Facilitating Mass Access of Veterinary Vaccines & Products to Scale-up Backyard & Small Holders Farming

A **GALVmed – Hester** Joint Initiative

HESTER

Preface

This report is compiled by Hester Biosciences, India.

The report portrays the evolution and outcomes of Hester's project for rural livestock keepers, implimented in 3 Indian states - Odisha, Chhattisgarh and Jharkhand, between October 2014 and June 2017, in collaboration with GALVmed, a Not for Profit organisation based out of Edinburgh, Scotland.

This report is a compilation of the activities performed, challenges faced and also suggests a way forward for continuing the work in this project as well as future projects. It throws light on positive outcomes as well as provides a fair idea about what did not work well.

Hester would like to extend its appreciation to GALVmed for its financial support and its team's constructive involvement, throughout the project.

Acknowledgments

Every project requires a greater effort at the start; however, the GALVmed-Hester project for rural livestock keepers in the three states was especially challenging, due to the combined focus on health and immunisation of backyard livestock. This success of this project is contributed to the hard work and energies of a group of people committed to the cause.

Firstly, at Hester, we would like to thank the entire GALVmed team, for the support extended to make the project a success. From the outset, GALVmed provided continuous and tireless support, as well as giving valued technical input.

Hester thanks our partner in success – Jharkhand State Livelihood Promotion Society (JSLPS), PRADAN, Pathe Pathshala, and Birsa Yuva Sewa Samiti (BSYS) for their active involvement in capacity building and awareness creation at the ground level.

Our NGO partners Udyogini, Sahabhagi Samaj Sevi Sanstha and Holistic Action Research And Development (HARD) also deserve a mention for their contribution to the project.

We would like to extend our thanks to State Animal Husbandry department of Odisha, Chhattisgarh and Jharkhand for supporting the initiative. It will be pertinent to recognize the field veterinarians of these states for their support and guidance to the implementing team. Their support in mobilizing and convincing the livestock keepers was worth appreciation.

Special gratitude to Dr. Kornel Das, who is an institute in himself, for his guidance and handholding right from the initial conceptual stage of the project; Hester also thanks Dr. Vijayant Kumar for imparting training to the resources in field.

The project would not have been possible without the enthusiastic participation of the Area Sales Managers, Veterinary Sales Executives and more importantly the service providers (Pashu Sakhis, CAHW and paravets) who were the frontline implementers of the project and made a real difference in their communities.

Finally, we also want to thank Super Distributors Vaishnavi Traders, Ranchi, Saideep Agencies, Bhubaneshwar and Shiv Sales and Marketing, Raipur, all distributors and retailers who contributed to the project and ensured product supplies to rural livestock keepers in remote areas.

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Project Background

A vaccine in time... can save an entire village economy

India lies in the villages just as much as it does in the fast-paced globalised cities. Backyard livestock has been integral part of rural India and has been the known source of livelihood for marginal and landless farmers. Poor villagers in remote areas of India rear few (5 to 10) indigenous poultry birds and 2 to 3 small ruminants (sheep and goats) and 1 or 2 dairy animals in the backyard of their houses. Backyard livestock keeping is marked by poor egg, wool and meat production.

The disease incidences are very high especially Newcastle Diseases commonly known as Ranikhet Disease has been a major limiting factor and responsible for causing very high mortality and morbidity to the backyard chicken, thereby causing huge losses to these poor farmers. This is aggravated further by limited awareness of farmers about diseases.

The same goes for diseases such as PPR, pox and worm infestation, which devastate livestock health. Such diseases severely affect the total productivity of backyard farms and diminish rural income and nutritional intake.

The solution to this largely unsung dilemma is: enabling villages to easy access high quality veterinary vaccines and other animal health care products. This presentation portrays a deeply committed, scientifically strategised endeavor in this direction, spearheaded by GALVmed (Global Alliance for Livestock Veterinary Medicines) and Hester Biosciences Limited.

Going beyond the traditional service format of development organizations, the GALVmed-Hester Initiative's fundamental aim is not just to offer physical and material aid to rural backyard farmers, but to help and encourage them become truly self-reliant in the present, and thereby self-assured about the future.

Hester Biosciences Limited has forayed into three Indian states namely Odisha, Chhattisgarh and Jharkhand for this project.

The GALVmed-Hester Initiative is based on a sound and effective business model for both the rural recipients as well as Hester Biosciences Limited. The key benefit of the initiative is rather great: self-sustainability in the long-term view without a dependence on donor or other support bodies. In this way, the GALVmed-Hester initiative is a unique endeavor for the rural backyard farmers as it promises not only in infrastructure, but also provides preventive medicare and healthcare for poultry and livestock – the virtual lifeline of India's villages.

GALVmed and Hester Biosciences Limited entered a tactical collaboration in 2009, with the objective of developing and commercialising Thermo-tolerant Newcastle Disease Live Vaccine. GALVmed provided the technology and technical know-how for the development of the product while Hester manufactured the product with its infrastructure.

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Introduction of Hester and GALVmed

The collaboration of two committed prevention proponents

Hester Overview

Hester Biosciences Limited is one of India's leading animal healthcare company, and its second-largest poultry vaccine manufacturer. Rajiv Gandhi, a visionary first generation entrepreneur, founded Hester in 1987. Under his inspiring leadership, what began as a small proprietary trading business emerged as Asia's largest single-location animal biological manufacturing facility. The Company's key strength is its cutting-edge research and development capabilities.

Hester's state-of-the-art manufacturing facility located near Ahmedabad, Gujarat, brings out a range of high quality products ranging from vaccines and health products to diagnostic products. Its services include sero-profiling of poultry flocks and mastitis control programs for cattle.

These four verticals – Poultry Vaccines, Large Animal Vaccines, Poultry Health Products and Large Animal Health Products, together establish Hester's identity as a strong animal healthcare company that addresses all sectors of animal healthcare.

Product Range:

- 44 types of Poultry Vaccines in singles & combinations
- 7 types of Animal Vaccines
- A vast range of Medicines, Disinfectants & Feed Supplements

Certifications & Approvals:

- WHO – GMP
- Good Laboratory Practices (GLP)
- ISO 9001:2008, ISO 14001:2004, OHSAS 18001:2007
- Government-approved R&D Centre

Sales in Financial Year 2016-17:

- INR 1230 million / USD 15.53 million

Apart from India Hester has ventured in other countries as well and has the following branches and subsidiaries:

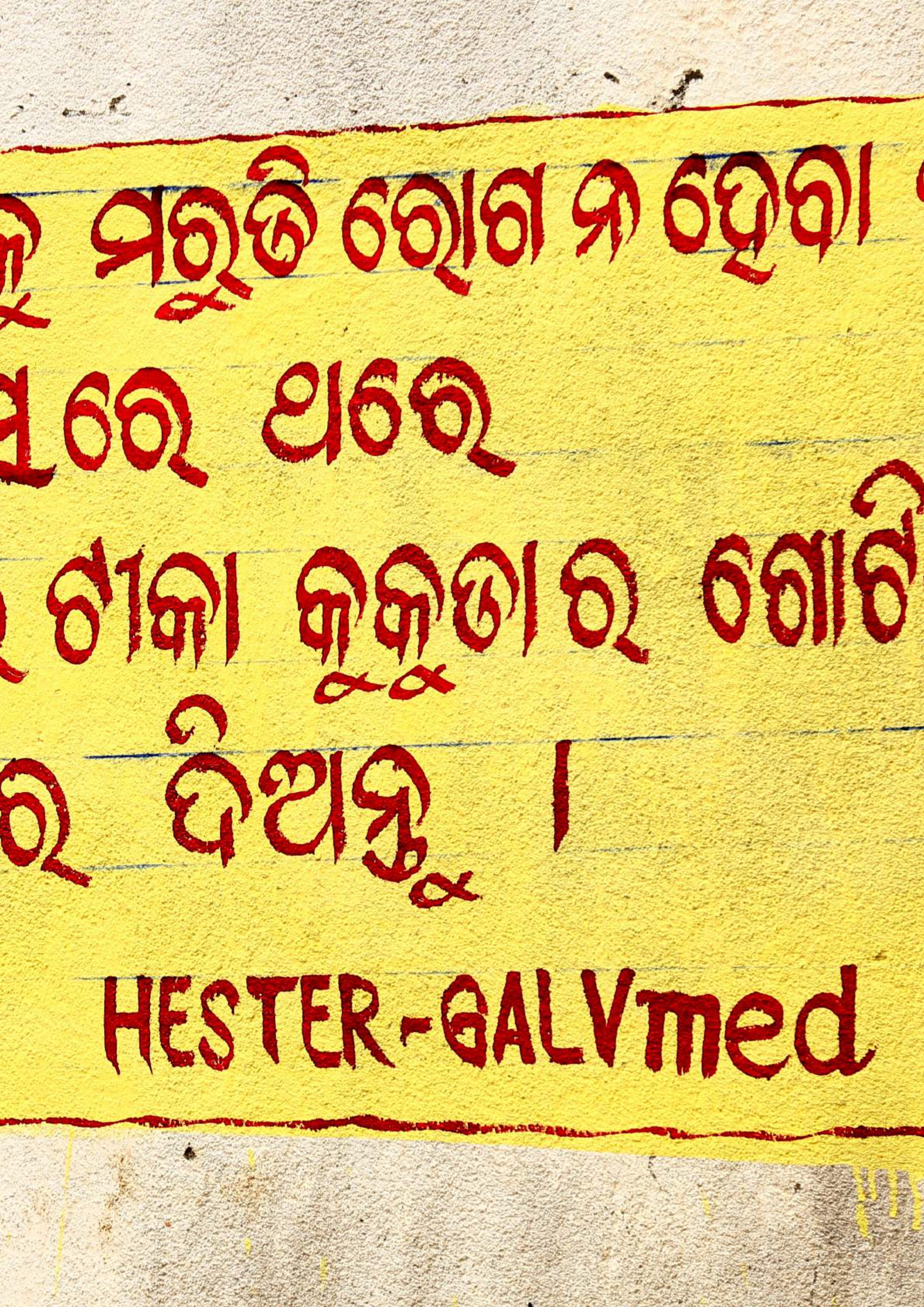
- Hester Biosciences Nepal Private Limited (HBNPL)
- Hester Biosciences Africa Limited (HBAL)
- Hester Biosciences Tanzania Limited (HBTL)
- Hester Biosciences Kenya Limited (HBKL)

At present the Company has a total strength of 281 employees out of which 27 employees dedicated exclusively for this project.

GALVmed Overview

GALVmed is an international Not for Profit organisation whose mandate is to make livestock vaccines, medicines and diagnostics accessible and affordable to millions of people in developing countries, for whom livestock is a virtual lifeline. It specialises in strategic product development partnerships established to translate global research progress into tangible livestock disease control tools for the developing world.

GALVmed's approach is unique, and enables substantial and sustainable improvements in smallholder agriculture. In the initial stages of intervention, GALVmed uses donor funding to undertake major development work in target areas. And the end point observes major livestock diseases being effectively controlled with vaccines and other animal health products through the creation of an efficient supply chain and distribution network.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HESTER-GALVmed

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The alliance between Hester and GALVmed

A fine duet of shared care

To develop this market and scale up the access of Newcastle Disease (and other) vaccines to this sector; and creating a commercially sustainable supply chain for this and other necessary livestock vaccines and products around a model that relies on a willing buyer (livestock keeper) and a willing seller (vaccine provider), that essentially links the supply chain back to manufacturer in a robust business model.

After the successful product development of Thermo-tolerant vaccine, a robust delivery network was required to ensure product delivery to the remote areas of targeted states.

