



HIV CHILD NUTRITION &
MEDICAL SUPPORT PROJECT

Nellore District, Andhra Pradesh, India.

COMPILED BY
STEWART BOTTING

Table of Contents

Summary of comments from World Health Organization and other agencies.

1

Report goals.

2

Malnutrition and HIV.

4

Nutrition - provision and value.

5

Content of project - Not just an Egg.

6

Calorie content.

10

Delivery.

13

Medical content of project.

14

Overview of benefits.

15

ART & nutrition.

16

Data analysis.

17

Nutrition Training

21

Case studies.

22

Budget and price increases.

25

Scaling up.

26

Appendix (i) WHO report.

(ii) WHO report

(iii) Child Health and CD4 records. (attached)

World Health Organization Department of Nutrition for Health and Development.

Summary of Report:

Identification of locally appropriate, sustainable ways of increasing dietary intake to meet the additional energy needs of HIV-infected adults and children.

An urgent need to develop and evaluate macronutrient supplementation for the improvement of the nutritional status for infected HIV people and the potential impact of nutritional supplementation on delaying the initiation of ART.

<http://www.who.int/nutrition/topics/Executive%20Summary%20WHO.pdf>

Nutritional Support for Children With HIV/AIDS: Interaction Between Nutrition and HIV in Children

Research supports clinicians' intuition that the incidence of opportunistic infections is increased in HIV-infected adults with a 5% weight loss.[5] If a 5% weight loss in adults has such deleterious results, one can readily hypothesize that a child with a constant expectation to gain weight, and fewer adipose and somatic protein reserves, would be even more adversely affected by suboptimal weight. **Therefore, promoting normal growth and avoiding weight loss or wasting should be utmost priorities when caring for children with HIV infection or AIDS.**

http://www.medscape.com/viewarticle/410256_2

World Health Organization Department of Nutrition for Health and Development

Conceptual Framework

There are complex interactions between nutrition and HIV/AIDS. HIV progressively weakens the immune system and malnutrition itself may also increase the susceptibility to infections. Those who are ill from HIV infection, from poor nutrition or both are less able to find work or food to sustain themselves. In many areas of the developing world, HIV infection co-exists with malnutrition (both in terms of macronutrient malnutrition (i.e. protein-energy malnutrition) and the hidden hunger of micronutrient deficiencies).

<http://www.who.int/nutrition/topics/Executive%20Summary%20WHO.pdf>

Summary of goals.

- The focus of this report is to provide conclusive evidence to demonstrate that good nutrition saves lives.
- Conclusive research indicates that HIV positive children need good nutrition.
- It finds that malnutrition in combination with HIV is a deadly.
- It shows that the nutrition this project provides in combination with the subsistence on rice alone, provides enough calories to lift children out of malnutrition and into better health.
- It provides circumstantial evidence to support the general research that good nutrition when provided to HIV positive children both supports and saves lives.
- It recommends that this project be continued and enhanced to include all the HIV positive children in the Nellore District.

The Cycle of Malnutrition and HIV/AIDS

Malnutrition is one of the major complications of HIV/AIDS infection and a significant factor in advancing the disease.

