

Integrated Health Project Plus

in the Democratic Republic of Congo



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Photo by Rebecca M...

The Integrated Health Project Plus (IHPplus) was implemented in the Democratic Republic of Congo (DRC) from June 2015 to June 2018 by Management Sciences for Health (MSH) and Overseas Strategic Consulting, Ltd. (OSC), under a subcontract via Pathfinder/Evidence to Action. This USAID-funded project was designed to avoid a gap in services in USAID-supported health zones upon completion of the USAID Health Office's five-year flagship Integrated Health Project (IHP) in 2015. The two major project components were direct support for service delivery and health systems strengthening activities. The service component included increased use of high impact family planning, maternal, newborn, and child health (FP/MNCH), nutrition, malaria, tuberculosis (TB), HIV and AIDS, water, sanitation, and hygiene services (WASH), and adoption of healthy practices in targeted health zones. The health systems strengthening component included improved implementation of selected policies, program advocacy, and decision-making, particularly at the provincial levels. Ultimately, the project was designed to create better conditions for, and increase the availability and use of, high-impact health services, products, and practices for more than 31 million people in nine provinces of the DRC with 168 target health zones (an increase from the 78 health zones supported by IHP).

Implementing the Helping Mothers Survive and Helping Babies Breathe Approaches in Bukavu and Luiza

In its National Health Development Plan 2016-2020, the Democratic Republic of the Congo (DRC) aims to reduce maternal deaths per 100,000 live births from 846 to 548 and to reduce infant and child mortality from 104 to 60 deaths per 1,000 births. However, the 2013-2014 Demographic and Health Survey indicates that Congolese women run a 1 in 18 risk of dying from maternal causes during their child-bearing years. Neonatal mortality is estimated at 28 deaths per 1,000 live births. These estimates seem all the more abnormal in that about 80% of births occur during deliveries assisted by trained personnel at health facilities.

Analyses conducted by the Ministry of Health (MOH) highlighted bottlenecks in service provision in all interventions—inventory outages, weak organization of reference, and lack of competent human resources.¹ In response to this latest finding, the MOH has introduced competency-based training that integrates interventions such as family planning, essential obstetric care, and essential and emergency newborn care, which lasts between 16 and 21 days. The complexity of this training, the prolonged absence of health care providers, and the difficulty in assimilating several skills at the same time made large-scale extension difficult. IHPplus, seizing the opportunity to use short-term

¹ Ministry of Health, DRC Enhanced Monitoring Documentation for Action, 2016

training packages to target the leading causes of maternal death, coupled the implementation of two approaches, the Helping Mothers Survive (HMS) Program and the Helping Babies Breathe (HBB) Program, to better integrate maternal

and neonatal care. HMS was developed by Jhpiego and a consortium of global partners and HBB by the American Academy of Pediatrics for Neonatal Asphyxia.²

Approach/Intervention

The HMS approach involved training health providers working in maternity hospitals in the prevention, detection, and management of postpartum hemorrhage. The HBB approach consisted of administering essential care to all newborns, identifying newborns with asphyxia, and placing them in neonatal intensive care within the golden minute on ventilation by ambu bag. The two approaches used simulation with the aid of mannequins to develop these skills. To strengthen the skills of providers for correct management of childbirth and for the survival of the mother and newborn in the delivery room, the two approaches were coupled and implemented in the maternity wards.

The intervention was based on four pillars:

- Reinforcement of the capacity of delivery room health workers and their supervisors
 - This training, identified as “classic” in this document, was carried out at the health zone central office and was conducted by clinical specialists for four days, three of which were dedicated to theory and practice on mannequins and one to practice in an actual clinical setting. The training took place from February to November 2017 for 1,005 providers in 35 health zones and 7 provinces (Upper Lomami, Central Kasai, Eastern Kasai, Lomami, Lualaba, Sankuru, and Sud Kivu).
 - Health providers who received the classical training provided training by coaching for their peers.

