

Conducting a Hearth session in a remote village in Bangladesh, 2011



World Vision's Positive Deviance/Hearth programme: multi-country experiences

By Diane Baik



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in Africa and Asia. Her areas of expertise lie in capacity-building, behaviour change communication (especially Positive Deviance/Hearth (PDH)), health monitoring information systems, operational research, nutrition-agriculture integration, adolescent nutrition and health system strengthening.

The author expresses her deepest appreciation to the hard-working PDH volunteers, Health Centre and other Ministry of Health and World Vision field and national office staff who make it possible to implement PDH and run Hearth sessions. Their role has been crucial in the learnings and positive results evident in the communities today. The programme continues to rely on these people as the hands and feet on the ground helping households to overcome child malnutrition and bring about sustainable change.

Location: *Global*

What we know: Positive Deviance/ Hearth (PDH) is a community-based behaviour change programme that aims to rehabilitate malnourished children (identified as underweight) in the context of their own homes, using local resources and knowledge.

What this article adds: PDH is implemented by World Vision in 30 countries throughout Asia and Africa. The primary target is underweight children under five years of age. Acutely malnourished children (identified using mid-upper arm circumference (MUAC)) are referred to available health services as per national protocol, but where such services do not exist, they have been admitted to PDH programmes. A multi-country programme evaluation in 2010 informed several years of programme quality improvement. Analysis in 2016 of programme data from 56,000 children in seven countries found good recovery rates for underweight children, but some limitations (such as loss to follow-up). Acutely malnourished children are screened but on-going monitoring data is not systemically gathered and is an important area for improvement. Data and experience from Burundi indicate slower but good recovery in both MUAC and underweight status in children admitted with moderate acute malnutrition. Plans include mobile data collection, ongoing research in an urban setting in Cambodia, and securing funds to research acute malnutrition management within PDH.

Background

Positive Deviance/Hearth (PDH) is a community-based behaviour change programme that aims to rehabilitate malnourished (identified as underweight) children in the context of their own homes. Despite limited resources, some parents find ways to raise well-nourished children. Identifying and understanding what these 'positive deviant families' are doing differently in their feeding, hygiene, caring and/or health-seeking practices from the parents of malnourished children in the same community is the

foundation for this approach. Studies show that PDH can lead to positive behaviour change among caregivers and improvements in nutritional status of children (Bullen, 2011). World Vision (WV) began implementing PDH in 1999 in Guatemala and Honduras and later expanded the approach to eight countries in Latin America, Asia and Africa. In 2010, WV adopted PDH as a core programme. In 2014, in addition to admitting underweight children, WV began screening for children using MUAC in response to many countries expressing con-

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cern over the lack of services to manage moderate acute malnutrition (MAM) in the community. To date, over 40 countries have implemented PDH and the approach is currently being implemented by WV in 30 countries throughout Asia and Africa in rural, urban, fragile and transition contexts. WV's PDH curriculum has so far been adopted into the national health and nutrition strategy in Uganda, Sierra Leone, Senegal and Burundi.

WV uses the PDH approach to target underweight children (with mild, moderate and severe underweight) between 6 and 36 months of age.¹ Depending on the context, acutely malnourished children (identified using MUAC) are accommodated in programmes and/or linked to available services. The programme indirectly benefits the households of underweight children by empowering primary caregivers with knowledge and positive practices who help prevent malnutrition and promote the growth and development of all children in the household and improve their own nutrition and wellbeing; for example, feeding and food choices, early childhood care practices, water, sanitation and hygiene (WASH) and health-seeking behaviours.

WV agency guidance stipulates conditions under which PDH programmes should be considered; i.e., families can meet regularly, there is food security, complementary health services are available, and there are active community networks. Adaptations may be needed for urban settings; e.g., targeting mobile food vendors to include low-cost, micronutrient-rich ingredients and the use of mobile phones to conduct follow-up visits. PDH programmes are challenging to implement and are generally not recommended where there is household food insecurity, landless/mobile/scattered communities, in conflict or acute emergency settings.

How PDH works

A situation analysis is first conducted in the local community, including wealth ranking, identification of underweight through growth

Washing vegetables before cooking the Hearth meal, 2011



monitoring, focus group discussions, seasonal calendars, market surveys, transect walks and community mapping to identify the major challenges contributing to malnutrition in the community. Following this, a positive deviance inquiry (PDI) is conducted to identify the local solutions and practices to address the major challenges in the homes of the PD households that inform six key hearth messages. Hearth menus are developed using PD foods and other nutrient-rich foods that are locally available and affordable. Table 1 shows the nutrient content of a PD meal compared to the nutrient content of ready-to-use supplementary food (RUSF) and ready-to-use therapeutic food (RUTF).

