

## **Final Draft**

# **Possibility of using AFYA, as a nutrition supplement contained in a Home Based Care kit for HIV/AIDS and TB patients - an acceptability study carried out in Lilongwe, Malawi.**

## **Introduction**

The World Health Organisation emphasizes the importance of nutritional support as a fundamental complement to other HIV/AIDS activities. The correlation between Nutrition and HIV has long been established. A person with HIV/AIDS is at greater risk of malnutrition due to reduced food intake, poor absorption, and anorexia as a result of chronic infections and changes in metabolism. HIV/AIDS is the greatest health crisis dawning this era. According to the World Health Organization the pandemic has claimed 30 million lives in two decades. An estimated 40 million people are now living with HIV/AIDS, 95% of them in developing countries, and 14 000 new infections occur daily.

Malawi is one of the sub-Saharan countries facing the scourge of HIV/AIDS. The World Health Organization Epidemiological fact sheets indicated that as of 2003, approximately, 900,000 adults and children were infected with HIV in Malawi. In the same year approximately 84,000 people died due to AIDS leaving behind 500,000 orphans. HIV/AIDS in Malawi as well as many other developing countries has increased Health Care Facility use. This unmatched rise in demand for Health Care Facilities has necessitated the innovation to care for some of the HIV/AIDS patients at home, through Home Base Care. It is hoped that when properly managed and supported Home Based Care can improve the quality of life of patients of all ages and caregivers alike.

The majority of Home Based Care, (HBC), programmes emphasize provision of medical kits and sometimes psychological and spiritual counseling. The use of a suitably fortified nutrition supplement in resource poor settings for HBC is often omitted due to lack of availability on the market. As a result Compact Norway has developed a new product, AFYA, for possible use as a nutrition supplement to local household foods, mostly porridge based on corn by HIV/AIDS and TB patients in resource poor settings within the context of Home Based Care. The acceptability of AFYA as one of the contents of two types of HBC kits developed by Medeco Norway was tested in this study carried out in Lilongwe, Malawi.

Compact Norway is one of the leading manufacturers of specialized foods for use in humanitarian crisis for either supplementary or therapeutic feeding. Compact Norway products are widely known not only for their nutritional

value but also for a very long shelf life of up to 5 years unconditionally. The profile of AFYA is shown in table 1 below.

Table1: Nutrition Profile AFYA per 100g

<p><b>Energy:</b>          Minimum: 1950 kJ/468 kcal          Protein (energy %) 15.6          Fat (energy %) 37.7          Carbohydrates (energy %) 46.7</p>	<p><b>Nutrient contents</b>          Carbohydrates (diff.) (g): 54          Protein (Nx6.25) (g): 18          Fat: Total (g): 20          Saturated (g) 8.1          Monounsaturated 8.1          Polyunsaturated (g) 3.8  <math>\omega</math>-3/ <math>\omega</math>-6 - ratio 0.14          Ash (g): &lt; 4          Humidity (g): &lt; 4</p>
<p><b>Shelf life</b>          18 months at moderate temperature and humidity, with a minor decrease in some vitamins.</p>	

The Medeco HBC kits used in this study are; the Community Volunteer (CV) kit for use by a trained health worker and the Home Based Care and Nutrition (HBCN) kit for use by care takers at home. The profiles of these kits are shown in table 2 below.

Table 2: Contents of Medeco CV and HBCN kits

<b>Community Volunteer Kit (CV Kit)</b>	<b>Home Based care and Nutrition Kit (HBCN Kit)</b>
Paracetamol tablets ReSomal Latex Gloves Hand towel Bed sheet Cotton wool Apron, plastic disposable Thermometer Scissors, surgical straight Forceps Swab Gauze pad Adhesive tape Gauze bandage Soap bar Sphygmomanometer Stethoscope Bedpan	Oral rehydration salt Miconazole Condoms Gentine Violet crystals Bed sheet Hand towel Cotton wool Gauze pads Adhesive tape Wound plaster Gauze bandage Soap bar Washing detergent Calamine lotion AFYA

## **1.1 Objectives of study**

The main object of the study was to get feedback from patients in the targeted group using AFYA:

- a) That the product can be used over a longer period as supplement to other food without creating adverse effects.
- b) Feedback on taste/smell, packaging and practical use that could be of importance in the adjustment of the product in a more user-friendly direction.
- c) Possible personal experience connected to the use of the product that could be of importance in considering further clinical studies.
- d) As AFYA is included in a kit containing other items (hygiene, medical) it is important to get feedback on the function of the kit itself and the items in it.