Project Rationale / Basis

- Newcastle Disease (ND) is the biggest challenge backyard and smallholder farmers in rural part of India have to overcome. Controlling this menace is one of the main objectives in GALVmed's projects, Protecting Livestock – Improving Human Life (PLSHL). GALVmed aims to make Newcastle Disease (ND) vaccines available to the poor livestock keepers in the developing world, mainly Sub-Saharan Africa and South Asia.
- GALVmed and Hester entered into a successful partnership that concluded with the development, registration and launching of a thermo-tolerant LaSota ND vaccine in India in February 2014 for use in the village poultry sector.
- The objective of this agreement was to further develop the partnership between GALVmed and Hester, and move into the next phase and support the commercialization and deployment of the thermo-tolerant ND vaccine in a way that reaches village farmers over a large scale in India.
- Hester, being a commercial organisation, fits into this as the best collaborator to steer the project into the desired direction.
- GALVmed provided the technology, funding, liaison and monitoring, while Hester developed the product in its infrastructure, set up the distribution network, recruited manpower, and provided training.
- Hester adopted flexible collaborative approaches and partnered with other stakeholders to ensure effective delivery in field.

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Village Livestock & Backyard Farming In India: Characteristics and Challenges

The virtual lifeline of rural india


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Rural backyard poultry farming contributes to nearly 30% of the national egg production. However, it still remains an informal sector, and a severely neglected one at that. This, despite the fact that village poultry eggs and meat are acknowledged as healthier, and fetch a much higher price than commercial poultry.

And the irony is, about 70% of rural poultry products and eggs are consumed in urban and semi-urban areas, while the consumption in rural areas is quite low. This low consumption is attributed to limited availability, and to some extent, the poor purchasing power of rural people.

For rural masses the major issues are food security and risk spreading through subsidiary income, which are not addressed by the private commercial poultry sector. It is a well-known fact that a fairly significant proportion of the rural farmers eke out their living from backyard poultry and other small ruminants. Besides income generation, rural backyard poultry provides nutrition supplementation in the form of valuable animal protein and empowers women. It is important not only because it reduces livelihood vulnerability but also from socio-cultural and religious point of view. Tribal also use poultry birds for traditional rituals & sacrifices.

The biggest impediment to growth of this sector is the large-scale prevalence of diseases like Ranikhet Disease (RD) referred to as “Poultry’s Deadly Enemy”. RD is a top-of-the-list fatal poultry disease, and a major threat to poultry industry worldwide.

Controlling and containing it is an economically important requirement, as annual losses caused by this disease are in millions of dollars. Ranikhet Disease in India is caused by virulent strains of Avian Paramyxovirus-1. The disease is characterised by respiratory and nervous system impairment, and gastrointestinal and reproductive problems. It can have a devastating effect on poultry, owing to the high morbidity and mortality rates it carries (in unvaccinated birds, these rates may reach up to 100%, depending upon the virulence of the NDV).

Other major diseases and challenges these rural livestock keepers face are Peste des Petits Ruminants (PPR), Goat Pox, Brucellosis, among others, which result in both morbidity and mortality and consequent production losses and adversely affect the animal productivity. These include direct losses due to mortality, reduced production in terms of milk, meat, wool, hide and skins, as well as indirect loss due to abortions, subsequent infertility, sterility and deterioration of semen quality.

The backyard livestock’s (both birds and ruminants) feed largely by grazing or picking feed from open fields, worm infestation is another havoc which causes losses to these poor farmers by negatively impacting the productivity of their livestock. To increase the productivity and maintain the healthy flocks, these animals require regular deworming. This project is conceived by keeping the above points into consideration.

Table 1. Estimated Animal Population in Crores

	Unattended Backyard Animals	Attended/Organized Farm Animals
Poultry	19.0	124.0
Cattle	6.0	29.0
Sheep & Goat	4.0	20.0

In order to redress and overcome these challenges, preventive veterinary medical inputs and other resources are necessary. Keeping Ranikhet Disease as top priority and to control other challenges product portfolio, the GALVmed-Hester initiative was designed.

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Project Introduction

Preventive, Protective & Purposeful

The project was designed to increase the awareness amongst rural farmers about the importance of backyard livestock, the diseases and means to prevent the occurrence of the diseases to avert financial losses. This required the creation of infrastructure to deliver the vaccine and health products to the poor livestock keepers in the remotest areas of the state. Hester's initiative was to ensure:

- Creation of marketing network for backyard livestock keepers
- Availability of Thermo-tolerant Ranikhet Disease vaccine to suit backyard farmers' needs
- Creation of vaccinators' network for creating awareness and carrying out vaccination activity
- Establishment of sustainable distribution network to ensure easy access to vaccines
- Conduct periodic sero-monitoring for disease surveillance and for impact measurement

Hester-GALVmed initiated this project in three States of India – Odisha, Chhattisgarh & Jharkhand – in view of the fact that these are underprivileged states with large tribal populations where backyard livestock is the key rural income resource.

While backyard poultry is a ubiquitous presence in the rural areas of these states, there was little to nil awareness about the deadly Ranikhet Disease, and no access to effective vaccines. The sub-optimal poultry farming practices also result in sparse availability and malnutrition in children.

In short, there was drastic need for effective intervention.

Objectives

- Facilitating mass access to quality vaccines and health products in rural area through sustainable supply chain
- Reducing mortality in backyard and small holder's poultry by Newcastle Disease vaccination to increase household income and nutrition

Project Area

Selected Districts in Chhattisgarh

- Koriya
- Surajpur
- Sarguja
- Jaspur
- Balrampur
- Bastar
- Kanker
- Dantewada
- Rajnandgaon
- Balod
- Dhamtari
- Raipur
- Durg
- Raigarh
- Korba
- Kondagaon

Selected Districts in Jharkhand

- Garhwa
- Palamu
- Chatra
- Koderma
- Girdih
- Deoghar
- Dumka
- Godda
- Sahibganj
- Pakaur
- Gumla
- Lohardaga
- Simdega
- Khunti
- Ranchi
- East Singhbhum

Selected Districts in Odisha

- Malkangiri
- Koraput
- Gajpati
- Kalahandi
- Nabrangpur
- Bolangir
- Phulbani/Kandmal
- Sundargarh
- Keonjhar
- Rayagada

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Business Model and Methodology

The business model was created on the following four major components of the project:

- Development of suitable product
- Demand generation through awareness
- Creation of service delivery value chain
- Supply chain

Product Development

Innovation

Thermo-tolerant ND Vaccine

Customised Small Dose Packs

Demand Generation

Awareness creation

Partnerships

Orientation Meetings

Supply Chain Establishment

Easy Access

Cold Chain Maintainance

Service Delivery

Vaccination

Deworming

The thermo-tolerant Newcastle Disease vaccine with LaSota strain was developed in technical collaboration with GALVmed.

Technical modifications in the formulation of the vaccine by alteration in the stabilisers and freeze drying cycle made the LaSota strain of the vaccine virus to be more thermo-tolerant.

Along with Thermo-tolerant Newcastle Disease vaccine other small dose size packs of other vaccines and health products for poultry, small ruminants were designed.

One Project Head was appointed for project conceptualisation, strategising and infrastructure creation. For the implementation level, Hester recruited three state level supervisors, one for each capital city of Odisha, Chhattisgarh and Jharkhand. They were designated as Area Managers with primary responsibility to implement the project at the ground level.

A team of 21 Veterinary Sales Executives (one per two districts) were recruited to identify service providers, awareness activities and to liaison with local stakeholders. During the project implementation 9, 7 and 5 Veterinary Sales Executives were on board in Jharkhand, Chhattisgarh and Odisha respectively.

A network of service providers was required to ensure the product delivery to the livestock keepers.

To ensure effective product delivery one Super Distributor was appointed at state level, a total of 30 distributors were appointed at district level and 147 retailers were appointed at village / block level for the availability of vaccines and health products in the project area.


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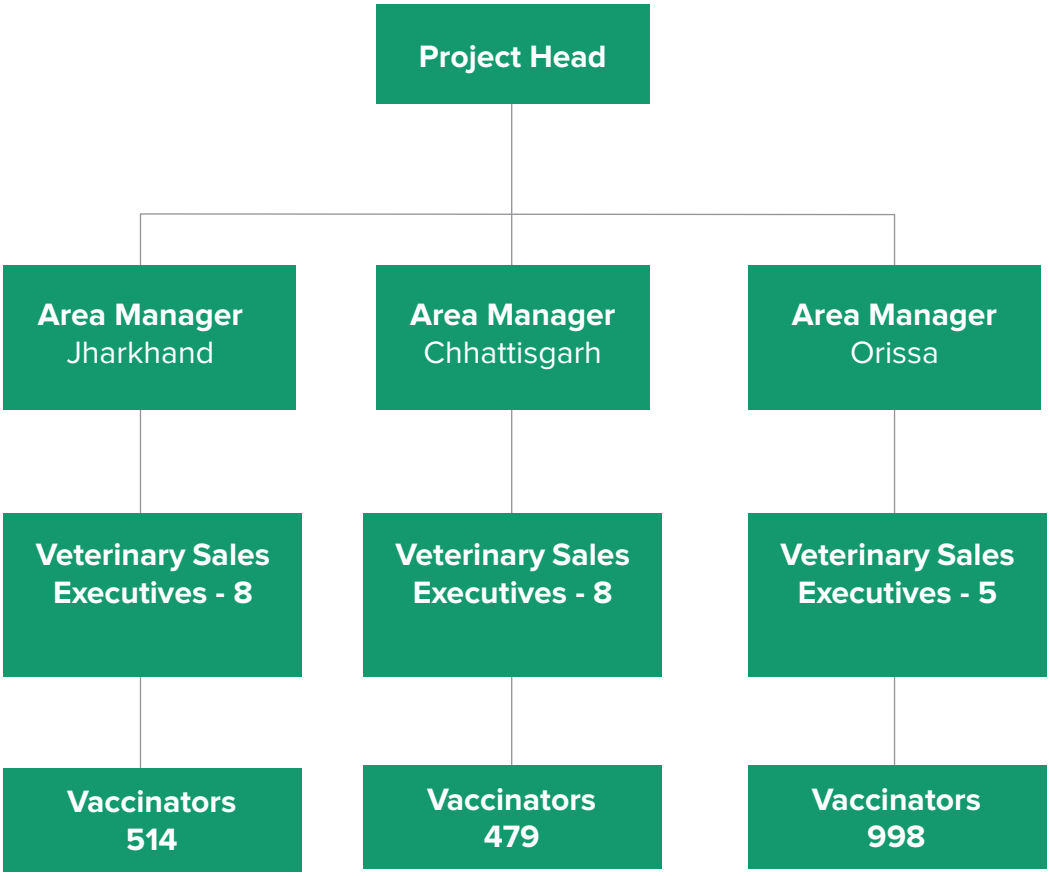