Hearth sessions are then conducted by two volunteers daily over 10-12 days, with 6-10 caregivers per group. Caregivers bring set ingredients and meals are prepared according to PD menus and fed to the beneficiary children. PD practices

are discussed at the same time. Following this period, volunteers visit Hearth caregivers in their homes two or three days per week over two weeks to assess progress, overcome barriers, and re-emphasise PD practices. Children who do not recover are re-enrolled or referred to the health facility if there is an underlying illness. Regular growth-monitoring is conducted in the community to track children's progress and identify new cases of malnutrition.

Depending on the context, PDH links with programmes from other sectors, including livelihoods (kitchen gardens and small livestock revolving projects); WASH; childhood development (ECD); and economic development (savings groups). For example, PDH participant caregivers are trained to build kitchen gardens, provided with seeds for PD foods, and/or given training and seedlings for biofortified, iron-rich beans or orange fleshed sweet potatoes. The PDH participant caregivers may also be included in savings groups, trained in business start-up and linked to subsidy programmes or vocational training programmes supported by the government (e.g., for fertilizer, loans or training). The team also works closely with local health centres to provide deworming, immunisation and vitamin A supplementation two weeks prior to a child starting Hearth.

While Hearth sessions are not costly to implement, the project requires funds for the early stages of implementation, including trainings and human resource development, which typically accounts for around 90% of project costs (this does not include opportunity costs for participating caregivers). A greater economy of scale is seen where the total cost per child per year decreases as more children are included in the

Table 1 Comparison of Hearth menu nutrient content with RUSF and RUTF

Food type	Quantity (g)	Calories (kcal)	Protein (g)	Vit A (mcg RAE)	Vit C (mg)	Iron (mg)	Zinc (mg)	Cost (USD)
Hearth menu nutrient requirements for 7-36 months	250-300	600-800	25-27	300	15-25	8-10	3-5	n/a
RNI for 7-12 months	N/A	608-844	11	400	30	18.6*	8.4**	n/a
RNI for 13-36 months	N/A	900-1400	13	400	30	11.6*	8.3**	n/a
Hearth meal in a Bangladesh village	291	645	25	400	53	20	4	0.17
Hearth meal in a Burundi village	287	607	28	318	23	8.7	7.8	0.18
Hearth meal in a DRC village	237	627	25	763	37	11	7.5	0.20
RUSF	100 (per sachet)	510-560	11-16	1150	60	10-14	14	n/a
RUTF	92 (per sachet)	500	10	840	49	11	13	0.40-0.84

*Bioavailability at 5%; ** Low bioavailability.

RNI: reference nutrient intake; RUSF: ready-to-use supplementary food; RUTF: ready-to-use therapeutic food.

¹ Some projects expand this range to include children aged 6-59 months; i.e. all children under 5 years old, and include mildly underweight children as well.

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project. WV's experience so far shows that the average yearly cost per child decreased from USD17 per child when 750 undernourished children were targeted to USD8 per child when the number of beneficiaries was doubled to approximately 1,400. Some projects, particularly those that integrate food security, may have a higher cost of up to USD100 per child per year.

Quality improvement of PDH in World Vision

In 2010, WV conducted a PDH programme evaluation in eight countries in Asia, Africa and Latin America. It found that countries with stronger implementation of technical components had greater reductions in the prevalence of underweight.² Major challenges to this included high number of cascade trainings, which diluted critical technical details; delayed implementation post-training, which compromised programme quality; lack of standardised training curriculum for trainers; missed essential elements in programme implementation; lack of standardised supervision tools; and poor systems for data monitoring and analysis. In addition, there were several criticisms by donors at the time, including the labour-intensive nature of PDH; the need for a high level of technical input; the need to focus on a small scale to ensure effectiveness; difficulties in implementation for staff and volunteers; lack of success of PDH in food-insecure areas; the targeting of only a small population of malnourished households; and low graduation rates.

Informed by these findings, WV acted to improve PDH programme quality across the organisation over several years by standardising training content and implementation, developing new tools such as the menu design tool, improving monitoring and evaluation, and emphasising quality, simplification and strong leadership and management. Hearth sessions continued to be targeted to malnourished (underweight) children aged 6-36 months, but contextualised key Hearth messages were shared more broadly with caregivers of all children up to 59 months of age in the community through existing mother support groups (MSGs), growth monitoring and promotion (GMP), village savings and loans associations, and health committee meetings.