- Setting up a practice group for neonatal intensive care and management of hemorrhages
 - In each health zone, the four or five health areas (maternity wards) situated on the same route constitute a practice group and meet monthly on a schedule they develop. The central offices of the health zones technically supported the operation of these groups.
- Donation of mannequins and treatment materials
 - IHPplus provided each maternity ward with two ambu bags, a penguin sucker, learning guides, and a poster of the action plan for the two approaches
 - IHPplus provided each group with a NeoNatalie (newborn resuscitation simulator) mannequin
 - IHPplus provided the central offices and general referral hospitals with one MamaNatalie (birthing simulator) and two NeoNatalie mannequins
- Monitoring and supervision of service providers trained in hierarchical order
 - Post-training monitoring generally was conducted in the three months after training ended. Members of the health zone central office and the Provincial Health Division (DPS) provided monthly supervision with mannequin demonstrations; however, there was no monitoring to follow up on this practice.

Methodology

The data, derived from a post-intervention evaluation, consisted of observing the providers performing the neonatal birth and neonatal intensive care techniques on mannequins. The data were collected in April and May 2018 in two IHPplus facilities that practiced the intervention and were convenient, which allowed the DPS management team to participate in the assessment. Seven health zones out of 35 were selected in the 2 provinces based on accessibility. In each health zone, four health areas were selected based on the total number of deliveries performed in the first trimester of 2018, according to the DHIS 2 data. Two strata were established based on the number of deliveries. Two health facilities were randomly selected in 7 health zones in the stratum that recorded fewer than 100 deliveries, and two other health facilities were

selected from the stratum that recorded at least 100 deliveries. In each health facility (28 in total), two providers present at that time were observed separately, one of whom had received classical training in both the HMS and HBB approaches and one of whom had been trained by coaching (table 1).³

Table 1. Description of types of training

Classically trained	Training by coaching
Training of the trainers at the national and provincial levels in classrooms, on mannequins, and in clinical internships with modules and a precise agenda	Training by pairs; the person who was classically trained trains colleagues with the support of the health zone central office; no classroom training, but practice with colleagues instead

² <https://hms.jhpiego.org/>; https://internationalresources.aap.org/Resource/ShowFile?documentName=HBB_Provider_Guide_Second_Edition_20-02552_Rev_C.pdf

³ During the data collection, two additional health providers were observed, for a total of 58 providers.

Two managers of the provincial National Reproductive Health Program conducted the observations, accompanied by two IHPplus staff members (all of them trained in observation and use of the checklist). During each session, the team of observers began with an explanation of the methodology to the provider, followed by observation of the techniques using a delivery observation checklist and an observation checklist on neonatal intensive care practiced on mannequins. For all providers, a verbal informed consent agreement was obtained before participating in this assessment. To ensure confidentiality, codes were assigned to all providers. Data were collected on the performance of various expected tasks. A provider who performed the expected gesture received a score of 1 and the person who did not perform it received a 0. In total, for each observation, there were 23 gestures to perform.

The data reported on the checklists were checked by the observers for consistency and accuracy. They were coded and entered on a mask designed on Epi Data and then exported to SPSS for analysis. The analysis consisted of summarizing the information as percentages for the categorical variable data and as averages (with standard deviation) or medians (with extremes) in case of non-normal distribution of the variable. Comparisons between percentages and means or medians were performed using the Pearson chi-square test or, if applicable, the Fisher test, the student's t-test, or the non-parametric tests, and the regression with scores obtained with the other variables. The threshold of significance was set at 5%. To clearly display the data, the results were presented mainly in the form of bubble graphs for each indicator showing the performance of providers trained by accompaniments as well as diagrams for averages.

Sample Characteristics

In total, the study included 58 health care service providers, 31, or 53.4%, of whom benefited from classical training during their employment in HMS and HBB and 27 from coaching.

Table 2 reports the general characteristics of the service providers who took part in the assessment.

