A Community-Led Partnership for Strengthening Routine Immunization in Hard-to-Reach Pastoralist Communities: Best Practice From Awash Fentale Woreda

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Abbreviations

CHP	comprehensive health post
EFY	Ethiopian fiscal year
EPI	Expanded Programme on Immunization
HC	health center
HEW	health extension worker
MCV1	first dose of measles-containing vaccine
Penta1	first dose of pentavalent vaccine
Penta3	third dose of pentavalent vaccine
VHL	village health leader

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1. Introduction

Routine immunization remains one of the most cost-effective public health interventions for preventing vaccine-preventable diseases, reducing child mortality, and ensuring equitable opportunities for children to survive and thrive. Despite Ethiopia's progress in expanding immunization services, reaching children in pastoralist and other hard-to-reach communities remains challenging. Geographic isolation, seasonal mobility, weak infrastructure, and limited access to health services often result in missed vaccinations and incomplete immunization schedules.

Awash Fentale Woreda in the Afar Region is predominantly inhabited by pastoralist and semi-pastoralist communities whose livelihoods depend on seasonal livestock movement in search of pasture and water. Frequent population movement, dispersed settlements, harsh climatic conditions, poor roads, and long distances to health facilities make routine immunization delivery particularly difficult. These conditions complicate the timely identification of pregnant women, newborns, zero-dose, under-vaccinated, and defaulting children, while disrupting outreach services and continuity of care.

Village health leaders (VHLs) occupy a trusted position within these communities and possess detailed knowledge of household locations, migration patterns, family structures, and local networks. Health extension workers (HEWs), meanwhile, are frontline providers of primary health care, including routine immunization. However, their complementary strengths had not previously been systematically leveraged.

To address these challenges, PATH, in collaboration with Awash Fentale Woreda, introduced a structured collaboration between VHLs and HEWs to strengthen routine immunization in remote pastoralist communities. Implemented through Sabure Health Center, Boloyta Health Center, and Doho Comprehensive Health Post, the intervention established clear roles and strengthened coordination between communities and the formal health system. Key activities included VHL capacity-building, joint microplanning, community-based identification and registration of eligible children, household follow-up, community mobilization, defaulter tracing, outreach planning, and motorcycle-supported transportation to remote settlements.

By placing trusted community structures at the center of immunization planning and implementation, the approach transformed local knowledge into actionable public health information. The strengthened partnership enabled health workers to better anticipate population movements, locate eligible children, improve outreach services, and follow up with children who missed vaccination appointments.

This best practice document highlights how VHL–HEW collaboration strengthened routine immunization in pastoralist settings and demonstrates how community-driven solutions can improve health-system responsiveness, equity, and access to lifesaving vaccines among hard-to-reach populations.

2. Problem statement

Routine immunization delivery in Awash Fentale Woreda has historically been constrained by geographic, logistical, and health-system challenges associated with pastoralist settings. The predominantly mobile population frequently relocates in search of grazing land and water, making it difficult for health workers to maintain accurate household information, identify newly arrived families, and provide vaccines according to the national schedule. As a result, many children remained unreached, received vaccines late, or dropped out before completing the vaccination schedule.

Although village health leaders (VHLs) had extensive knowledge of community movements, household composition, and local social dynamics, this information was not systematically integrated into routine immunization planning and service delivery. Communication between VHLs and health extension workers (HEWs) was largely informal, limiting opportunities to identify eligible children, trace defaulters, anticipate seasonal migration, and coordinate outreach services. Consequently, routine microplans often lacked the real-time community information needed to effectively reach mobile populations.

Health workers also faced severe operational constraints, including poor roads, long travel distances, difficult terrain, and limited transportation options. These barriers frequently delayed or disrupted outreach sessions, and some remote settlements could only be reached after several hours of travel on foot. This reduced the frequency and timeliness of vaccination services and increased the likelihood of missing children in isolated communities.

Key challenges prior to the intervention included:

- Difficulty identifying and tracking eligible children in highly mobile pastoralist communities.
- Limited identification and follow-up of zero-dose, under-vaccinated, and defaulting children.
- Weak coordination and information sharing between VHLs and HEWs.
- Limited use of community-generated information in immunization microplanning and outreach scheduling.
- Inadequate consideration of seasonal migration patterns during service planning.
- Frequent disruption or postponement of outreach sessions due to transportation and logistical constraints.
- Poor road infrastructure and limited reliable transportation to remote settlements.
- Long travel times for frontline health workers, who often had to travel on foot across difficult terrain.
- Reduced continuity of immunization services for mobile pastoralist families, increasing the risk of missed vaccination opportunities.