Fig 3: Man Power & Distribution Planning

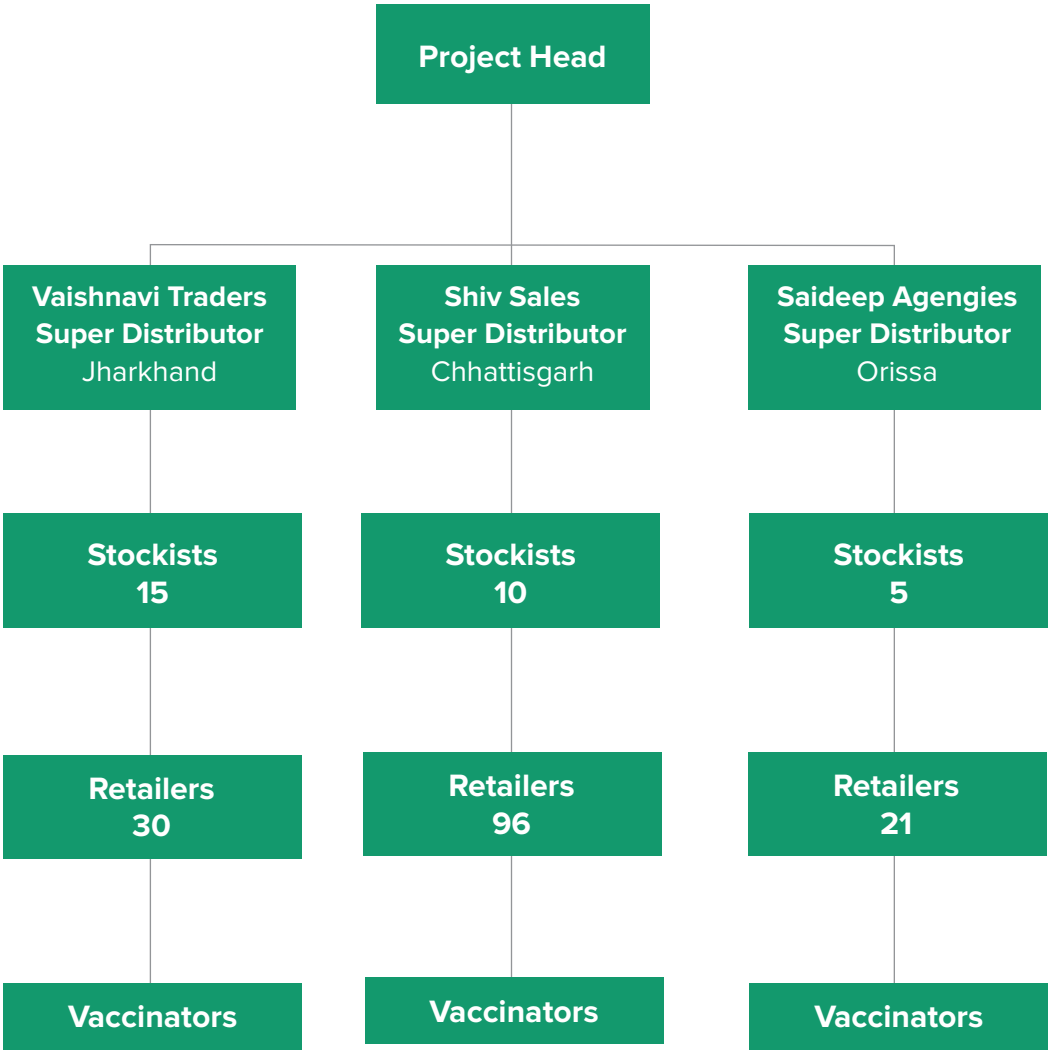

Fig 3: Man Power & Distribution Planning

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Project Evolution


Product Development
Collaboration
Product Commercialisation
2014
Field Visits
February 2015
Go Dicision
May 2015
Area Managers Recruitment
June 2015
Super Distributor Appointment
June 2015
Project Kick start VSE
and Service providers
June 2015
Orientation meetings and
Baseline Surveys July and August
2015
Capacity Building and Vaccination
Drive-Awareness Campaign
2016-17
Partnerships and Agreements
Follow Up Surveys
and Sero-monitoring
Success Stories
Project Conclusion
June 2017

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Product Portfolio

Characteristics

In the following products and packs were supplied in the project area

Two versions of vaccines for Newcastle Disease: ***Thermo-tolerant LaSota*** and ***Normal LaSota***.

The Thermo-tolerant LaSota is available in a 100 dose pack, which is recommended to be stored between 2°C to 8°C with stability of 18 months. However, there is flexibility; if the vaccine is stored at 37°C, it has the stability of 10 days, and 7 days at 40°C.

Normal LaSota Vaccine is available in a range of doses: 100, 200, 500 and 1000 dose packs. This too needs to be stored between 2°C to 8°C.

The PPR Vaccine is available in 50 and 100 dose packs, to be stored between 2°C to 8°C.

Goat Pox vaccine is available into 50 and 100 dose pack and stored between 2°C to 8°C.

3PD Piperazine as dewormer is available in 30 ml and 50 ml, to be stored in a cool and dry place.

Potency: Each dose contains not less than 1x106 EID50 of Ranikhet disease virus LaSota strain

Dose Size: 50, 100 & 200

Storage: To be stored between 2°C to 8°C

Stability:
18 months at 2°C to 8°C
10 days at 37°C
7 days at 40°C

Strength

The thermo-tolerant feature of the ND vaccine has been a very important tool for entry in the project area due to the lack of proper cold chain.

The availability of targeted products in small dose packs of the products is preferred by the service providers.

Limitation

The high cost of Thermo-tolerant vaccine was a constrain and vaccinators started complaining about the margins, leading the steering committee to approve the combination of Thermo-tolerant as well as Normal LaSota vaccine to mitigate cost constrains.

Non-availability of Fowl Pox vaccine in 100 dose pack also hampered the demand.

Competitors

There is no alternative available for Thermo-tolerant ND vaccine in India, for rest products though there are products of different companies but very few products actually reach the remote areas in the targeted states. In a few parts of the project area Piperazine (Zydus) and Normal LaSota vaccine (Venky's) was available.

Lessons Learnt

- The regular income to the service providers is critical to the sustainability of such project hence it is important that margins in the product should be good enough to generate livelihood to these service providers.
- Thermo-tolerance is an important feature but requires devise mechanism to make it cost effective.
- It is important to note that when the vaccination is coupled with deworming, the survival rate of the birds increases.

Suggestions for Future

- It is observed that a Thermo-tolerant is important for the initial phase and as the farmers become aware, subsequent vaccination shift to normal LaSota is more acceptable.
- Thermo-tolerant vaccine for PPR disease with intranasal delivery mechanism should be developed and made available for future projects.
- Additionally in the future F-strain and R2B strains should also be included to the vaccine list.
- It will be very useful if a combination vaccine covering Fowl Pox and Ranikhet Disease is available.
- An observation is that the dewormer range should be increased to incorporate Fenbendazole Powder and Albendazole Liquid.
- For small ruminants 150 mg packs of Fenbendazole and Albendazol should be incorporated.

The Product Innovation

I will bear the heat

Commercial poultry worldwide is routinely vaccinated with Newcastle Disease vaccine and thereby protected from the disease. Newcastle Disease is a huge problem for the backyard poultry of the developing countries where the poultry are reared as free-ranging scavenging poultry under village condition. It is very important to protect these backyard birds from the Newcastle Disease by immunisation.

Although very effective live vaccines with Newcastle Disease LaSota strain is available to protect the birds from the Newcastle Disease, these vaccines are thermo labile in nature, which means the vaccine must be stored and transported under cool conditions of 2°C to 8°C before application, or else it will become ineffective.

The main constrain of the vaccination in backyard poultry is to make the vaccine available to the remote villages under the cold condition; where there are constrains of transportation and storage of the vaccine due to lack of electricity and refrigerators, which is an essential requirement for storage of the vaccine now a days.

As a first step in addressing this issue, Hester effected a major technical change in the vaccine's constitution – a product feature was changed to enable the vaccine to withstand the cold chain. Hester Biosciences Limited has developed a thermo tolerant Newcastle Disease vaccine with LaSota strain in technical and financial collaboration with GALVmed.

GALVmed and a technical expert, Dr. Joseph Litamoi from Kenya, supplied the technology and worked with the Hester team to standardise the technology in Hester R&D and Manufacturing Plant.

"By the changes in the formulation of the LaSota live vaccine and by making few changes in the stabilizers and freeze drying processes, we could make the LaSota strain thermo labile vaccine virus into a thermo tolerant vaccine," said Dr. J. K. Pal, Head of R&D, Hester Biosciences Limited.

This vaccine is found to be stable at 37^0C temperature for 10 days and 40^0C temperature for 7 days. This ensures the advantages of keeping the vaccine out of cold chain for a considerable period of time, at that period the vaccine can be transported to the remote village before the vaccine can be applied to the backyard poultry birds.

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Supply Chain

The remoteness of the livestock keepers is the biggest challenge to ensure the effective delivery of vaccines and health services. The need of the project was setting up of distribution networks to ensure supply as per need and demand.

Stock from Hester's warehouse in Ahmedabad is supplied to Super Distributors (SD) in the capital cities of the project states: Ranchi (Jharkhand), Bhubaneswar (Odisha) and Raipur (Chhattisgarh). The SDs supplied the stocks to distributors, stockists and wholesalers at district level, who in turn supplied to retailers or the chemists. From the retailers the stocks reach the smallholder farmers through vaccinators and NGOs.

Table 2. Supply chain status update June 2017

Description	Target	Actual
Super Distributors	3	3
Distributors	34	30
Retailers	340	147

Mode of Transportation

The modes of supply chain vary from point to point. The stocks are flown by air from Hester to SD. Thereafter the stocks are transferred by state bus or local transport from SD to Distributors and from Distributors to Retailers. The service providers purchase the vaccines from the retailers and carry the vaccines in Vaccinator Kits by bicycle, motorbike or by foot to deliver the same at farmer's doorstep.

Hester ensured that the products remained available throughout the project areas.

Due to strict quality assurance and checks there was no product quality complaint reported. The service providers were trained on cold chain maintenance, and the Veterinary Sales Executives were responsible to educate the retailers and distributors for maintenance of proper cold chain through out the supply chain.

The Super Distributors have a freezer along with refrigerator for careful storage of vaccines. The stockists and retailers have refrigerators to ensure good quality of products. Vaccines are only supplied to NGOs having refrigerators.

For the vaccinators, thermocol boxes are provided and some of them have refrigerators at their homes, clinics or store the vaccines at the village shop. In short, cold chain is ensured at every level.

Hester's expertise in the commercial poultry aided in creation of supply chain, which was not only impeccable, but so was the storage and cold chain supply – an important factor for successful implementation.

Challenges

- Adamancy of distributors to stock new vaccines and products in spite of regular visits and follow up by field staff.
- It is a very big challenge to collect money from the farmers, which is a major cause of vaccinator drop out.
- Retailers do not take interest to stock low demand or volume products; their interest is further blemished by late payments from service providers.
- Late payment cycle demoralises the distributors to supply products to the retailers.
- High drop out at service providers' level hampers demand and thus availability.
- Due to the remoteness and huge distances the cost of transportation is very high because of which distributors become less interested in supply to the retailers in such areas.
- If distributors add that cost, chemist margin is impacted negatively, making them hesitant to sell the product. This challenge could be addressed with higher volumes generated through increased sales.
- A peculiar challenge faced was whenever a drop out at service providers was reported – they did not return the vaccination kits, which used to deprive the succeeding service providers of the kits thus disturbing the normal working.
- This also resulted in inflated cost of cold chain maintenance.
- The service providers are very hesitant to purchase the vaccines from the retails outlets; they expect the delivery of the products at their doorsteps.

Take home from the supply chain

The product range should increase in sales volumes, which in turn will improve the gross margins at each level.

It is noted that wider margins to retailers and vaccinators have positive impact on the sales of vaccines. The mere increase in the number of retailers does not increase the sales of the product – as is seen in the case of Chhattisgarh where the number of retailers is higher compared to Odisha and Jharkhand but the sales of products is less. The price of thermo-tolerant vaccine at the vaccinator level was an issue as service providers' margins are squeezed due to high cost. However this issue was resolved with the introduction of non-thermo-tolerant vaccine.

The price of thermo-tolerant vaccine at the vaccinator level was an issue as service providers' margins were squeezed due to high cost. However this issue was resolved with the introduction of non-thermo-tolerant vaccine.

Supply Chain Success Story

Maa Durga Medicine Store Swampatna

The store was initially hesitant to keep the vaccine and doubted the saleability in the rural area for backyard poultry.

But after the awareness campaign through audio visual modes and print materials, and vaccinators' rigorous follow up, it created a pull in demand in his area and he finally agreed to keep the stock.

Now the store maintains good stock and sells around 100 to 150 vials every month of RD vaccine to Hester's vaccinators and farmers.

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Distribution Channels

The commercial animal healthcare organisations have been relying on the conventional marketing network for product delivery, which is created over the years by them. The strength of this network is that it connects the stakeholders and nature of functioning is well defined. This network is mature enough to handle the logistics, financial and inventory issues at field level. But this network's limitation is that it reaches upto the retail level only and lacks the capability of delivery at smallholder farmers' doorstep.

On the contrary the developmental organisations are equipped to establish service delivery to smallholders via their service providers. But the limitation is that the area covered by these developmental organisations is confined to very small territories and they face challenges in terms of infrastructure and connectivity at the top of value chain viz at state, district level and block level.

The unique feature of this method is that in this project we have adopted hybrid approach and thereby breezed this gap. This project combines the strength of both commercial as well as developmental organisations' delivery capabilities. Hester has created a supply chain to ensure the availability and accessibility of vaccines and other health products to the poorest of poor and remote neglected livestock keepers in the rural parts of the country.