Table 2. Characteristics of health care service providers studied

	Providers trained in HBB and HMS		Total
	Classic	Coached	
Type of health facility			
General referral hospital	5 (16.1%)	4 (14.6%)	9 (15.5%)
Referral health center	4 (12.9%)	5 (18.5%)	9 (15.5%)
Health center	22 (71.0%)	18 (66.7%)	40 (69.0%)
Level of schooling of the provider			
Midwife	4 (12.9%)	5 (18.5%)	9 (15.5%)
Nurse A3	2 (6.5%)	5 (18.5%)	7 (12.1%)
Nurse A2	13 (41.9%)	11 (40.7%)	24 (41.4%)
Nurse A1	12 (38.7%)	5 (18.5%)	17 (29.3%)
Matron	0 (0.0%)	1 (3.7%)	1 (1.7%)
Notification of maternal death (yes)	3 (9.7%)	2 (7.4%)	5 (8.6%)
Providers in a facility that performs at least 30 deliveries per month	11 (35.5%)	10 (37.0%)	21 (36.2%)
Number of years worked in the maternity ward (median with extremes)	10 (1-34)	8 (1-32)	8 (1-34)
Number of births delivered by the service provider in the last 7 days (median with extremes)	3 (0-33)	2 (0-14)	3 (0-33)
Total number of births delivered in the health facility in the past month (median with extremes) ⁴	28 (7-178)	28 (7-178)	28 (7-178)
Number of babies placed in intensive care by the service provider (median with extremes)	1 (0-6)	0 (0-7)	1 (0-7)
Number of stillbirths last month in the health facility (median with extremes) ⁴	0 (0-6)	0 (0-6)	0 (0-6)

⁴ The service providers with classical training and the providers with coaching work within the same health facility; therefore, there is no difference in the total number of deliveries or stillbirths in their health facility.

More than two-thirds of service providers (69.0%) worked in the health centers. The A2 nurses constituted more than 40% of the service providers, and the midwives represented fewer than 10%. Half of the providers worked in a delivery room for more than eight years. In the last 7 days, they directed 3 deliveries and worked in a facility that performed an average of 28 deliveries a month. Half of the assessed providers had resuscitated at least one newborn in the past month and no stillbirth was registered the month before the survey.

Assessing the Performance of Tasks in HMS and HBB Approaches

Helping Mothers Survive

Of the 23 total tasks performed by classically trained and coached providers, 4 were correctly performed by more than 80% of providers in both groups:

- Preparation of the necessary equipment
- Wearing gloves
- Intramuscular administration of oxytocin within one minute after the birth of the newborn
- Careful examination of the placenta and membranes

Three actions were poorly performed in both groups to the extent of less than 30%:

- Stating the time of birth
- Changing gloves after expulsion of the fetus and before cutting the umbilical cord
- Treating patients with respect and dignity during care

In contrast, seven tasks showed a statistically significant difference: four at the 0.01 level of significance and three at the 0.05 level of significance. The predominance was relative in the execution of nine other tasks. The seven tasks have a statistically significant relationship to classical training.

As shown in figure 1, classically trained providers were significantly more likely to wash their hands; palpate the woman's abdomen to check for another baby; clamp and cut the umbilical cord once the pulsations stop after birth; control the traction of the cord while applying a supra-pubic counter-traction; and monitor the newborn (breathing, coloring, temperature) and mother (blood pressure, tonicity of the uterus, vaginal bleeding) every 15 minutes.

Helping Babies Breathe

The only task performed by more than 80% of providers in both groups was removing gloves after intensive care. In contrast, fewer than half of the providers in both groups did not correctly perform these three tasks: explain to the mother the actions performed on the baby, wash hands after removing gloves, and record the findings and treatment.

By comparing classically trained providers and providers trained by coaching in the performance of expected tasks, it was found that more classically trained providers were correctly performing the 13 steps in the neonatal intensive care process than coached providers. Ten tasks had a high significance level ($p = 0.01$), and three tasks had a low significance level $p = 0.05$.

