do you charge for Fowl pox vaccination?

|_____| Local Currency per Bird

Q47: Do you also provide poultry husbandry advice?

O Yes O No

Q48: Do you accept non-cash payment for your service?

O Yes O No

Q49: If yes, what kind of non-cash payment do you accept?

Q50: Do you vaccinate on credit?

O Yes O No

Q51: Do you sell ND vaccine vials to others without administering the vaccine?

O Yes O No

Q52: How much income do you typically earn from poultry healthcare service per month?

|_____| Local Currency

Q53: Do you also provide healthcare for small ruminants?

O Yes O No

Q54: What kind of healthcare for small ruminants do you provide?

Q55: How many small ruminants do you typically treat per month?

|_____| Small Ruminants

Q56: How much do you typically earn from small ruminant healthcare per month?

|_____| Local Currency per Month

Q57: In the last month, how many poultry did you vaccinate against ND?

|_____| Poultry

Q58: In the last month, how many households did you approach in order to provide ND related services? (can include sales and administration)

|_____| Households

Q59: In the last month, how many of these households accepted ND related services?

|_____| Agreed to Vaccinate

Q60: In the last month, how many of these households that accepted ND related services were NEW households?

|_____| New Households

Q61: In the last month, how many individual villages did you visit in order to provide ND related services?

|_____| Villages Visited

Q62: In the last month, how many individual hamlets/wards did you visit in order to provide ND related services? (leave blank if not applicable)

|_____| Hamlets Visited

Q63: How many villages were assigned to you at the beginning of the project?

|_____| Villages

Q64: In how many villages, which have not been assigned to you, do you provide ND related services?

|_____| Villages

Q65: After how many months do you typically return to the same household for ND vaccination?

|_____| Months

Q66: Do you compete with other ND vaccinators in your area?

O Yes O No

Poultry status

Q67: How many poultry does a typical household in your area have on average?

|_____| Poultry

Q68: Which poultry diseases are common in your area?

☐ Newcastle Disease ☐ Fowl Pox
☐ Parasites (Internal, External) ☐ Other

Q69: If you chose "Other", what other poultry diseases are common in your area?

Customers' profile

Q70: How difficult is it for you to convince new customers to start vaccinating their birds against ND?

O Very difficult O Difficult
O Easy O Very easy O Neither difficult nor easy

Q71: What kind of awareness campaigns were organised in your ND vaccination area?

Q72: In your opinion, why does a farmer decide NOT to vaccinate against ND?

Q73: How do you know when your ND related service will be required in a particular household?

☐ I keep a record ☐ Farmers call me ☐ I call on farmers and ask
☐ Other

Q74: If you chose "Other" in the question above, how do you know when your service will be required in a particular household?

Vaccinator's perception of their vaccination job

Q75: Are you planning to continue working as a ND vaccinator?

O Yes O No

Q76: What difficulties have you encountered while working as a ND vaccinator?

Q77: What is the biggest obstacle in achieving more vaccinations?

O Work long hours elsewhere
O Customers inaccessible
O Finding new customers
O No salary from the NGO
O Vaccine shortage
O Free government vaccines offered in area
O Cost of buying the ND vials upfront
O Safety
O Travelling between households
O Maintaining the cold chain
O Demand for vaccine very low
O Lack of willingness to pay for vaccinations
O Vaccine supply not always available
O Other

Q78: Do you think that vaccinating is a reliable source of income for you?

O Yes O No

Q79: Are you satisfied with the amount of vaccinations you perform?

O Yes O No

Q80: Does your community appreciate you working as a vaccinator?

O Yes O No

Q81: Does your family approve of you working as a vaccinator?

O Yes O No

Q82: While working as a vaccinator, did you receive any support from your local veterinary office? (advice, collaboration, disease status information)

O Yes O No

Q83: If not, would you be interested in such support?

O Yes O No

Q84: Would you be interested in any additional training?

- □ Entrepreneurship and Management
- □ Course on Poultry Husbandry
- □ Course on Poultry Diseases
- □ Course on Other Poultry Vaccinations
- □ Course on Animal Husbandry (for example goat, pig, sheep, ducks or cattle)
- □ Course on Animal Diseases (for example goat, pig, sheep, ducks or cattle)
- □ Course on Animal Vaccination (for example goat, pig, sheep, ducks or cattle)
- □ Other

Q85: If you chose "Other" in the question above, what additional training would you be interested in?

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