Every channel partner in the supply chain has a margin at each step The livestock keeper receives product and service delivery at a very nominal price; the service provider, particularly women, earn livelihood, retailers earn margins by way of product range increases, and the distributors are also earning extra profit by using the same resources.

Value addition occurs at each step and each stakeholder is making profit – this has the potential of being developed further as a sustainable distribution model in the rural parts of the country

Fig 7: Our Model

The vaccines are sold at following distribution channels:

- Distributors
- Retailers
- NGO
- Service providers
- Private practitioners

Distributors

The distributors are located at district level; while there are exclusive distributors who distribute veterinary medicines, a few of them also supply human medicines. These distributors have supply network vans, manpower, proper storage facilities and cover one or more districts.

The list of a few important distributors is below:

Distributors	Block	District	State
JK Medical	Ambikapur	Sarguja	Chhattisgarh
Khedwal Pharma	Rajnandgaon	Rajnandgaon	Chhattisgarh
Vaibhav Medical	Surajpur	Surajpur	Chhattisgarh
M.K Enterprises	Ranchi	Ranchi	Jharkhand
Vajapayee Agency	Deoghar	Deoghar	Jharkhand
Palamu Poultry	Daltongunj	Palamu	Jharkhand
Blue Print	Brahmapur	Ganjam	Odisha
Vet Link Agency	Keonjhar	Keonjhar	Odisha
Shibani Medical Store	Keonjhar	Keonjhar	Odisha

Table 4. List of Major Distributors in the Project States

Retailers

The retailers are selected chemist shops located at block level and have refrigerators to store the vaccines. These stores sell both human and veterinary medicines. The vaccinators buy vaccines from these retailers.

The list of top retailers stocking and selling vaccines and other products as attached:

Retailer	Block	District	State
Shubham Medical	Batauli	Surguja	Chhattisgarh
Sampatlal Tejkaran	Mohala	Rajnandgaon	Chhattisgarh
Swati Medical	Bhaiyathan	Surajpur	Chhattisgarh
Raj Poultry	Bero	Ranchi	Jharkhand
Bajpayee Medical	Deoghar	Deoghar	Jharkhand
New Famous Medical	Chatra	Chatra	Jharkhand
Baitarani Mahila Seba Samiti	Turumunga	Keonjhar	Odisha
Mandal Medicine Store	Patna	Keonjhar	Odisha
Pappu Medicine Store	Patna	Keonjhar	Odisha

Table 5. Major Retailers in the Project states

NGOs

The NGOs with a considerable network at local community level and cadre of service providers were selected. These service providers are provided with kits and training on vaccination delivery. Only NGOs in possession of refrigerator are selected.

Limitations

A limitations of this model is that it is demand driven and is viable only if there is sufficient demand of the product. Creating demand in the rural areas is a time consuming process, and if there is no proper hand-holding, care and monitoring, the chain may break and the availability of products can be hampered.

Another point of consideration is that the stakeholders in the value chain require regular monitoring and motivation to control the drop out at service providers level.

The difficult terrain of the project area makes it difficult to work in field.

Service providers, especially women, face difficulties to procure vaccines from the retailers as they are located in the far off places.

Challenges

Recognising and overcoming bottlenecks in service delivery is a key part of evaluating immunisation programs. Hester identified obstacles for establishing the distribution channels and ensuring the product and service delivery in the project area to improve immunisation coverage and to make adjustments while the programs are in progress.

- Identification and recruitment of service providers is very big challenge.
- Most of the service providers take up vaccination as secondary employment only as per convenience, sometimes they skip the vaccination even though the livestock keeper is willing and vaccination is due as per the schedule.
- High service providers drop out for many reasons and expectations of remuneration by service providers were two major challenges faced through out the project
- Farmers are hesitant to pay for vaccination; they expect free vaccination.
- The livestock keepers do not have money to pay upfront to the service providers who in turn cannot pay to retailers so product availability is impacted
- Strong faith and reliance on traditional therapies
- Even after constant follow up and push still many farmers do not get ready to vaccinate their birds due to lack of confidence and awareness
- Lack of synchronization with livestock keepers daily routine, reduces vaccination doses as service providers return without vaccination due to owner's unavailability, leaving the birds in open for no money arrangements

Lessons learnt for various distribution methods

- The range of products and vaccines should be extended at retail level to increase the efficiency of the distribution.
- Product trade offering retailers and service providers performance-linked incentives can be effective tools to ensure availability and service delivery.
- Motivation tools for vaccinators to buy a vaccines and pay upfront to the retailers so that chemist take interest to keep the stocks.
- The design of Vaccinator Kits can be modified to make it handy like a flask; the cool packs size can be shortened to be fit into the flasks.
- Awareness creation is crucial to generate demand so rigorous activities and campaigns should be continued throughout the project.
- Training module can be made more comprehensive covering other poultry, small ruminants and cattle immunisation as well as deworming to increase the scope for sustainable livelihood generation.

11

Delivery Agents

Veterinarians

Veterinarians acted as great influencers and played pivotal role in capacity building. The field veterinarians and Block Veterinary Officers (BVOs) were responsible for the training and awareness program, their support is crucial for the vaccinators as they convinced the farmers and involved in awareness campaign.

Veterinarians support the community health worker in emergency cases.

No government cadres are involved in vaccine delivery directly.

Para-veterinarians & CAHW

Para-veterinarians and CAHW are trained by government or NGOs for performing Artificial Insemination and related services.

Pashu Sakhis

Also known as “Friend of Animals,” and are generally women. Pashu Sakhis are enrolled under National Rural Livelihood Mission (NRLM) by the Government of India scheme, and are trained by Hester for vaccination.

JSLPS under the community based small ruminant support system developed Aajevika Pashu Sakhi, who is a practicing livestock rearer from the community (mostly an SHG member) is promoted as paravet in the villages who give services to the small ruminant farmers at village itself through GRC (Goat Resource Centre). Pashu Sakhi works on business model, collects service charge for pre-defined goat services provided to the goat farming household. The core area of their work is community mobilization through SHGs, providing preventive and curing health services management of goat rearing, managing kid nursery, providing community insurance, breeding buck service and managing all kinds of forward and backward linkages.

To promote these Aajeevika Pashu Sakhi, the project (NRLM) would provide support/honarium and there after they would work with GRC. They work on:

- Awareness and cattle census
- Provide input in good practices of goat rearing, keep healthy goat and buck and remove unhealthy one
- Provide support for promotion of backyard poultry, disease prevention for ND
- Promote right feed and fodder practices
- Method of feeding pure water (using water tub)
- Preserve and protect them from weather
- Timely weight check up to get the weight gain or loss
- Protect from worms in the body
- Deworming of goat – twice in a year (before rainy and after rainy season)
- Timely vaccination of goat
- Insurance service

Viable Smallholders Product Delivery

The smallholder sector has the potential to make animal healthcare products into a viable delivery system. It will take an immense amount of effort and resources, but once these smallholder farmers see and feel the results in terms of nutritional uptake and thereby a monetary rise in earnings, the volumes of business will sustain the system.

This is also subjective to the fact that the products are delivered to smallholder farmers at a reasonable rate with proper awareness. The key driver to pull demand is that the animal population is very high in this sector. Furthermore, the disposable income at the rural parts is increasing. With the electronic media reaching in these tribal areas, awareness can be spread more effectively and efficiently.

12

Our Partners in Success

One of the key element of the project was flexible approach. Hester collaborated with organisations with similar mandate and combined the strengths of many. The collaborations were established with defined timelines and outcomes. A detailed report from each partner on such collaborations is demonstrated in the subsequent sections of this document.

Outcomes

- Gender Inclusion
- Forward Marker Linkage
- Capacity Building
- Service Delivery
- Ambulatory Services

Fig 8: Useful Associations and Partnerships

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Capacity Building

The entire project was envisaged on the effective service delivery and involvement of service providers. It was very important to keep the service providers motivated so that they are able to mobilize the livestock keepers to immunize their livestock. This required a comprehensive training of the service providers for both product technical knowledge and convincing the livestock keepers.

The training material was designed in a manner to covers practical know-how of the products, cold storage maintenance and communication skills.

Hester associated with the expert individuals as well as institutions alike: Dr. Kornel Das, Dr. Balaram Sahu, JSLPS, PRADAN and BYSS. The collaboration with Jharkhand State Livelihood Promotion Society (JSLPS) was a major milestone of the project. A tripartite agreement was signed between Hester-GALVmed-JSLPS for imparting a training and immunization drive in Jharkhand.

The following report submitted by JSLPS throws light on the objectives, activities and outcomes of the collaboration


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GALVmed, JSLPS & Hester Biosciences in Jharkhand

A relationship of mutual empowerment

Jharkhand State Livelihood Promotion Society (JSLPS) is an autonomous and independent society under the aegis of Rural Development Department, Government of Jharkhand working toward poverty reduction.

Hester-GALVmed-JSLPS collaborated under a non-financial tripartite agreement to support backyard poultry and goat based livelihood intervention.

Objective

- To assist JSLPS in capacity building for ND vaccination in backyard poultry and PPR in small ruminants in Jharkhand
- To create a sustainable supply chain of quality and affordable vaccines (ND and other vaccines) and important animal healthcare products in Jharkhand
- To create a model for replication by JSLPS in the entire Jharkhand

The collaborative initiative was piloted in 8 districts and 25 blocks.

Activities by partners

- JSLPS under the community based small ruminant support system developed Aajeevika Pashu Sakhi (APS)
- Capacity building support from Hester Biosciences Limited staff to identified APS / Vaccinators
- Support of vaccination kit and dropper by Hester helped in maintaining the cool chain and dose in the project area
- Supporting in supply of vaccines in remote villages of the project by Hester appointed staff
- GALVmed helped in building the environment in the Government department in terms of policy formation
- GALVmed advocacy in supporting the project and scaling up the program with Government developing overall scenario of the sector.
- JSLPS provided the institutional platform and extension support in replicating the model in project as well as in other districts

Results and Outcomes

- A total of more than 750 service providers were trained in the project area under this initiative
- We were successful in reducing morbidity due to vaccination and deworming and mortality among poultry birds and goat was reported at 7% in old villages where work was done since 3 years.
- APS has been recognized as trainer for Backyard Poultry by Rural Development Department, Govt. of Jharkhand and as trainers for MGNREGA LIFE.
- Under this joint initiative the service providers vaccinated 995,700 birds in backyard poultry for the prevention of Raniket Disease
- PPR vaccination was given to 76,000 goats in the project area. Now regular vaccination is being adopted by the villagers.
- It has helped in adoption of basic management practices – like housing, promoted hygiene practice.
- The livestock keepers are benefited by enhancement in profit margin selling of poultry birds through live weight

15

Hester-GALVmed-PRADAN Partnership in South Odisha for livestock development

- **Time Period:** 8th June 2016 to June 2017
- Under this project, we received support of Dr. Balaram Sahu, engaged by Hester-GALVmed in 5 teams named as Nandpur, Lamtaput, Ambodola, J K Pur & Balliguda. The objectives were to develop a trained pool of Animal Health worker also called as Prani Mitras, who would be providing vaccination and de-worming door step services to livestock keepers, establishing cold supply chain and availability of vaccines at block level through existing medicine shop keepers.
- There were a total of five batches consisting of about 100 active women rearers in five districts of South Odisha. PRADAN teams were given two days for in-house and on field practical training
- Following this, the second phase was carried out by Dr. Sahu and Sri Ananta Singh of Hester jointly in five teams. PRADAN staff also received the training. We developed a system of monthly planning, review-cum-refresher training for the prani mitras on regular basis. Apart from this, Dr. Sahu helped us in providing guidance about identifying diseases specific to each team context.

With the help of Dr. Sahu, we have worked out an annual vaccination and de-worming calendar. For all the teams we have received a total of 130 cool boxes, which has helped for ensuring maintaining cold chain. Introduction of Thermo-tolerant LaSota through Hester's network is proving to be very useful especially in remotely located area like Southern Odisha.