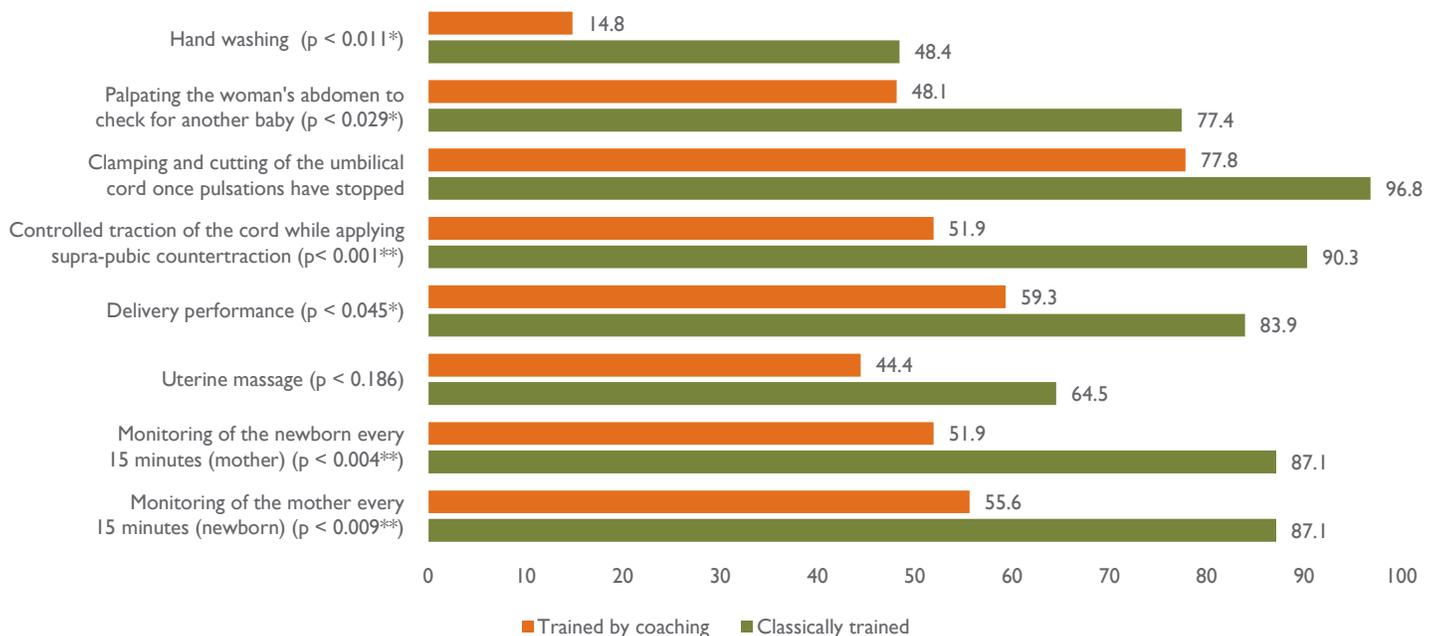


Figure 1. Tasks in the HMS approach showed a significant difference between the classically trained service providers and the coached service providers