These interconnected barriers highlighted the need for an integrated, community-centered approach to bridge the gap between pastoralist communities and the formal health system. Strengthening VHL–HEW collaboration provided an opportunity to improve child identification, outreach planning, continuity of care, and equitable access to immunization services, ensuring that children were not missed because of where they lived or how often their communities moved.

2.1. Baseline routine immunization performance

Baseline data from Ethiopian fiscal year (EFY) 2017 showed substantial variation in routine immunization coverage across the three intervention sites (Table 1).

Table 1. Baseline routine immunization coverage by facility, Ethiopian fiscal year 2017.

Health facility	Target population	Penta1	Penta3	MCV1
Sabure Health Center	360	64%	64%	63%
Boloyta Health Center	168	40%	30%	33%
Doho Comprehensive Health Post	144	156%	156%	131%

Abbreviations: MCV1, first dose of measles-containing vaccine; Penta1, first dose of pentavalent vaccine; Penta3, third dose of pentavalent vaccine

2.2. Baseline zero-dose and under-vaccinated children

The baseline assessment identified a substantial number of children who either had never received vaccinations or had not completed their recommended vaccination schedule (Table 2).

Table 2. Baseline counts of zero-dose and under-vaccinated children by facility.

Health facility	Indicator category	Baseline count
Sabure Health Center	Zero-dose children	51
Sabure Health Center	Under-vaccinated children	96
Boloyta Health Center	Zero-dose children	375
Boloyta Health Center	Under-vaccinated children	410
Doho Comprehensive Health Post	Zero-dose children	45
Doho Comprehensive Health Post	Under-vaccinated children	126
Overall total	**Zero-dose children**	**471**
Overall total	**Under-vaccinated children**	**632**

Across the three intervention sites, the baseline assessment identified 471 zero-dose children and 632 under-vaccinated children, highlighting substantial gaps in routine immunization coverage among pastoralist communities.

The situation was most pronounced at Boloyta Health Center, where 375 zero-dose children and 410 under-vaccinated children were identified. These findings demonstrated that facility-based service delivery alone was insufficient to identify and reach all eligible children within dispersed, highly mobile pastoralist populations. Many children remained outside the reach of routine immunization services because their families frequently moved, settlements were geographically isolated, and timely information on population movements was not available to health workers.

The underlying challenge extended beyond the physical availability of vaccination services. A critical gap existed in coordination between community structures and the formal health system. VHLs possessed detailed knowledge of household locations, seasonal migration patterns, births, and community dynamics, yet this valuable information was not systematically integrated into HEWs' routine microplanning, child tracking, or outreach implementation. As a result, opportunities to identify zero-dose and under-vaccinated children and to provide timely follow-up were frequently missed.

Operational constraints further compounded these challenges. Poor road infrastructure, long travel distances, difficult terrain, and limited transportation reduced the ability of HEWs and other frontline health workers to conduct regular outreach services and reach remote settlements. Although quantitative baseline data on outreach session completion were unavailable, routine program experience consistently indicated that transportation and access barriers severely constrained the frequency and timeliness of outreach service delivery.

In response, the intervention introduced structured collaboration between VHLs and HEWs. This was complemented by community-based child identification and tracking, joint microplanning, strengthened community mobilization, and motorcycle-supported outreach. By linking trusted community knowledge with the formal health system, the approach sought to improve the identification and follow-up of eligible children, enhance the efficiency of outreach services, and increase equitable access to routine immunization for pastoralist populations living in hard-to-reach areas.

3. Intervention objectives

General objective

To improve equitable access to and uptake of routine immunization among children in hard-to-reach pastoralist communities of Awash Fentale Woreda through strengthened collaboration between village health leaders (VHLs) and health extension workers (HEWs).