Also, at initial stage, when the cold chain is not yet stabilises and CAHWs are new, the thermo-tolerant LaSota is very useful. We have also received 10,000 copies of farmer's card for recording the progress farmer-wise from Hester-GALVmed.

Critical help that we have received out of this project:

- The knowledge transfer methodology of Dr. Sahu has boosted the confidence of very low literate women of South Odisha teams. He helped them to understand the importance of deworming, vaccination as preventive care as well as in skill building through practical sessions in the villages.
- Continuous guidance from Dr. Sahu on rolling out strategy like vaccination calendar, pricing of vaccination and deworming so that CAHWs can earn some revenue out of her services etc.
- Hester has supplied 130 cool boxes. In addition, Sri Ananta Singh has ensured supply of vaccines on timely manner, as per demand in most of the cases. He has also provided small, but critical support to rollout things like supply of Lancet along with Fowl Pox Vaccine, perfect droppers for LaSota vaccination and so on. We have also received some support in linking the identified local entrepreneur for supply vaccine.

The challenges, learnings & way forward

- South Odisha is a low literate area especially when it becomes the case of women (estimated 20% women literacy as per census, but practically it is lower). Therefore, even if women are interested, the learning speed is much slower than expected. Apart from this literacy barrier, huge gender discrimination prevails in the area (especially where the women have come first time to this kind of job). It is a major challenge for accepting the women in patriarchal society. There have been cases, when women CAHWs have not been allowed to vaccinate during their menstruation cycle.
- In some cases, few CAHWs also dropped because they could not bear the family pressure where they have to be out of home more frequently. So, it was a major learning for us that, we have to slowly and gradually develop the CAHWs very systematically, with lots of patience.
- Initially, the extension agents and wings of government veterinary departments like livestock inspector, service providers promoted by government, JK Trust called GO-mitra felt threatened. They discouraged and created misunderstandings in the community proposing CAHWs are taking more money, whereas government provides the same at lower costs. They advocated using the vaccines available to them first, and only procure those that are not available. This is also model of Odisha Livelihood Mission (OLM, a government promoted livelihood body). OLM has promoted Prani Mitras like Krishi Mitras, who are to work in association with veterinary department.
- We were under impression that, once trained, the CAHWs will be able to generate demand from the community very quickly. This proved to be wrong. It required some time and efforts from PRADAN professionals to intermediate between community-CAHWs by identifying the gaps at micro-operational level. We became conscious of this fact about six months down the line. In team's like Phulbani, where we have a focus on this aspects picked up the activity even training by Dr. Sahu was not given there. However, in other teams like Nandpur, Lamtaput, J K Pur and Ambodola it has not picked up like Phulbani and Balliguda.
- Therefore, we have re-visited our strategy in the FY 2017-18. We are encouraging more numbers of CAHWs to participate and providing them a very basic level of orientation and field practice. We are having fortnightly/monthly meeting of those CAHWs for experience sharing and confidence building. They have been instructed to engage only in one hamlet for about six months to complete all the vaccination and deworming cycle. It would be treated as part of their extended on-field training. The respective PRADAN staff would also closely support the CAHW in doing things in that particular hamlet. It is expected that, this demonstration will build confidence between the community, CAHW and PRADAN.

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VETmark Initiative: Connecting Markets with Animal Health

Objectives

- To establish a market linkage between poor livestock keepers and organized markets by vaccinators and veterinarians
- To increase the adoption of vaccine and animal healthcare services among poor livestock keepers
- To develop an innovative mobile service delivery model in remote areas

In remote areas of Jharkhand state in India, access to veterinary services has not been easy. Tribal livestock farmers had to travel far from their villages when there was a dire need. This has adversely affected livestock farming in tribal regions.
The habitats of the tribal people are in remote geographical locations. Until recently, infrastructure in these areas has not been favourable for expediting basic services.

Additionally, the domain is unorganised and fragmented, making it difficult for targeted service delivery. The overall situation has not been congenial for permanent veterinary service delivery.

A project of GALVmed and Hester Biosciences Limited has been looking for an opportunity to enable service delivery in this difficult terrain.
The gap in demand and availability of veterinary professionals in government and supportive infrastructure to cover huge livestock population scattered among smallholder livestock keepers, mobile ambulatory services could support a viable supply chain and ensure delivery of veterinary services in these remote areas.

This could provide relief to tribal livestock farmers. Also, an ambulatory service could be a multi-purpose utility. It can be used for awareness generation, veterinary services and market access. Under the able leadership of veterinarians, para-veterinarians can deliver better animal healthcare services.

The opportunity arose, when GALVmed came across an ambulatory service started by Birsa Yuva Seva Samiti (BYSS). The organisation transformed a small truck into a mobile van, which has been used to deliver veterinary and agri-based services in the districts of East Singhbhum, West Singhbhum and Saraikela Kharsawan in the state.

BYSS founder Dr. Bablu Sundi initiated this mobile agro-vet clinic. Being a veterinarian from a tribal background he understood the ground level needs well. Hence, he did not restrict himself into animal healthcare service delivery only but learned agriculture and expanded in to agriculture advisory services as well. This combination gave the initiative a rare edge.

GALVmed utilised the opportunity to initiate service delivery at the ground level in these districts. It provided the tools for awareness generation, such as pocket projectors for video shows, and with the help of Hester Biosciences, it ensured timely delivery of medicines and vaccines.

Now, with the help of GALVmed and Hester, BYSS offers animal healthcare services to all smallholder farmers raising poultry (mainly indigenous), goat, sheep, pigs, cattle and buffalo. These animal health care services encompasses treatment, vaccination and advisory for nutrition and husbandry aspect in all animals.

The team has not only extended veterinary services with Mobile Agrovet Clinic, but they are also giving overall market linkage solutions to local farmers.

This coming together of veterinary and market access, with the help of GALVmed and Hester, has been termed VETmark.

BYSS, led by Dr. Sundi, established a clinic in Dumaria Block of East Singbhum in 2013. The same year, they started an ambulance service for ailing animals.

After receiving support from GALVmed-Hester, Dr. Sundi started providing other facilities as well, such as disseminating information about governmental and non-governmental projects related to animal husbandry and animal produce and making the villagers aware about seasonal diseases in birds and animals and their remedies. He began to give audio-visual training to the master trainers through pocket projector.

In the last few years, Dr. Sundi expanded his team, by involving local educated unemployed youth. According to Dr. Sundi, with the help of his ten-member team, the effort has now been spread across 250 villages of Jharkhand state.

- Poultry: vaccinated against Newcastle disease (120,300 birds), 15033 birds vaccinated for Fowl Pox and 10,694 birds were dewormed
- Cattle: deworming (2977); bacterial diseases like Haemorrhagic septicaemia HS and Black Quarter BQ vaccination (2759)
- Goats: deworming 13227 and vaccination against enterotoxemia disease (646), PPR vaccination in 17,510 goats
- Pigs: deworming 2500

Under the VETmark Project, an easy mechanism for market linkage has been initiated. Those poultry and livestock farmers who could not sell their produce profitably, are now reaping the benefits of this effort. The BYSS vaccinators purchase the chickens from the villagers and sell them at town or city markets.

This saves the farmers from middlemen and ensures that they receive the right price for their produce. Also, they don't have to travel to markets, which are often far away from their homes.

Through the support he has been getting from GALVmed, Hester and the villagers, Dr. Sundi aspires to bring his Mobile Agrovet Clinic to every village of Jharkhand.

He exemplifies the success that can be achieved when veterinarians actively participate in service delivery at the grassroots and broaden the scope of services.

Animal healthcare camps in remote areas (Mobile)

- Awareness creation in remote areas
- Free advisory services to farmers but products will be charged
- Reach of healthcare services in remote areas

Vaccination and Deworming

- ND and PPR Vaccination and deworming campaigns
- Mass awareness and demand generation

Training to Hester vaccinators and others para veterinarians

- Quarterly training to Hester vaccinators, if required
- Development of vaccinators in unserved areas

Market Creation

- Exclusive country bird sale-cum-retail agrovet shop
- Fair price to farmers for bird sale
- Increased income of vaccinators by sale of AH products and vaccination

Fig 9. VETmark Initiative Connecting Markets with Animal Health

	*VETmark vaccinators									
Districts	East Singhbhum					West Singhbhum-Sariakela				
Vaccines	VM-1	VM-2	VM-3	VM-4	VM-5	VM-6	VM-7	VM-8	VM-9	VM-10
Newcastle Disease (ND)	13178	16596	8347	6685	8154	9026	17056	15003	10113	16142
Fowl Pox	1806	1795	1043	723	1480	1271	1953	1870	1045	2047
HS &BQ	320	322	212	175	294	298	361	260	205	312
Enterotoxemia (ET)	27	88	70	69	59	76	69	81	61	46
PPR	1700	1831	1650	1585	1621	1867	1969	1681	1691	1915

Table 6. Total number of animals vaccinated and types of vaccine used during the VETmark project

VETmark vaccinator	Animals / Birds Dewormed					Total
	SHEEP	DESI BIRDS	GOAT	PIG	CATTLE	
VM-1	425	1346	1109	241	325	3446
VM-2	554	1141	944	279	343	3261
VM-3	395	1081	903	260	232	2871
VM-4	427	821	650	268	257	2423
VM-5	394	775	608	326	238	2341
VM-6	413	1231	1001	244	278	3167
VM-7	435	935	951	175	388	2884
VM-8	497	1378	1054	237	310	3476
VM-9	422	752	645	243	264	2326
VM-10	441	1234	959	227	342	3203

Table 7. Total number of birds and animals dewormed during VETmark project

Figure 10
Health camp by Dr Bablu Sundi in the field outside the village in remote area

Figure 11
Animal treatment in the remote areas

Figure 12
Awareness program in the heart of village

Figure 13
PPR vaccination in remote areas with vaccinators

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Examples of awareness and sensitisation approaches

Awareness program of ND vaccination in backyard poultry at village level (meeting with farmers individually or groups) was done through sabha, projector-documentary films, wall writing or slogan and by loudspeaker announcements.

Various messages were created to increase awareness not only for vaccination but also to promote backyard poultry farming.

- Management for backyard poultry faming
- Disease and its prevention / vaccination
- Economics of vaccine in backyard poultry
- Along with awareness, distributed bamboo feeders and drinkers to the farmers free of cost

The various methods for awareness include:

- Pico projectors portable device to project the video documentary shows was distributed to the team. This proved to be very effective and tool to reach the villagers.
- Audio announcement at selected places in the project area were included in the awareness creation. The audio system mounted on auto rickshaw, bicycles and other motor vehicles were used to spread the message in the field.
- Weekly markets commonly known as Haat meetings were used as media for awareness creation
- Radio Spot
- In most of the villages there are women Self Help Groups they are termed as Mahila Samush in local language. Meetings at these SHGS proved very important for spreading awareness.
- Another approach adopted was Wall Paintings and Wall Writing. With pictorial displays and innovative catchy slogans with message on vaccination and other issues related to backyard livestock were displayed at thousands of places in these 42 districts. Of this wall writing was very economic and easy mode as even the service providers could write the slogans.
- Flex banners were also affixed at many places. Though this was very effective but cost was little high. A peculiar issue with the flex banners was villagers will tear the banner and used them as curtains or for other use.
- A very innovative animation book was designed and distributed in the villages. The mascot used in the book was termed as Murgi Mitra (Friend of Chicken). The book was targeted at children so that they could influence their parents for adopting vaccination.
- Murgi mitra caps were also distributed to the villagers.
- A unique campaign was run in Chhattisgarh to create awareness by mobile video van.
- Print material especially pamphlets distribution also used as one of the tools.
- The team distributed bamboo feeder and drinker made out of used plastic bottles and cans so that the villagers can feed their chicken and distribute water easily
- Campaigns with NGOs also effective mode not only for awareness creation but for service delivery as well.
- These small tools created interest and curiosity amongst the rural masses. Mike announcements, wall paintings and meetings proved to be the most effective tools to attract the attention of these rural masses.
- The authorities and other government related agencies had very limited role in vaccine delivery under our project. They were indirectly involved in the process.