Project monitoring data from seven countries was analysed in 2016. Across these projects 56,000 children under five years old were admitted



Actively feeding Hearth meal to participant children during Hearth session, 2011

into PDH with underweight (mild, moderate or severe). By three months, 54% were fully rehabilitated.³ Bangladesh had the highest number of admissions, with over 49,800 underweight children enrolled.⁴ At three-month follow-up, the proportion of moderate and severe underweight had decreased from 81% to 46%. By six months it had decreased to 37%. An important limitation in interpreting this data is loss to follow-up, which was considerable at 36% at three months and 62% at six months. Another challenge in interpretation is that these data include children who are now older than 59 months (and therefore no longer part of the programme) and defaulters. Reasons for defaulting and 'aged out' children are now being tracked but this was not the case at the time this data was collected.

In most areas, a child anthropometry census to assess the weight-for-age z-scores (WAZ) of all children aged 6 to 36 months (or up to 59 months in some contexts) is conducted quarterly or through existing governmental services/systems such as growth monitoring and promotion (GMP). The review of the data compares the prevalence of underweight in the PDH community area at the end of one year to that at baseline. A tool called the "Implementation Quality Assurance" (IQA) tool can be used to assess the readiness of the target area to implement PDH, design the programme or project to ensure all essential elements are incorporated and to monitor implementation to determine if the essential elements of the PDH approach are

being implemented according to the standards. The IQA tool is used on an ongoing basis every year and, in some contexts, once every six months. WV has observed considerable decline in prevalence of underweight over a two-year period in communities where PDH has been implemented, even when only some behaviours have changed. For example, in Rwanda, data from health centres in one community (Kigogo), where PDH was implemented, show decreased prevalence of underweight from 50% in 2009 to 6% in 2011. In contexts where data shows limited improvement, the IQA tool can be used to provide qualitative assessment of the programme to help the implementing team to easily identify areas to address.

Management of acutely malnourished children

Since 2014, WV has also screened and admitted children to PDH using MUAC. Cases are admitted in order of priority, as shown in Table 2. Where no community-based programme to manage MAM is available, moderately malnourished children are admitted to PDH with close monitoring by PDH volunteers, community health workers (CHWs) or health centre staff. Children with a 'red' MUAC (<11.5cm), indicating severe acute malnutrition (SAM), are referred directly to the health clinic or hospital for management. On discharge, these cases may be admitted to PDH. Uncomplicated SAM cases may also be admitted to PDH where community-based treatment services are unavailable, also under close supervision.

Table 2 Priorities for admission into PDH

Priority	Acute malnutrition (MUAC)	Underweight (Weight-for-age)	Age
1	Moderate (Yellow) ⁵	Severe*	6-59 months
2	Normal (Green)	Severe	6-36 months
3	Normal (Green)	Severe	37-59 months
4	Normal (Green)	Moderate	6-36 months
5	Normal (Green)	Moderate	37-59 months
6	Normal (Green)	Mild	6-36 months
7	Normal (Green)	Mild	37-59 months

*Note: From our observations, moderate wasting is always associated with severe underweight.

² The evaluation compared different countries implementing PDH without a control group using programme monitoring data. A research project is currently underway to compare PDH with a control group, the results of which will be available soon.

³ WAZ ≥ 2.0 if admitted with moderate or severe underweight or gained ≥900g if admitted with mild underweight. Analysis of the recovery trajectory of the remaining 46% of children was not undertaken as most of them repeated Hearth and their monitoring data was accounted for in the next fiscal year.

⁴ Includes data from 53 Area Development Programs (ADPs) and the Nobokoli special project.

⁵ Close counselling and monitoring is provided to MAM children by volunteers, CHWs or health centre staff after they complete Hearth sessions.

Children who are admitted under MUAC criteria are monitored for progress using weight gain. The weight-gain guidelines are $\geq 200\text{g}$ at 12 days; $\geq 400\text{g}$ at 30 days; and $\geq 900\text{g}$ at 3 months for all ages. Discharge and graduation is declared after three months of enrolment. If the child was admitted with moderate or severe underweight, the child is discharged if they are

healthy or have mild underweight ($\text{WAZ} \geq -1.0$), regardless of weight gain. If the child is still moderately or severely underweight, the child repeats the Hearth cycle up to a maximum of three times. If the child was admitted with mild underweight, the child graduates if the nutritional status improves to 'healthy' or if the child gains $\geq 900\text{g}$. If children do not gain ade-

quate weight after two rounds of Hearth, they are referred to the health centre for investigation of underlying medical complications that may be contributing to malnutrition.

Overall weight gain is monitored through household visits to positively reinforce the improvements caregivers see in their children as a result of their positive behaviour changes. The weight of each admitted child is monitored on days 1, 12, 30; 3 months; 6 months and 1 year. Community health meetings are also conducted every one to three months to enable the community to monitor the growth of PDH participant children, share health and nutrition messages and conduct graduation ceremonies.