## **1.2 Study design**

The study was conducted in Lilongwe, Malawi at two sites, Likuni and Alinafe, where HBC is supported by CHAM (Christian Hospital Association of Malawi). A total of 75 home based care patients were enrolled into the study. These 75 study subjects were divided into two groups based on the type of the Medeco HBC kit they received. Both the Medeco CV and HBCN kits contained enough AFYA to meet the daily ration recommended for this study. A total of 11 subjects were treated using the Community Volunteer (CV) kit while the rest, 64 subjects were treated using the Home Based Care Nutrition (HBCN) kit. The contents of the two kits are indicated in table 2 above. The patients using the CV kit were followed up by 2 trained nurses because they needed more medical attention. The rest of the subjects were followed up by 10 trained HBC volunteers every 10 days. The trained nurses and HBC volunteers ensured that subjects had sufficient supply of AFYA and supplies from the Medeco CV and HBCN Kits. Three packets of AFYA (180 g) containing 840 kcal and approximately one RDA of vitamins and micro-minerals were provided to each patient per day. AFYA provided in this study was a complement to a HBC kit which was delivered to each study subject.

The acceptability of AFYA was assessed through the use of a patient diary which was completed daily and an AFYA qualitative questionnaire completed every 10 days. Mid-Upper-Arm-Circumference (MUAC) was measured in order to monitor increase or decrease in weight during the study period. Trained supervisors at Alinafe and Likuni hospitals supported the HBC volunteers through regular quality control visits. The regular supervisory visits ensured that the recommended daily ration of AFYA was issued and that diaries and questionnaires were completed properly.

Data analysis was carried out using Microsoft Fox Pro, Microsoft Excel and qualitative data analysis techniques after cleaning of data for quality control.

### The Acceptability Study findings

#### AFYA study Sample description

The study had a near equal ratio of man to women. The table 1, below indicates that patients in this study were under a Home Based Care Programme for TB, HIV related illnesses and other illnesses at 52.1%, 37% and 10.9% respectively. It is important to note that in developing countries a significant number of TB patients could also test positive for HIV. In terms of age distribution of study subjects 73 of the patients were above 18 years, while 1 patient was in the age range 5 to 18 years, and 1 under 5 years of age.

**Table 3: AFYA study subjects**

Variable	N	Frequency	%
Gender	75		
- male		34	45.3
- female		41	54.7
Hospital attended -	75		
- Alinafe		35	46.7
- Likuni		37	49.3
- Bottom		3	4.0
Type of illness	73		
- HIV related		27	37.0
- TB/PTB		38	52.1
- Others eg malaria, diabetes		8	10.9

#### Medeco CV and HBCN Kits Study Sample Description

The subjects used to study the acceptability of both the Home based Care and Nutrition Kits are the same subjects used for the AFYA study. This is because AFYA was one of the components of the kits. The distinction however is that out of the total of 75 patients only 11 were selected for assessing the acceptability of the CV kits. The acceptability of the CV kit was carried out by a trained Nurse due to its contents. The acceptability of HBCN kits was carried out by community HBC volunteers. The HBCN kits are for use at home by a trained caretaker. The contents of these kits are indicated in table 2 above. The rest of the sample description is similar to the sample description indicated for the AFYA study subjects above.