Figure 14 and 15 Audio Announcement by loudspeakers

Figure 16.Orientation Meet

Figure 17.Wall Writing

Figure 18 and 19 Feeders and drinkers distribution

Figure 20 and 21 Bamboo Poultry Houses

18

Innovative Campaign: Video On Wheel

Unique chicken vaccination awareness media campaign

- Video on Wheel campaign was launched to create mass awareness for Thermo-tolerant LaSota vaccine administration against Newcastle Disease, a life-threatening disease of poultry, among tribal hen-keepers of Chhattisgarh region of India from 12 December 2016 to 2 January 2017.
- During the 22 days of campaign (including 4 days of pre-counting testing and 1 day travel time from Bastar to Ambikapur), chicken vaccination films were shown at 5 to 7 places everyday and hence a direct communication was established with the villagers.
- From 12 to 15 December 2016, under pre-testing, an audio-van covered 27 villages panchayats, some weekly markets of Jagdalpur and Kondagaon and vaccination films were shown through projectors, and a direct communication was established with the local villagers for chicken vaccination to prevent Newcastle Disease
- From 16 December, a colourful video-van was used to show the films. People started to gather around it and watch the video films, after which the team members of Hester addressed audience queries. Along with vaccination, the team members talked to the villagers about healthy poultry keeping methods and introduced skilled vaccinators, trained by Hester to them.
- During this awareness round, our Chicken Vaccination Awareness Campaign video van covered 5 districts of Chhattisgarh Jagdalpur (Bastar), Kondagaon, Surajpur, Sarguja and some part of Jashpur. During this campaign we made our presence in 137 gram panchayats, weekly markets. We covered a distance of 2672 km under this campaign.
- This campaign allowed us to develop direct connect with more than 6000 people and indirectly facilitated the reach of vaccination campaign reach to more than 50,000 poultry keepers. The number can be deduced from the fact that village head and villagers assured that they will spread the message of the campaign to other fellow villagers.
- On an average 35-40% village population was present in every campaign. Out of this, women constituted 37% and children about 10%. However, at many places hundreds of school kids were present during the interaction while some areas garnered female majority of 90 percent.

Figure 22.Glimpses of Video Van Campaign

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Gender Inclusion

One of the important observation is that women play a pivotal role in backyard livestock keeping. In this project we ensured that women participation both at livestock keeper as well as service provider level should be substantial.

It is a worldwide accepted fact that a society improves when its' women are allowed access to education, skill and training. In the rural and grass root level this objective is best achieved by imparting training to women on health and immunisation management of BYP.

Women are the ones who take care of the chicken in the house, they are attached to them and rear them as their own child and are emotionally attached to them. All the hard work to rear the backyard livestock is done by women but irony is even after so much of efforts they are deprived and subjected to abuse.

The collaborations with JSLPS and Pathe Pathshala proved to be important as they also emphasised on women participation to BYP. JSLPS trained 750 and Pathe Pathshala trained 111 women service providers.

Traditionally the sales promotion in field is considered to be male activity but Nutan Ekka was recruited as Veterinary Sales Executive for Ranchi Head Quarter. She broke all fallacies and has proved to be a great resource for us. She imparted training not only to women service providers but also to men as well and is amongst highest seller of vaccine doses in the project.

The Hester team consisted of 585 women vaccinators. This process helped them to earn money and contribute towards their household expenses.


CLF (क्लस्टर संगठन)
100-120 किस्तों
V.O. ग्राम संगठन
50-60 किस्तों
समूह SHG
माहिने का आय-व्यय सुची
आय का विवरण

20

Pathe Pathshala

The peoples' university on the move

Hester associated with Dr. Balaram Sahu, the founder of Pathe Paathshala who has been awarded with National Award for his outstanding contribution in the field of Science and Technology Communication by Department of Science and Technology, Government of India for the year 2011. In the certificate awarded by the Government of India, Pathe Paathshala has been acknowledged as an outstanding and innovative method for communicating science and technology to grassroot people

The knowledge transfer methodology of Dr. Sahu has boosted the confidence of very low literate women of South Odisha teams. This helped in explaining the importance of deworming, vaccination as a preventive care and skill building through practical sessions at the villages.

Continuous guidance of Dr. Sahu on rolling out strategies like vaccination calendar, pricing of vaccination and deworming so that CAHWs can earn some revenue out of her services and others.

Objective

- On field training of women at grassroot level in Odisha on Back Yard Poultry (BYP) vaccination against deadly Ranikhet Diseases (RD) with latest trend of thermo-tolerant, user-friendly vaccines along with other allied livestock immunisation.
- In recent times, Back Yard Poultry (BYP) has become an effective weapon in reducing rural poverty and protein hunger. There are many advantages in the BYP system, of which climate resilience, free ranging, less management requirement and its presence in women domain are very important.

Activities

- Trained a total number of 111 women and 36 supervisors on BYP from 147 villages.
- In-class training on BYP, economics of BYP, poultry diseases in BYP, vaccination, deworming, LaSota vaccination in poultry, advantages of thermo stable vaccine produced by Hester, reconstitution of LaSota vaccine, cold chain maintenance, vaccination schedule of LaSota was demonstrated.
- The second in-class training was on Goat/Sheep diseases, vaccination, deworming schedule prior to vaccination.
- PPR and Goat Pox diseases with vaccination schedule with power point presentation.
- In-field training on LaSota vaccine, carrying with cold chain, reconstitution in field situation, on eye application of vaccine to poultry birds was conducted, demonstrated and practiced by the participants at the villages of Totaguda, Block-Kolnara, Dist-Rayagada.
- Sheep/goat vaccination by subcutaneous route was demonstrated followed by practice by the participants.
- Skill-Development-Game with participants
- Feedback, difficulties, doubt clearing on vaccine in total, recap, oral quiz, reaffirmation of self confidence by participants, vaccine distribution with carrier was conducted to sum up the training.

Results

All 111 women in 4 tribal districts, from 111 villages were trained both in class and infield situations on:

- BYP economics
- Poultry diseases and symptoms
- Preventive vaccination
- Cold chain issues
- Reconstitution skills in vaccines
- Do's and Don't in vaccination
- Deworming
- Oral quiz and reaffirmation of skills

Figure 24. Hester-Pathe Pathshala Team organizing training program

Observations

It is observed that women participants were serious and enthusiastic. They had the hunger to learn and earn.

The executing organisations have a mix of very cooperative, dedicated staff as well as the unmotivated.

Suggestions

- These initiatives need follow-ups on quarterly basis.
- We suggest that vaccine availability in rural at least in block quarter should be ensured for better results
- It will be pertinent to train women on other animal herbal healing practices to supplement their income
- They should be taken into confidence on local issues like ice packs availability, income supplementation etc.
- We suggest that it will be more effective if there is more cohesiveness between implementing organization and GALVmed-Hester
- We should impart training in wider range and more frequently

21

Success Stories of Women Entrepreneurs

Mariam Karketa is a housewife, residing in a typical small hemlet near Ranchi, in Jharkhand. A mother of three, she was struggling run her family.

Her husband, Uday Karketa, a farm labourer and holding a very small piece of land, was unable to generate regular income.

All her chickens died because of Tunki (local name of Newcastle Disease); thunderstorms and floods worsened the situation further.

Somebody told her in the village that Lenda (local resident in her village) has got some training to vaccinate the poultry birds which can prevent the occurrence of Tunki (Newcastle Disease). When no villager was ready to vaccinate the chicken, she borrowed few chicks from her neighborhood and got them vaccinated.

The chicks survived, grew and slowly the number increased to 102 in a few months. She sold the chicken to a nearby restaurant at a nominal price and she started making livelihood.

The number of birds kept increasing; she and her husband started selling the chicken to the nearby market, fetching a higher price than the dhaba.

Now her husband has opened a chicken dressing counter in the village where they sell 5-6 chickens daily and fetch very good price. They now own 60 chickens, 35 pigs and 3 goats. She earns 10-12 thousand monthly.

"I am able to fulfill my family responsibility thanks to vaccination, which saved my chicken. I feel very proud when I see my children going to school wearing uniform and chappals."

She now plans to purchase some land to start a small poultry and goat farm.

Figure 25.
Mariam feeding chickens while her son is ready to go to school

Figure 26.
Chicken Dressing Counter- Mariam and Uday Karketa


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Key Measureable Outputs

This section reports on the project performance against our mission and objectives set at the start of the project. It also includes updates on many other initiatives that are in place to further our mission

Achieved number of doses till July 2017

Newcastle Disease Vaccine: 71,426,104

Goat Pox Vaccine: 1,758,500

PPR Vaccine: 102,100

3PD Dewormer: 1,125,188

Fowl Pox Vaccine: 1,045,600

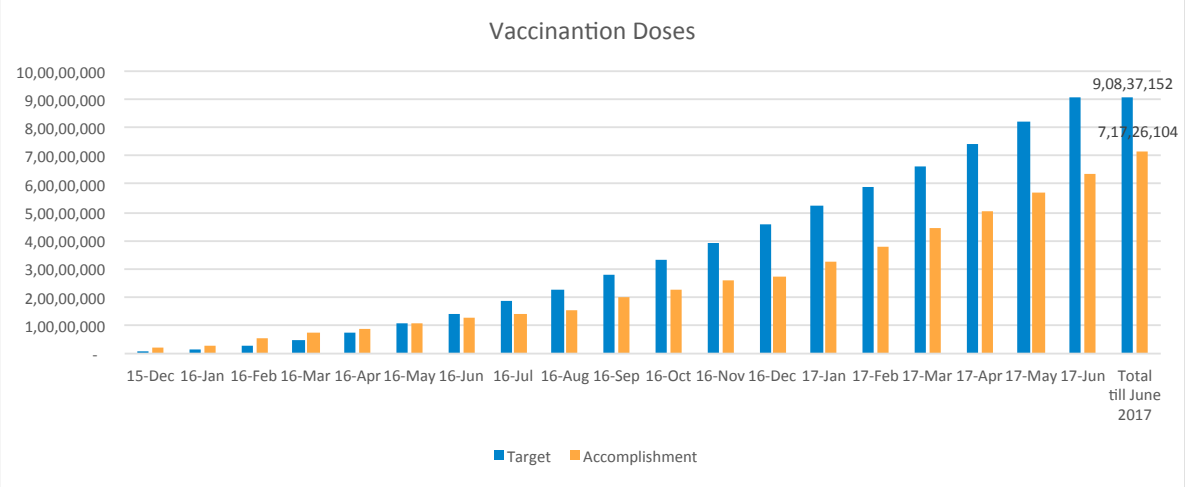

Figure 27.
Accomplishment of ND vaccination doses in comparison to targets

Key Success Factors:

- Timely availability of vaccines and other products was key to success.
- Hester created an efficient network of service delivery supported by supply chain to ensure service delivery
- Emphasis on mass awareness activities and orientation programs was very important tool for more vaccination
- The flexible approach for inclusion of NGOs and Association with different agencies proved to be helpful for vaccinators enrollment as well as ensuring more vaccination
- One of the major success factor was the collaboration with JSLPS in Jharkhand which laid the foundation of service providers enrollment
- Animal Husbandry Department of Odisha purchased Goat Pox vaccine for mass vaccination

Apart from Newcastle Disease in poultry we covered other backyard livestock species and other complementing products in the project.

Number of Household Coverage

In total 877,246 smallholders were serviced for vaccination and other health services. There was increasing trend in the household coverage on monthly basis with parallel increase in the number of household repeat in coverage. A total of 366,560 households were serviced at least twice.

Service Providers:

Total number of service providers 1991

Total number of women vaccinators 586

Out of the total 1991 service providers enrolled, 585 were females, which is close to 30%. Majority of service providers were enrolled through JSLPS and PRADAN intervention.

Number of Shops Selling Vaccines

Distributors appointed at district level 30

Retailers appointed at village and block level 147

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Vaccination Adoption Studies

It requires a lot of sustainable efforts to convince the rural livestock keepers for vaccination. Between August 2015 and June 2017, we conducted a survey to establish the status of vaccine adoption by the village livestock keepers.