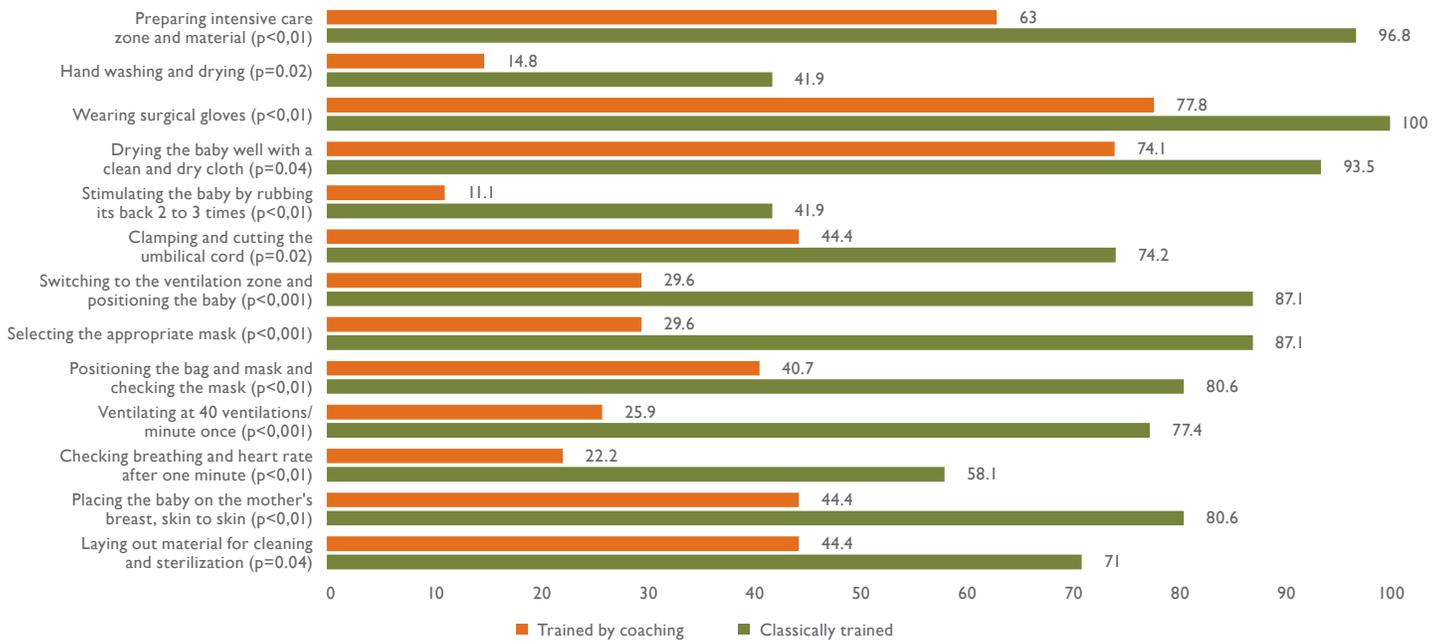


Figure 2. Tasks in the HBB approach showed a significant difference between the classically trained service providers and the coached service providers

Classically trained providers demonstrated stronger skills than coached providers in the following sequences: properly preparing the intensive care area; washing hands; putting surgical gloves on both hands; drying the baby properly with clean and dry towels; stimulating the baby by rubbing its back two or three times; clamping and cutting the umbilical cord; passing the baby into the ventilation zone; positioning it correctly; choosing the appropriate mask; positioning the ambu bag and checking the mask; ventilating at 40 ventilations/minute once; ventilating for 1 minute, then stopping and checking; putting the baby on the mother's chest, skin-to-skin, and covered; encouraging breastfeeding and keeping the child in skin-to-skin contact; and laying out all materials for proper cleaning and sterilization. The predominance was relative for some essential care items,

including receiving the baby in a clean, dry towel; covering the baby; explaining to the mother the actions performed on the baby; monitoring the baby every 15 minutes and instructing the mother on danger signs; and removing gloves, washing hands, and recording all findings and treatments that were provided.

Overall Score in the HMS and HBB Approaches and the Regression Results

To study the performance of the actions necessary to assist the mother during childbirth or the intensive care of the newborn, each gesture was scored 1, and an overall score was based on the 23 expected actions for each of these approaches. Figure 3 reports the average of scores for assisting childbearing mothers and intensive care of newborns. The potential total score was 23, with a potential score of 1 for each correct task.