**Table 4: Medeco CV and HBCN kit study subjects.**

Variable	Community volunteer kit			Home-Based Care and Nutrition kit		
	N	Frequency	Percentage	N	Frequency	Percentage
Gender	11			63		
- Male		5	45.5		28	44.4

- Female	6	54.5	35	55.6
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### Acceptability of AFYA

Table 5, below shows the acceptability of AFYA in terms of taste and the ability to result in general well-being of the patient. A total of 93.2% of the patients managed to take the recommended daily ration of 3 packets AFYA, providing a total of 840 kcal per day. Sixty-two of the patients (86.1%) reported an overall improvement in their health, which showed that supplementation with AFYA has the assumed well-being effect. On commenting on the taste of AFYA, 79.7% of the patients said it was good and appetizing. Furthermore, a large percentage (70.8%) of the patients said that what they liked most about AFYA was its flavour. In terms of its satiety value, 94% of the patients said that they found AFYA, filling.

**Table 5: Acceptability of AFYA**

Variable	N	Frequency	Percentage
Daily share of AFYA- completed	73	68	93.2
- not completed		5	6.8
Effects of AFYA - improvement in overall health	72	62	86.1
- gastric disturbances eg diarrhoea, nausea, abdominal distension		7	9.7
- no improvement		3	4.2
Taste of AFYA - good and appetizing	64	51	79.7
- sour		8	12.5
- not good		5	7.8
Is AFYA filling? - yes	68	64	94.0
- no		4	6.0
-			
Do you share your daily ration of AFYA? - no	73	68	93.2
- yes		5	6.8
AFYA packet? - should remain the same	69	52	75.4
- should be changed		17	24.6

### Acceptability of Medeco CV and HBC Kits

#### *Community Volunteer Kit*

A total of almost 73% of the respondents indicated that the contents of the CV kits were adequate to meet their medical needs within the context of HBC. On being asked to give feedback on impression about the Community volunteer kits the most frequent response was that the kit is good, complete and helpful. Upon responding to the questions on items most liked the most frequent answer was personal care items, followed by remedial drugs and bed sheet in order of importance. There were also suggestions that local herbal medicines should be included in the CV kit. The most common examples given were Aloe Vera and Neem in order of priority. The majority of the respondents

	Community volunteer kit			Home based care and nutrition kit		
	N	Frequency	Percentage	N	Frequency	percentage
*What do you think of the CV/HBCN kit?	11			61		
- Good, complete and helpful		8	53.3	33		42.9
- Food items should be separated		2	13.3	3		3.9
- Change some of the items		2	13.3	13		16.9
- Remove some of the items		2	13.3	3		3.9
- Add some more items		1	6.7	25		32.5
*Items liked most	11			63		
- Afya		2	7.7	40		24.2
- Remedial drugs (GV, Daktarin)		6	23.1	31		18.8
- Personal care items		10	38.5	35		21.2
- Accessories (bandages, gloves)		2	7.7	13		7.9
- Bed linen		6	23.1	25		15.2
- All of them		-	-	21		12.7
Could the kit be refilled easily?	11			61		
- Yes		6	54.5	2		3.3
- No, there's no money/items are expensive		5	45.5	41		67.2
- No, it's difficult to find the items		-	-	18		29.5
Is the kit adequate?	11			59		
- Yes		8	72.7	18		30.5
- No		3	27.3	41		69.5
*Traditional herbs and remedies	11			63		
- Aloe vera		4	26.7	23		19.7
- Neem		3	20.0	29		24.8
- Garlic		-	-	10		8.5
- Ginger		-	-	3		2.6
- Pawpaw		1	6.7	-		-
- Mango		-	-	1		0.9
- Local ones eg mfura, mwaye		-	-	22		18.8
- Don't know any		7	46.7	29		24.8

(54%) felt that the CV kit could be refilled easily while the rest felt it would be difficult due to lack of money and the fact that the contents of the Kit are expensive.

#### ***Home based care and Nutrition Kit***

In the HBCN kit respondents indicated that they liked most AFYA, personal care items (soap, hand towel, washing detergent), remedial drugs and bed linen in order of priority. Only 30.5% of the study subjects said that the kit was adequate. The rest of the respondents indicated that more items including herbal medicines such as Aloe Vera could be added to the kit. Most of the respondents indicated that they felt that the kit would not be easy for families to refill locally due to lack of money.