Specific objectives

- To strengthen VHL–HEW collaboration for identifying, tracking, referring, and following up with pregnant women, newborns, zero-dose, under-vaccinated, and defaulting children.
- To integrate community knowledge on household locations, population movement, and seasonal migration into routine immunization microplanning and outreach planning.
- To strengthen community-based mobilization, vaccination reminders, and defaulter tracing to improve timely completion of routine immunization schedules.
- To improve the reach, continuity, and responsiveness of outreach immunization services in remote and mobile pastoralist communities.
- To reduce geographic and logistical barriers to vaccination and improve equitable access to routine immunization services among hard-to-reach children.

3.1. Intervention sites

The intervention was implemented at three selected routine immunization service-delivery sites (Table 3).

Table 3. Intervention sites and annual target populations, 2018.

Facility	Type	2018 annual target population
Sabure Health Center	Health center	156
Boloyta Health Center	Health center	192
Doho Comprehensive Health Post	Comprehensive health post	84

The intervention primarily targeted children under one year of age, particularly zero-dose, under-vaccinated, and defaulting children. The intervention also aimed to benefit caregivers, VHLs, HEWs, health facility staff, and the Woreda Health Office.

4. Implementation strategy and approach

Rather than creating parallel community structures, the intervention strengthened and institutionalized collaboration between existing village health leaders (VHLs) and health extension workers (HEWs) to improve routine immunization service delivery. The approach integrated community knowledge into routine planning, child tracking, outreach implementation, and follow-up through five mutually reinforcing strategies:

4.1. Strengthening the capacity of village health leaders

VHLs received practical orientation on routine immunization, child registration and tracking, identification of zero-dose and under-vaccinated children, defaulter tracing, community mobilization, interpersonal communication, and reporting. The training equipped VHLs to move beyond traditional community mobilization and become active partners in identifying eligible children, supporting outreach services, and linking households with the health system.

4.2. Institutionalizing village health leader roles

To ensure consistent community engagement, VHLs were assigned clearly defined responsibilities within the routine immunization system. Their roles included:

- Identifying newborns and eligible children.
- Tracing zero-dose and defaulting children.
- Mobilizing caregivers prior to outreach sessions.
- Reporting seasonal population movements and newly established settlements.
- Contributing to community mapping and joint microplanning.
- Supporting the linkage of newborns to immunization services,
- Providing constructive feedback following outreach activities.

Formalizing these responsibilities strengthened accountability and positioned VHLs as an integral part of routine immunization service delivery.

4.3. Strengthening VHL–HEW collaboration

The intervention established a structured coordination mechanism between VHLs and HEWs, enabling regular communication, joint microplanning, shared outreach scheduling, child tracking, defaulter follow-up, community mobilization, and performance reviews. Community-generated information was routinely incorporated into outreach planning, allowing health workers to adapt service delivery to seasonal migration patterns and changing settlement locations.

This two-way communication pathway improved health-system responsiveness:

Community - Village Health Leader → Health Extension Worker / Facility → Joint Planning → Outreach Delivery → Community Feedback-→ Community…

4.4. Community-based child identification and follow-up

VHLs worked closely with HEWs to identify and register eligible children at the household level, assess vaccination status, trace zero-dose and under-vaccinated children, mobilize caregivers, and update child records post-vaccination. This community-based tracking system ensured that children who might otherwise have been missed due to population mobility were systematically linked to vaccination services in a timely manner.

4.5. Motorcycle-supported outreach

Recognizing transportation as a primary barrier to service delivery, the Afar Regional Health Bureau—in collaboration with the Woreda Health Office and development partners—provided four motorcycles to support outreach implementation. The motorcycles enabled health workers and VHLs to reach remote settlements efficiently, transport vaccines and supplies, support community mobilization, identify missed children, and strengthen overall operational linkages.

Participating VHLs dedicated approximately 10 days per month to immunization-related transport and outreach support while maintaining their regular livelihoods. This flexible arrangement ensured sustained community participation without disrupting household income.

5. Results

5.1. Qualitative programmatic shifts

Table 4. Qualitative changes in routine immunization implementation following strengthened VHL–HEW collaboration.