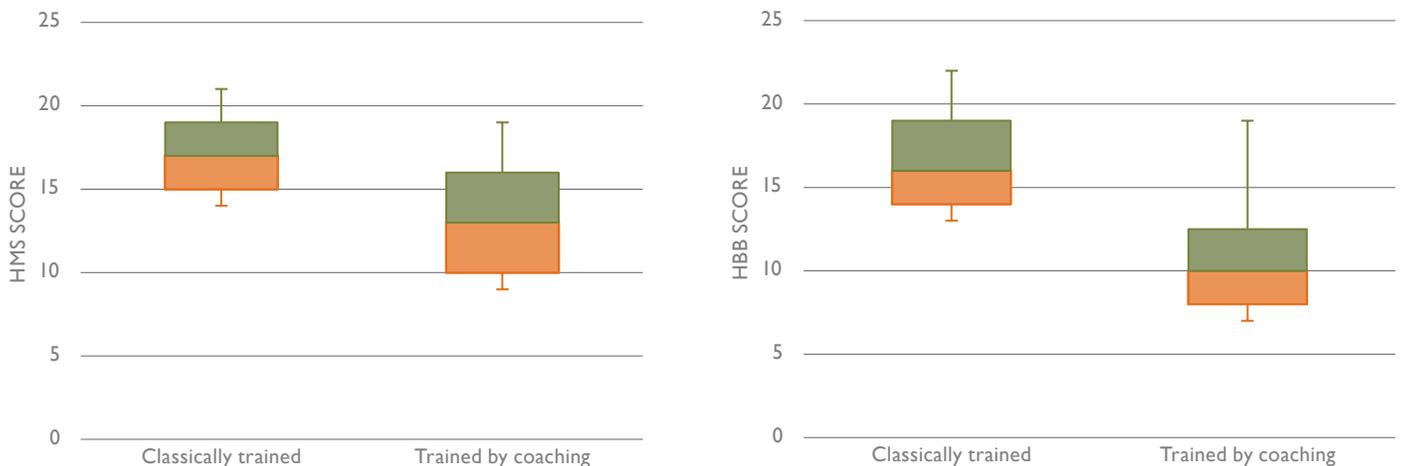


Figure 3. Mean scores of tasks performed during childbirth attendance and neonatal intensive care

These figures show that on average the classically trained service providers performed 73.4% of the expected tasks under HMS (16.90 ± 2.66) and 71% of the tasks under HBB (16.35 ± 3.49). Service providers trained by coaching did worse with 55.9% under HMS (12.85 ± 3.94) and 45.9% under HBB (10.55 ± 3.28). A statistically significant difference of $p < 0.001$ was found.

The regression analysis with the HMS and HBB scores as dependent variables and with four controlled independent variables showed that number of years spent working in the maternity ward is associated with higher HMS and HBB scores (table 3). The four controlled independent variables were:

- Number of births delivered by providers in the last seven days
- Number of years spent working in the maternity ward
- Service provider's level of schooling (traditional midwife, A3 nurse, A2 nurse, A1 nurse, midwife)
- Type of training (general referral hospital, referral health center, or health center)

DISCUSSION

This assessment was performed with a mannequin. The true attitude and ability of providers when dealing with patients during delivery and newborns with asphyxia have not been assessed. This effort requires more monitoring in order to know if the skills acquired have actually been translated into everyday actions. In addition, providers were not observed before training, so it was not possible to determine whether the observed differences were due to our intervention or potential bias in trainee selection or other factors. The results cannot be extrapolated because the sampling was not exhaustive and included only 58 providers. The choice of convenience based on the availability of provincial supervisors and the accessibility of health facilities is likely to lead to selection bias in the assessment. However, assessing providers working in the same framework reduces the effect of this bias because these providers have the same characteristics outside of HMS and HBB training.

Nevertheless, these results show globally that the HMS and HBB training had positive effects on the improvement of providers' skills in good practices of midwifery, active management of the third phase of pregnancy, essential care of the newborn, and neonatal intensive care. During the assessment of skills on a mannequin, the providers who were classically trained in the execution of HMS and HBB tasks performed better compared to the providers who were trained

Table 3. General sample characteristics

	Value F (9,48)	R2	Prob (F)
HMS	6.50	0.5494	0.0000
HBB	9.03	0.6286	0.0000

On average, classically trained persons had an HMS score greater than 4 (total score obtained = 23) and an HBB score greater than 6 (out of a total score of 23 for each approach) compared to those trained by coaching. The number of deliveries in the health facility, the level of schooling of the provider, and the type of health training do not have a significant statistical relationship with the HMS or HBB scores.