Figure 28.
Selected districts for adoption studies

Selection Process:

The selection of districts was done from all three states in a total 7 districts were selected as first choice and 5 districts as backup. The criterion for selection of village was random, any two villages with less than 100 households were selected from each district for survey. Then within the selected villages, 27 households were questioned.

Households were systematically selected, each nth household, where n is the nearest to the ratio (total number of households with poultry in the village/27). For example, if the village has 159 households, the ratio is 159/27 = 5.8, or about 6, indicating that every 6th household was questioned.

Data Collection Period

- Six rounds of data collection till December 2016 including baseline survey were done
- 4 more data collection rounds till December 2017 will be completed
- Total 10 rounds of data collection are planned

Cluster analysis of survey data collected from August '15 – June '17.

- Between 149 and 218 poultry keepers were surveyed in each of 3 areas in India on their poultry keeping habits on 5 occasions.
- In the baseline readings, the following numbers of chickens were recorded:

Table 8. Cluster analysis of surveyed data from August 2015 to June 2017

Cluster	State	Baseline	
		Number of poultry	Number of households
Korba, Rajnadgaon and Dhamtari	Chattisgarh	1265	160
Koraput, Kalahandi and Kendujhar	Odisha	1968	185
Deoghar, Ranchi, Gumla and Sahibganj	Jharkhand	1295	161

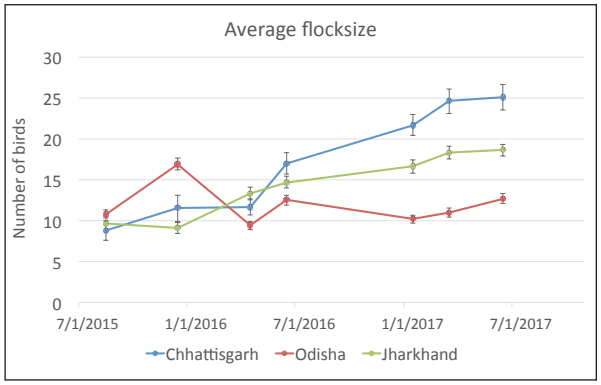
Flock Size:

There was an increase in the average flock size in all three states from baseline till the seventh survey. The impact is more visible in Chhattisgarh followed by Jharkhand. Whereas in Odisha the increase in flock size is marginal

Chhattisgarh: 8.8 to 25.1

Odisha: 10.8 to 12.7

Jharkhand: 9.7 to 18.6



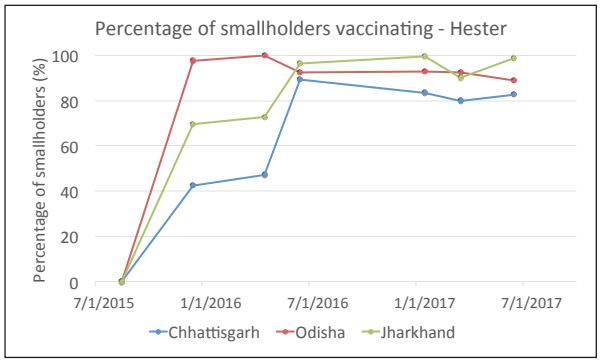
Livestock keepers vaccinating their birds (%)

The smallholders in the selected villages considering baseline data never sold chicken but this number increased and at the end of the surveys the increase is substantial, with Jharkhand leading followed by Odisha and Chhattisgarh

Chhattisgarh: 0 to 82.6

Odisha: 0 to 88.9

Jharkhand: 0 to 98.6



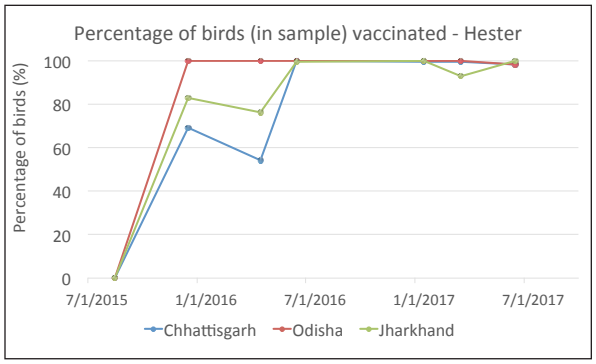
Birds in sample villages vaccinating (%)

When vaccination was started in the selected villages no birds were vaccinated before but the farmers started vaccinating their birds and the trend increased. In all the three states the similar trend was reported irrespective of the number of chicken sold

Chhattisgarh: 0 to 98.2

Odisha: 0 to 98.3

Jharkhand: 0 to 99.9



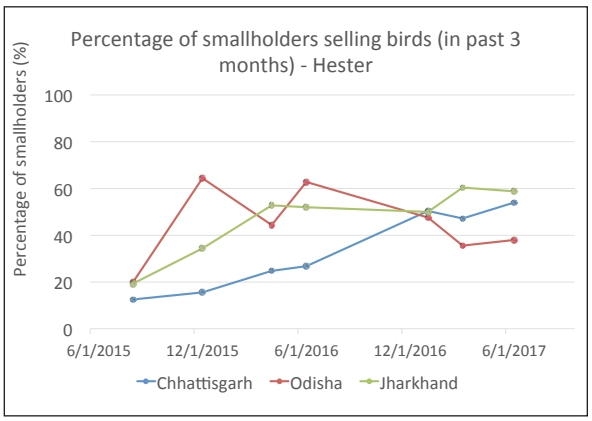
Livestock keepers selling their birds (%)

The data was collected to see how many smallholders farmers in the surveyed villages actually sold their chicken in past three months it was evident that many household started selling their birds after increase in bird population

Chhattisgarh: 12.5 to 54

Odisha: 20 to 37.7

Jharkhand: 19.3 to 58.7



Livestock keepers consuming their birds (%)

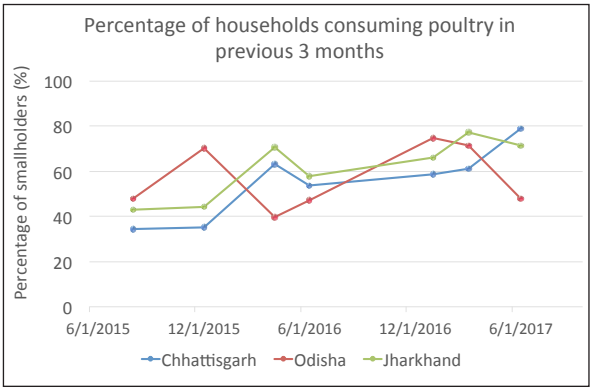
The data was collected to see how many smallholder farmers in the surveyed villages are actually consuming birds in past three months it was evident that many household started consuming their birds after increase in bird population

Chhattisgarh: 34.4 to 78.9

Odisha: 48.1 to 48.1

Jharkhand: 42.9 to 71.6

Jharkhand: 3.9 to 4.4



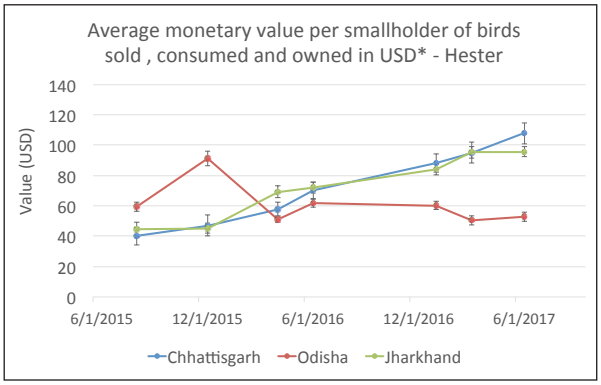
Average monetary value per smallholder of birds sold, consumed and owned in USD (assuming the bird value at USD 4)

The data was collected to analyse the monetary gains made by the smallholders in all 7 phases of surveys it was evident that there was increase in the monetary value earned by smallholders

Chhattisgarh: 40 to 107.7

Odisha: 59 to 52.7

Jharkhand: 44.6 to 95.6



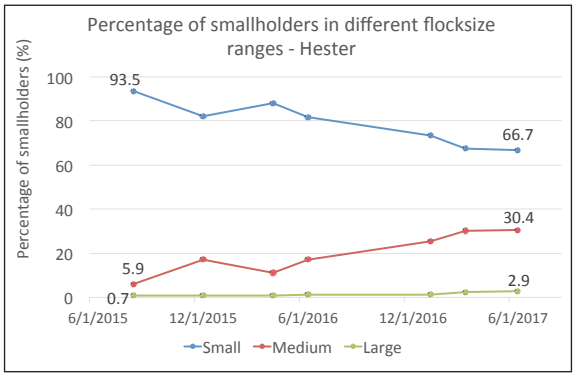
Livestock keepers in different flock size ranges (%)

The data was collected to see how many smallholder farmers in the surveyed villages have graduated from Small to medium or large flock sizes after increase in bird population. For the survey purpose we categorised flock sizes as follows small having birds 1-20 birds, medium keeping 21 to 50 birds and large flock means more than 50 birds. It was reported that there is clear shift from small flock size to medium but nominal population shifted from medium to large flock size.

Small 93,5 to 66.7

Medium 5.9 to 30.4

Large 0.7 to 2.9



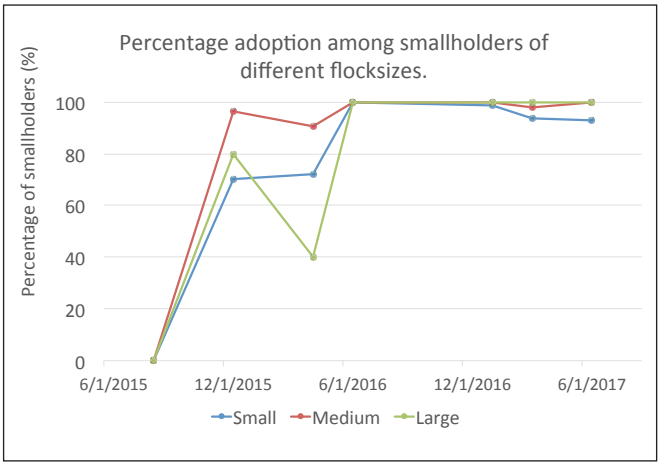
Adoption in smallholders of different flock size ranges (%)

The data was collected to compare between the different categories of livestock keepers adopting vaccine. The survey suggested that irrespective of the category of smallholders the vaccine adoption was same.

Small 0 to 98.8

Medium 0 to 100

Large 0 to 100



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Sero-monitoring

Importance of Thermo-tolerant Newcastle Disease Vaccine in backyard chickens

Introduction

Newcastle Disease (ND) is widely known poultry disease all over the world. It causes high economic losses even in backyard poultry. The purpose of present study was to estimate specific antibody response of backyard poultry chickens to thermo-tolerant vaccine of ND. Presence of antibodies before vaccination was determined by haemagglutination-inhibition (HI) test and vaccine was inoculated by intraocular route to birds of vaccinated group. Blood was withdrawn at intervals of 1 month and generation of specific antibodies to the ND antigen was measured by HI test. The results showed significant increase in antibody titre at 1 month time in vaccinated birds and protective up to 3 months of vaccination in the birds. The study suggests that it is necessary to revaccination at 3 months interval in the backyard chickens, as they are highly susceptible to ND.

Materials and Methods

60 healthy backyard chickens were taken from Chhattisgarh, 117 healthy backyard chickens were taken from Jharkhand and 119 healthy chickens were taken from Odisha for the study (Fig-1).

All birds were subjected to free supply of feed and water ad libitum and observed daily throughout study.

Vaccination, Blood Collection and Testing

All chickens were vaccinated with one dose of thermo-tolerant LaSota vaccine from Hester Biosciences Limited, India by intraocular route. Blood samples were collected from all birds at 0 day, 1 and 3 months after vaccination. All serum samples were subjected to haemagglutination-inhibition (HI) test at Hester Biosciences Limited, Anand laboratory. Specific antibodies were measured through HI against Newcastle Disease antigen (Maine Biologicals Limited, USA) by preparing 4 HA units of serum. The result was reported as log2 HI: Abdu et al. (2012).