Status before intervention	Status after strengthening VHL–HEW collaboration
Limited systematic community-level child tracking.	VHLs actively identify and report eligible, zero-dose, under-vaccinated, and missed children.
Difficult to trace movements of mobile communities.	VHLs provide real-time data on population movement and new settlement locations.
Outreach services frequently disrupted in remote areas.	Outreach continuity significantly improved at Sabure and Boloyta.
Health workers traveled long distances on foot.	Motorcycle support reduced travel time and expanded access to remote sites.
Weak linkage between community data and facility microplans.	Community information directly informs outreach planning and follow-up.
Caregivers unnotified prior to outreach sessions.	VHLs mobilize caregivers and organize children before health care providers arrive.
Passive community participation.	VHLs serve as active, embedded partners in routine immunization implementation.

Abbreviations: HEW, health extension worker; VHL, village health leader.

5.2. Stakeholder perspectives and field insights

Improved identification and follow-up

"Since the community moves from one place to another, the VHL also moves together with the community. The VHL informs the HEW when the community moves and where they have moved. Previously missed villages and hard-to-reach communities are also being reached because of the improved collaboration between VHLs and HEWs. They regularly provide information about newborns, pregnant women, and children who have defaulted on vaccination. We use this information to trace them, conduct follow-up, and provide the services they need."
—Ato Ali Mohammed, Awash **Fentale** Woreda Expanded Programme on Immunization (EPI) focal person



Ato Ali Mohammed, Awash Fentale Woreda Expanded Programme on Immunization (EPI) focal person, Photo: PATH.



W/ro Asamenech Matiwos, Expanded Programme on Immunization (EPI) focal person at Sabure Health Center. Photo: PATH.

"VHLs help us identify children under one year of age and count the number of children under five years of age in each Gott(small Village). They also help identify missed communities and children who have not received vaccination services." —W/ro Asamenech Matiwos, EPI focal person at Sabure Health Center

Improved outreach and responsiveness



W/ro Afreha Kedir, health extension worker. Photo: PATH.

"In the absence of VHLs, it was difficult to reach all outreach sites, especially the hard-to-reach locations. Currently, we have motorcycles and VHLs, which have made a significant difference. VHLs inform us and request services when communities are missed, while the motorcycles enable us to travel to these areas." —W/ro Afreha Kedir, health extension worker

Strengthened community–health system linkages

"We serve as a bridge between the community and HEWs. Our responsibilities include identifying pregnant women, identifying children who have defaulted from vaccination, understanding the reasons for defaulting, and encouraging them to go to the health facility..." —Kedir Abasal and Fatuma Mohammed, village health leaders





Kedir Abasal and Fatuma Mohammed, village health leaders. Photo: PATH.

Increased caregiver awareness and access



W/ro Guaguahu Truneh and W/ro Seafa Mohammed, caregivers. Photo: PATH.

"The VHLs have helped us by ensuring that our children receive their vaccinations on time. They also conduct social mobilization activities and remind families about the importance of vaccination." —W/ro Guaguahu Truneh, mother/caregiver

"They have improved access to vaccination by bringing vaccination services closer to our homes." —W/ro Seafa Mohammed, caregiver from Boloyta Gott

5.3. Quantitative performance improvements

Table 5. Routine immunization coverage by facility and indicator, Ethiopian fiscal year 2017 baseline and intervention period.

Facility	Indicator	EFY 2017 baseline coverage	Intervention-period coverage
Sabure HC	Penta1	64%	96%
Sabure HC	Penta3	64%	99%
Sabure HC	MCV1	63%	97%
Boloyta HC	Penta1	40%	86%
Boloyta HC	Penta3	30%	77%
Boloyta HC	MCV1	33%	73%
Doho CHP	Penta1	156%	154%
Doho CHP	Penta3	156%	146%
Doho CHP	MCV1	131%	117%

Abbreviations: CHP, comprehensive health post; EFY, Ethiopian fiscal year; HC, health center; MCV1, first dose of measles-containing vaccine; Penta1, first dose of pentavalent vaccine; Penta3, third dose of pentavalent vaccine.

Note: *Coverage percentages were calculated using target population estimates for each period. Target populations shifted between the EFY 2017 baseline and the intervention period (Sabure: 360 to 156; Boloyta: 168 to 192; Doho: 144 to 84). Coverage trends reflect period-specific programmatic progress rather than direct cohort tracking. Coverage exceeding 100% at Doho CHP indicates service delivery to mobile populations outside the officially estimated target denominator.*

5.4. Zero-dose and under-vaccinated tracking performance

Table 6. Baseline and reached counts of zero-dose and under-vaccinated children by facility.