However, the number of years spent working in the maternity ward has a highly statistically significant relationship with both scores. Each additional year of service adds 0.2 points.

by coaching. This difference in performance indicates that the classical competency-based training is effective, but the transfer of the acquired competencies to the trained providers' peers in the same health facility is less effective. It should be noted, however, that we have not documented whether the health zones have completed the planned follow-up.

A study conducted at the Pumwani Hospital in Kenya demonstrated a higher proportion of adequate initial intensive-care steps in the trained versus the control group in almost the same proportion and degree of significance (66% vs 27%). $p < 0.001$.⁵ Other observational studies have shown that basic neonatal intensive care can prevent 30% of intra-partum-related neonatal deaths.⁶ A study conducted by Herge et al. in Tanzania⁷ showed that field trials of implementing the HMS and HBB approaches to skilled midwives using short-term training sessions in several countries showed a high level of satisfaction and confidence as well as an increase in knowledge and proficiency; however, only one training program is probably not sufficient to master ventilation, and a decline in knowledge and in proficiency was reported nine months after a single training program. Five months after the training, there was a reduction of about 23% in terms of the capacity of providers to use adequate ventilation (all providers were trained on this skill during the training).

⁵ Opiyo N et al : Effect of Newborn Resuscitation Training on Health Worker Practices in Pumwani Hospital, Kenya, PLoS One. 2008; 3(2): e1599

⁶ Wall SN et al : Neonatal resuscitation in low-resource settings: what, who, and how to overcome challenges to scale up? Int J Gynaecol Obstet. 2009 Oct;107 Suppl 1:S47-62, S63-4. doi: 10.1016/j.ijgo.2009.07.013

⁷ Successful implementation of Helping Babies Survive and Helping Mothers Survive programs—An Utstein formula for newborn and maternal survival

The significant differences observed between classically trained providers and those trained by coaching, when it comes to important and critical gestures in childbirth management, may not be adequate to lead to improved quality of care. Since it is difficult to train all providers in all health facilities, other innovative capacity building strategies

for service providers should be put in place to fill gaps and strengthen the ability of service providers to pass on the skills acquired to others while putting in place appropriate strategies for training supervision by technically better-equipped structures.

Implementing the HBB and HMS approaches more widely

From the results of this study and the experience of implementing the intervention, the project developed the following recommendations:

1. Put in place innovative strategies for “return on training” that include having the supervisory level of the health zone and DPS monitor and reinforce the capacities of all providers in the facilities
2. Advocate for clinical coaching in the facility to build the capacity of all providers at the same time
3. Ensure close follow-ups (monthly) and support to providers for actions that fewer than half of the trained providers performed correctly and encourage cross-training on intensive care and delivery management between providers
4. In the training schedule, anticipate three monthly follow-ups directly after the initial training and quarterly follow-ups during the first year, as well as refresher sessions at the end of the second year to maintain the skills acquired
5. Consider more sophisticated studies to determine the impact of these training programs on the survival of mothers and newborns in the DRC
6. Include a chapter on respect for the dignity of patients during care

“ I became a nurse because my grandmother was a nurse, my sisters are nurses, and one of my aunts is a nurse. In April 2017, I was one of five people from Bagira Hospital trained in HBB techniques by IHPplus. I then trained the other midwives in the technique, which is used when babies are not breathing after they're born. I also provide refresher training in HBB for them every three months and train new hires.

We used to hit the baby on the side, turn him or her upside down, and use mouth-to-mouth resuscitation. Now, we have a clear plan to resuscitate babies who are not breathing at birth, and it works.

On average, I use HBB techniques on two babies each month out of about 70 women who deliver. One mother I was able to help was Deborah Ndema, whose first-born baby was not breathing when he was born. We used the three steps of HBB on him—*aspiration, stimulation, and ventilation*—before he began to breathe. It was scary for Deborah when she saw her baby not breathing, but because of our training, I knew what to do!”

Neema Kitima
Head midwife, Bahira Hospital, Bukavu health zone