Results

Pre-vaccination titre at 0 days of Chhattisgarh, Jharkhand and Odisha was 1.78, 1.91 and 1.85 respectively. The HI titre at 1 month post collection was 5.88, 5.79 and 5.98 respectively for Chhattisgarh, Jharkhand and Odisha. After 3 months, titre were 4.11, 4.02 and 4.04 Chhattisgarh, Jharkhand and Odisha (Fig-2). So, the booster vaccine is recommended at 3 months interval.

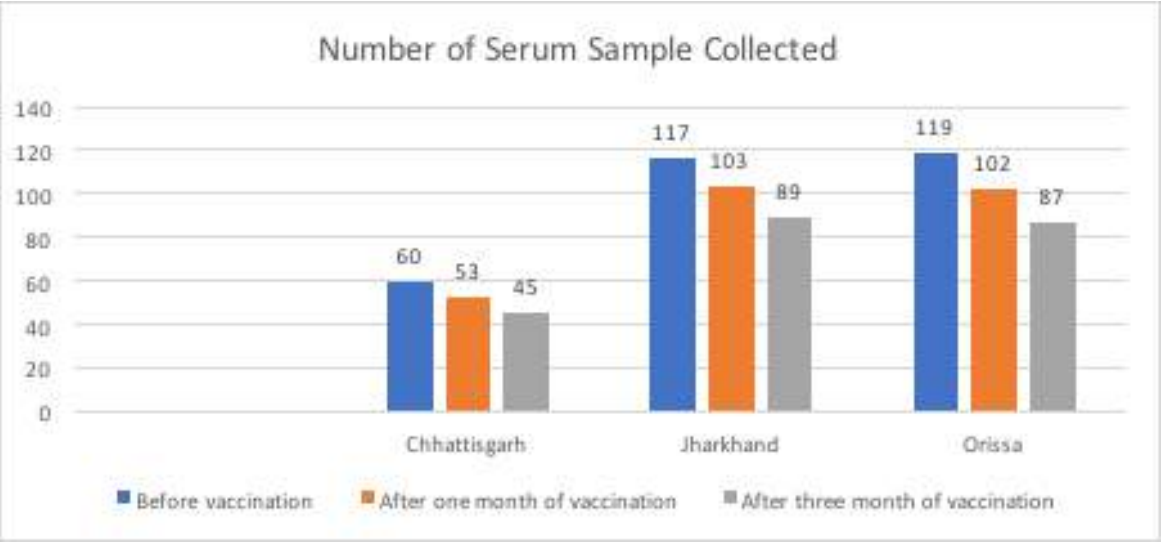

Figure 36.

The figure showing the number of serum samples collected from Chhattisgarh, Jharkhand and Odisha

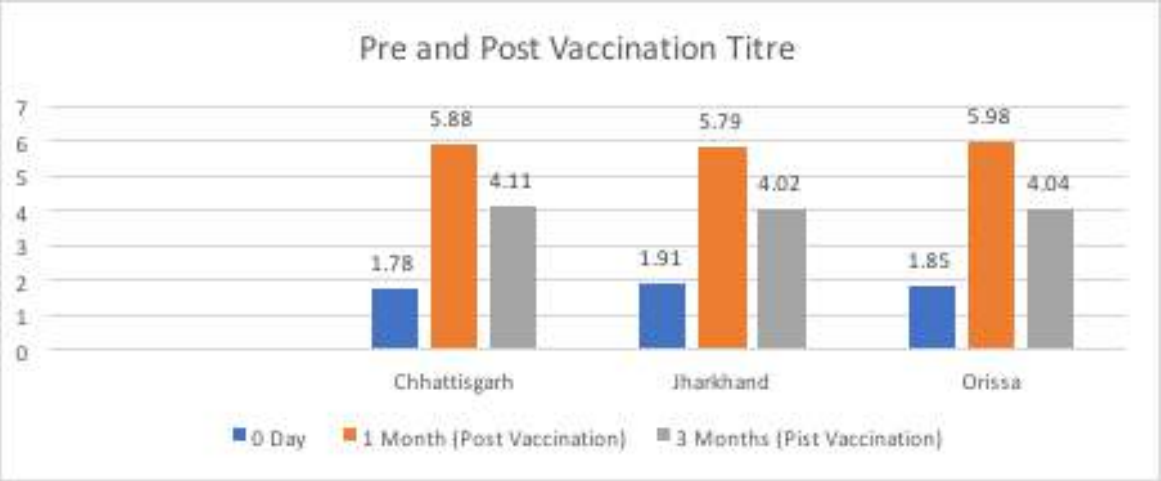

Figure 37.

The figure showing the titre to ND live vaccine at 0 day; 1 and 3 month post vaccination

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Sustainability of Project

The general experience is when developmental organisation executes a project in a particular region, chances are high that the process will be continued only till the allocated funds last. In view of this, when Hester and GALVmed came together for the Knowledge-Enhanced Backyard Farming project, there was a pre-understanding that the project must be self-sustainable, to be truly effective.

Hester being a commercially sound corporate house, had the infrastructure, network and outreach to ensure continual availability of the vaccine. It developed a vaccine that can survive up to 7 days in room temperature, which made storage and transportation easier and more viable. It also provided refrigerators to select local stockists to store the vaccine for longer periods.

The big picture vision and comprehensive plans of action employed by Hester has ensured value-additions and profits for all involved. For the farmer, vaccination ensures healthier chickens, resulting in better earnings and better nutrition for his family. Vaccinators are chosen from the villages, trained and appointed, giving them a good livelihood. The local chemists and stockists are supplied vaccines, ensuring additional earnings for them, and timely vaccinations for the farmers.

The entire chain and cycle is benefitted – from Super Distributors to Local Retailers to Vaccinators and end-users (farmers). This also ensures that as the demand is generated, the vaccine and vaccinator are readily available to cater to the need.

Important take home notes from the project

- Paid vaccination was implemented at smallholders level for the first time in most of the project area territories. The community is used to free or no vaccinations. This was not only selling a service but a change of mindset. Inspite of many challenges we achieved fair success at grassroot level
- There is visible increase in the population in many villages under the project area; herd behavior was noticed as farmers were influenced with the reduction in the mortality of their fellow livestock keepers' chicken
- Use of electronic media and mobile technology can be a useful tool to spread awareness and knowledge The awareness materials were developed in Hindi language but if the same is developed in local tribal dialect it can be even more effective.
- Vaccination alone cannot suffice the livelihood requirements of the service providers, adding more vaccines, health products with coverage of more livestock species will be more useful. The service providers' services can be used for multiple activities even selling of birds.
- Official support from government department is crucial for better distribution and outreach. If the government departments are involved and lend full support, vaccination can easily increase in numbers and effectiveness
- The retail level promotion and regular rewards for service providers will have better impact
- Range of product offerings need to increase to give scope of more earnings to the service providers and generation of more sales volumes for the retailers.This could have helped in more channel creation
- In spite of the constrains of movement, women vaccinators work more diligently than their male counterparts. This can be attributed to the fact that an additional income of INR 1,500 to 2,000 is motivating factor for females but male service providers look for more income so their interest weakens.
- Regular follow up with the service providers is crucial to the overall effectiveness and support as adoption is very slow process and change of the mind-set takes time, persistence is very important. Hand-holding helps check drop outs.
- Awareness program and meetings at regular intervals is the key to the success of the programme
- The lower compensation of the vaccinators discouraged their involvement to a larger extent

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Recommend-ations for future improvement of delivery and sustainability of similar projects

- Inclusion of more species and product range will create value.This project was designed with Ranikhet Disease at the forefront, for the sustainability it is important to include other species and products in the project. It will provide more opportunities to all stake holders in delivery value chain as well as supply chain.
- Awareness creation-backyard livestock as a dependable livelihood tool.The message need to be embedded in rural parts that besides income generation, rural backyard poultry provides nutrition supplementation in the form of valuable animal protein and empowers women.
- In due course of time the livestock keepers need to upgrade from backyard farming to smallholders farming and then graduate to a commercial farmers in due course of time.The training curriculum for service providers should be developed in a way that they are able to convince farmers about the economics of vaccination as well chicken
- Market linkage should be done to ensure that the villagers are able to sell their produce easily and fetch right price of their output
- Entrepreneurship development of the service providers - The service providers take up vaccination as the secondary activity, through training they need to be skilled as complete integrators and single window for livestock keepers right from vaccine and health product delivery to marketing of farmers' produce. They should be skilled as the entrepreneurs along with technical know how of the product delivery.
- For scavenger and free-range small poultry farmer thermo-tolerant LaSota vaccine is important but gradually need to transit to normal LaSota vaccine especially in the areas where infrastructure is created. It will reduce the cost for livestock keeper and increase margins for service providers
- Thermo-tolerant feature should be added to PPR and also a change in the mode of administration is recommended to make it convenient viz nasal spray rather than injection. Vaccines should have an economical price.


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Impacts & Benefits


समूह का
1. नियमित साप्ताहिक बैठक
2. नियमित साप्ताहिक बचत
3. आंतरिक उधार
HESTER

Initially the farmers were hesitant to adopt vaccination but gradually changed when they observed that after regular vaccination, the disease outbreaks were not recurring and led to a rise in bird population.

We also struggled a lot in finding and enrolling service providers'; however now many unemployed youth want to associate.

Animal Husbandry Department and NGOs were less supportive and cooperating in the early phase and were apprehensive. But after noticing the good impact on backyard poultry, their attitudes slowly changed. This was particularly effective with the NGOs as farmers demanded these vaccines from them.

Another good impact is the added good nutrition source: farmers are now consuming their own desi bird instead of broiler and layer and by selling them, they are receiving good income.

Many vaccinators are now earning more than INR 5000 to 10,000 and thereby improving their lifestyle and are able to send their children to good schools, purchase two-wheelers and are financially comfortable compared to pre-project days. Now they are appreciating the business and want regular vaccinations.

In adopting local NGOs workers they got some extra earnings and expecting continuous partnerships.

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Conclusion & Future Vision

The Hester-GALVmed Backyard Poultry & Livestock Farming Initiative has enabled backyard farmers in the three target states to improve their earnings and check malnutrition in their families, leading to better health, peace of mind and optimism.

Hester has created a sustainable supply chain connecting the remote areas of these states, and created stable employment opportunities for hundreds of rural youth as trained service providers, reinforced with the satisfaction of being part of a social development movement.

Healthier animals, healthier humans, happier homes, harmonious societies, prosperous villages. It's a chain of goodness that inspires Hester and GALVmed to reach out to more and more states and change lives.

- Government bodies should be convinced to incorporate changes in the policy and recognize the service providers to vaccinate the birds and other livestock
- Keeping the project and its future impact in view, this project should be sustained for effective control of the disease in area of operation and also to enhance better nutritional and social status of tribal community.
- There should be some incentivising and recognition to the service providers so as to control the drop out and keep them engaged in service delivery
- More area should be covered and economical Thermo-tolerant vaccine should be introduced.
- Focus should be on entrepreneurial model for service providers which should be mixed bag of vaccination and health service delivery in poultry as well as other species of livestock, selling feed and other related inputs and involvement in final marketing of farmers' produce. This will increase the scope of income generation for them and will inspire them to continued service delivery.
- In future projects Thermo-tolerant feature need to be added to other products as well specially PPR. A combination vaccine for Fowl Pox and Ranikhet Disease should be developed.
- The training curriculum should be made more comprehensive and should emphasize on poultry and other species with focus on entrepreneurial skill development. Need to press policy makers to combine these service providers with the Skill Development Programs run by government of India.
- The resources from National Service Scheme (NSS) a Government of India initiative can be very useful as service providers as their profile and educational background is suitable for such service delivery

It is not the end of the story, but rather a good beginning.

We need to strengthen the foundation laid and use the infrastructure created for more efficient delivery in the rural parts.

It is A Mission On The March and we need to learn from the mistakes made and continue with the good work.

We are sure that joint efforts of Hester-GALVmed, partners and government support will continue yielding desired outcomes and benefit the underprivileged rural communities.

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