Facility	Category	Baseline count	Reached count	% of baseline reached
Sabure HC	Zero-dose	51	33	65%
Sabure HC	Under-vaccinated	96	80	83%
Boloyta HC	Zero-dose	375	370	99%
Boloyta HC	Under-vaccinated	410	398	97%
Doho CHP	Zero-dose	45	23	51%
Doho CHP	Under-vaccinated	126	68	54%
Total	**Zero-dose**	**471**	**426**	**90%**
Total	**Under-vaccinated**	**632**	**546**	**86%**

Abbreviations: CHP, comprehensive health post; HC, health center.

5.5. Outreach session completion rates

Table 7. Outreach session completion rates by facility during the intervention period.

Facility	Planned sessions	Conducted sessions	Completion rate
Sabure HC	48	48	100%
Boloyta HC	96	94	98%
Doho CHP	48	38	79%

Abbreviations: CHP, comprehensive health post; HC, health center.

Hard-to-reach sessions: Boloyta HC completed 2 of 4 planned remote sessions (50%); Doho CHP completed 6 of 12 planned remote sessions (50%).

6. Lessons learned

- **Community-based information is essential for reaching mobile populations:** Standard facility-based tracking cannot maintain pace with pastoralist mobility. Village health leaders (VHLs) supply crucial, real-time data on seasonal movements and newly formed settlements.
- **Role clarity maximizes VHL effectiveness:** Formalizing VHL roles within microplanning and routine child tracking shifts community engagement from ad hoc mobilization to structured collaboration.
- **Demand generation must match service capacity:** Mobilization by VHLs must be supported by adequate health worker staffing, vaccine supplies, and transport logistics.
- **Logistics enable equity:** Motorcycle support combined with localized community intelligence decreases physical barriers to primary health access.
- **Hard-to-reach areas require differentiated outreach models:** Static outreach approaches struggle in extremely remote contexts . Flexible scheduling, tailored mobility solutions, and seasonal adjustments remain critical.

7. Conclusion

The experience from Awash Fentale Woreda demonstrates that structured collaboration between village health leaders (VHLs) and health extension workers (HEWs) offers a practical, effective strategy to strengthen routine immunization in mobile pastoralist communities. By formalizing VHL roles, establishing systematic communication with frontline HEWs, integrating community data into microplans, and removing operational transit bottlenecks via motorcycle support, the model significantly enhanced service reach, reduced zero-dose numbers, and improved routine coverage.

Sustaining and expanding these gains requires continued local ownership, supportive supervision, routine target re-estimation, and flexible, movement-sensitive logistics. Ultimately, the partnership model proves that when health systems actively listen to, plan with, and logistically equip community partners, immunization services become far more equitable and resilient.

8. Recommendations

The following actions are recommended:

1. **Institutionalize village health leader (VHL)–health extension worker (HEW) collaboration:** Formally integrate VHL workflow into national routine immunization microplanning, monitoring, and review frameworks.
2. **Ensure continuous capacity-building:** Provide periodic refresher training and supportive supervision focusing on defaulter tracing and interpersonal communication.
3. **Strengthen session monitoring:** Monitor planned versus conducted outreach sessions continuously to identify operational delays and take proactive corrective action.
4. **Prioritize underserved geographies:** Use community-generated data to dedicate tailored mobile units to hard-to-reach settlements.
5. **Incorporate seasonal migration patterns:** Align health post and health center microplans directly with pastoralist migration routes and calendar patterns.
6. **Maintain transport infrastructure:** Ensure that health teams have the transportation, equipment, vaccines, and other operational resources required to respond promptly to community information generated by VHLs.
7. **Conduct regular population headcounts:** Re-estimate target population denominators regularly to resolve coverage anomalies and track true coverage gains.
8. **Triangulate data sources:** Periodically cross-check community register entries against health facility logbooks to maintain data integrity.
9. **Incentivize VHLs non-financially:** Maintain volunteer motivation through recognition certificates, dedicated badges, community appreciation, and skill development opportunities.
10. **Document and scale:** Systematically adapt and replicate this collaborative model across similar pastoralist woredas throughout the Afar Region and beyond.