Plans

In mid-2019 WV will launch a PDH Facilitators' eWorkshop on its online learning centre (eLearning Academy) to support improved learning outcomes. It is hoped that this will lower training costs by shortening face-to-face training sessions. In addition, the mobile data collection application is currently being used in several countries in Asia and Africa and the PDH online monitoring database (quantitative data) and online quality assurance tool (qualitative) will be rolled out soon to enable real-time access and analysis of data by programme staff and enable better WV oversight and identification of areas for programme improvement.

The acceleration of urbanisation and food insecurity in many country contexts requires PDH to adapt. WV is therefore currently conducting an operational research project in Cambodia (2017-2020), in partnership with Emory University and the National Institute of Public Health in Cambodia, to compare a control group with a PDH and a PDH-lite (mobile health) group with integrated food security programming in a peri-urban context. The aim is to compare the effectiveness of the two programmes in a context with up to three months of food insecurity. The PDH-lite group is using mobile phones to enable interactive conversations between PDH volunteers and Hearth participant caregivers to replace 50% of Hearth session days and 80% of face-to-face household follow-up visits. The study period is two years; final results will be available in 2020.

PDH shows promise for addressing uncomplicated MAM and even SAM children 6-59 months of age, but this component needs strengthening. Data is not systematically gathered on SAM and MAM cases managed within PDH programmes. Further research is required on this sub-group of children and funding is being sought in this regard.

For more information, please email Diane Baik at Diane_Baik@wvi.org

References

Bullen PAB (2011) *The positive deviance/hearth approach to reducing child malnutrition: systematic review*. *Trop Med Iner Hea* (2011); 16(11):1354-1366.

Box 1 Burundi PDH case study

In 2018, WV Burundi, a fragile context, admitted 1,727 underweight children ($\text{WAZ} < -1.0$) 6-59 months of age into PDH (see Table 1). Of these admissions, 35.1% did not have MUAC measured on admission; 46.1% ($n=797$) had $\text{MUAC} \geq 12.5\text{cm}$; 17.9% ($n=309$) met MAM criteria (yellow MUAC); and 0.8% ($n=14$) met SAM criteria (red MUAC) (Table 5). Following 12 consecutive days of Hearth intervention, 53.7% ($n=166$) of MAM children and 35.7% ($n=5$) of SAM children were rehabilitated to a MUAC of $\geq 12.5\text{cm}$ (Table 5).

The overall graduation rate at three months for all PDH-admitted children in their first round of Hearth was 64% ($n=956$), with a default rate of 2.7% ($n=46$) (Table 6). Of the MAM and SAM children admitted on day one of Hearth, 53.1% ($n=164$) of MAM and 50% ($n=7$) of SAM children graduated in three months. WV Burundi's monitoring data shows that MAM and SAM children recover in terms of MUAC and weight gain through the rehabilitation process. Programme observations suggest that recovery of MAM children takes longer (an additional one to two Hearth sessions) than for children who are only underweight.

Table 3 World Vision Burundi's PDH data for 2018

Underweight Status	Day 1		Day 12		Day 30		3 Months	
	# Children	% Children	# Children	% Children	# Children	% Children	# Children	% Children
Healthy	0	0.0%	109	6.4%	250	14.8%	279	18.6%
Mild	510	29.5%	583	34.3%	671	39.6%	713	47.5%
Moderate	726	42.0%	649	38.2%	516	30.5%	367	24.5%
Severe	491	28.4%	360	21.2%	256	15.1%	141	9.4%
TOTAL	1,727		1,701		1,693		1,500	
% of admitted children weighed			98.5%		98.0%		86.9%	

Table 4 Number of underweight children WV Burundi admitted into PDH with MAM and SAM in 2018

MUAC	MUAC Day 1		MUAC Day 12	
	# of Children	% of Children	# of Children	% of Children
$\text{MUAC} \geq 12.5\text{cm}$, but $\text{WAZ} < -1.0$	797	46.1%	1447	83.8%
MAM ($\text{MUAC} \geq 11.5\text{cm}$, $< 12.5\text{cm}$)	309	17.9%	143	8.3%
SAM ($\text{MUAC} < 11.5\text{cm}$)	14	0.8%	9	0.5%
MUAC not recorded	607	35.1%	102	5.9%
Children > 59 months of age	0		7	0.4%
Defaulted	0		19	1.1%
TOTAL	1,727		1,727	

Table 5 Caseload at 3 months follow-up (WV Burundi, 2018)

Caseload at 3 months	# of children	% of Children
Remained in programme for declaration of graduation/no graduation	1,500	86.8%
Over 59 months of age (no longer eligible)	20	1.2%
Less than 3 months in programme	163	9.4%
Default rate (loss to follow-up)	46	2.7%
TOTAL	1,729	