**Table 6: Acceptability of Medeco CV and HBCN Kits**

### Impact on weight gain

The study followed up the weight of the 75 study subjects using MUAC measurements. At the beginning of the study only 3 of the adults were found to be severely malnourished (MUAC <16 cm), 9.3% were moderately malnourished (MUAC >16 and <18.5 cm) while the rest had normal weight (MUAC >18.5 cm) (2). Of the 3 severely malnourished adults, 2 died just before the end of the study while the third patient showed improvements in weight by the end of the study. Overall, the majority of the patients registered an increase in weight, 82%, as shown by increase in MUAC readings.

**Table 7: Impact of AFYA on weight change using a MUAC tape**

MUAC	n	%
Increase	62	82.7
Static	6	8
Decrease	4	5.3
Missing	3	4

### **Discussion of results**

The majority of the patients, 79.7%, indicated that the taste of AFYA was good and appetizing and 86.1% reported an overall improvement in health. These observations and the noted increase in MUAC among 82.7%, indicate that AFYA could be used to restore nutritional status among HIV/AIDS and TB patients within the context of Home Based Care. AFYA being a micronutrient fortified supplement is supposed to restore both lean and adipose tissue. It should be noted that this study did not verify whether the observed weight gain was due to both lean and adipose tissue. Staple isotope techniques to measure body composition could be used in future studies to verify the amount of lean tissue deposited. It is however known that diets which are inadequate in quality and quantity either fail completely to restore body weight or simply restore adipose, non-functional tissue. Lean tissue is the functional tissue that includes major components of the immune system.

The contribution of Medeco CV and HBCN kits on the health and hygiene of the study subjects is very important. Health has a direct effect on malnutrition thus the kits should have contributed to the nutritional effect of AFYA on the weight change observed in the study subjects. The popularly accepted UNICEF conceptual framework on the multiple causes of malnutrition argues that inadequate diet and disease are the two immediate causes of malnutrition and death.

Due to its compact nature AFYA can easily be incorporated into a Home Based Care medical kit for HIV programmes in resource poor settings. This ensures that the immediate cause of malnutrition, inadequate diet and disease are tackled within the context of home based care. It is important for the kit to

contain personal hygiene items like soap and detergents and not just medicines, as indicated by the results of this study.

Most of the respondents raise concerns on their inability to refill the Medeco CV and HBCN kits at community level due to lack of money. This is common in resource poor settings where household incomes are low. However it is important to note that support from governments and their donor partners is necessary to ensure provision of HBC kits and nutrition supplements. It is unlikely that families could sustain provision of HBC kits and nutrition supplements without external support.

The composition of AFYA should be dynamic and based on latest research findings. The most recent study carried out in Tanzania has shown that some selected vitamins taken in stipulated doses are important determinants for slowing down the HIV disease progression and mortality (1). Such kind of study should inform product development as well as improvement.

The sharing of AFYA among family members noted in this study was low. This demonstrates that AFYA in its compact nature is easily perceived as a specialized supplement for targeting HBC patients. The provision of AFYA as a nutrition supplement for HBC should also be completed with provision of an adult MUAC tape. The MUAC tape could be used to monitor the weight of the HBC patient and thus provide feedback on the condition of the patient.

It is important to note, that most of the patients under this study were neither severely nor moderately malnourished at the onset of the study. Patients who are severely malnourished should be placed on a special diet for treatment of severe malnutrition based on other more suitable products like BP100. Most countries have not yet started the admission of severely malnourished adults into therapeutic feeding because national guidelines are often limited to children under the age of five years.

Public health experts, industrialists and research institutions should collaborate in developing specialized nutrition supplements like AFYA for use in resource poor setting for Home Based Care (HBC). Similar collaborative efforts have been shown to work effectively in salt iodisation programmes for the control of Iodine Deficiency Disorders (IDD). The enormous challenge posed by the HIV/AIDS pandemic dawning in this era calls for private and public sector joint efforts.

## **References**

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