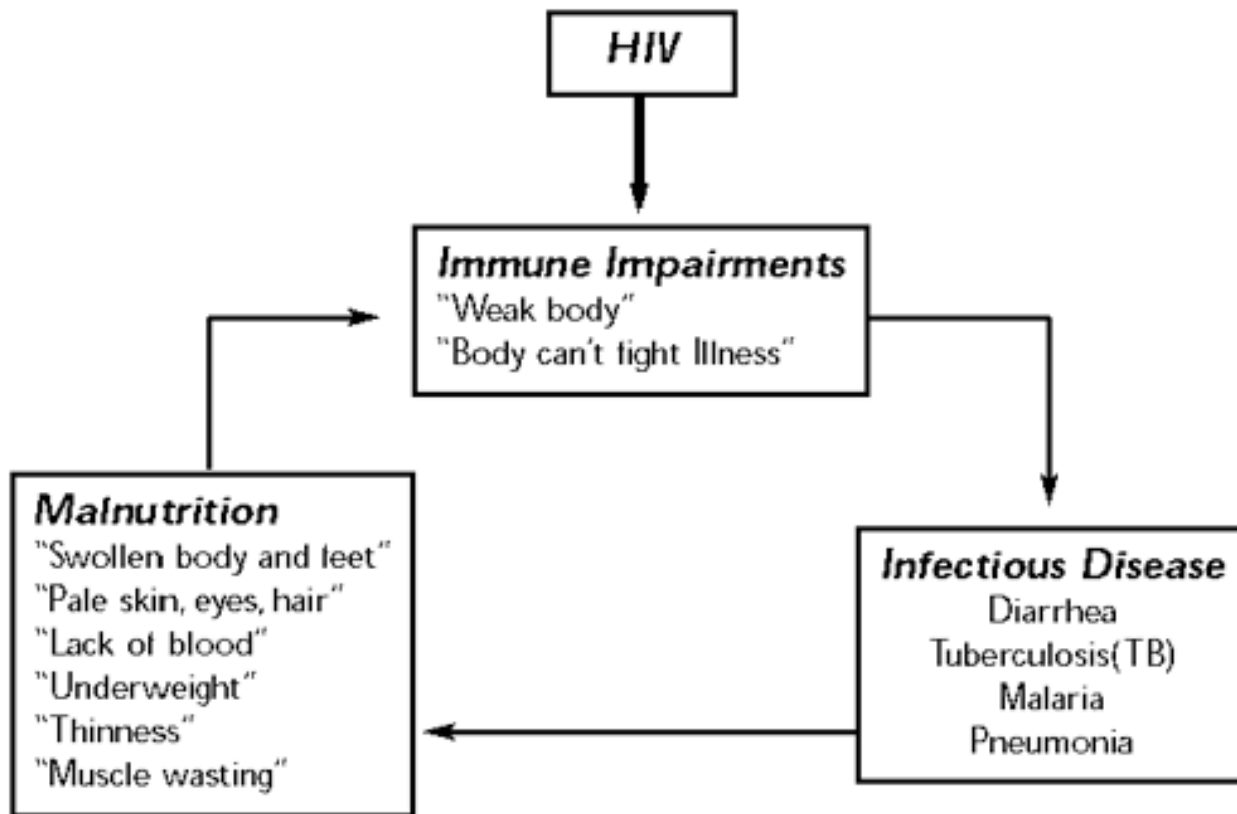
HIV infection can compromise nutrition through malabsorption and altered metabolism resulting in:

- Weight loss
- Loss of muscles and fat tissue
- Vitamin and mineral deficiencies
- Reduced immune function and competence
- Increased susceptibility to secondary infections
- Increased nutritional needs because of reduced food intake

People living with HIV and AIDS may not get enough food because of:

- Drugs reducing their appetite
- Infections causing sore-mouth, nausea and vomiting
- Illnesses causing abdominal pain and damage of the the gut
- Persistent diarrhoea
- Reduced absorption of nutrients especially of fats and fat soluble vitamins
- Increased tiredness, loneliness and depression leading to loss of appetite and anorexia
- Reduced energy to work or produce food
- Changes in their metabolism - the way the body transports, uses, stores and gets rid of nutrients

Malnutrition is significantly high among HIV-infected people.



Relationship Between HIV and Malnutrition. Source – HIV/AIDS: A Guide for Nutrition Care and Support, 2001 motherchildnutrition.org

World Health Organization Department of Nutrition for Health and Development.

Interim version April, 2005

- Traditional risk factors in non-HIV-infected children such as insufficient food intake and diarrhoea also are major contributors to poor growth in HIV-infected children and may be especially important in resource-limited settings.
- Based on the currently available evidence in children not receiving ART, energy supplementation alone improves weight gain but does not reverse deficits in height.

<http://www.who.int/nutrition/topics/Executive%20Summary%20WHO.pdf>

Not just an egg a day:

Malnutrition kills 5 million children every year one child every 6 seconds.

The Mother and Child Health and Education Trust

motherchildnutrition.org

Current provisions of the project in Nellore District.

Provides high value, fresh nutritious food to 87, previously malnourished HIV positive children, whose survival was threatened, in 41 villages across a district the size of Northern Ireland, or, an area the size of Wiltshire, Hampshire, Somerset and Devon combined.* There is no other organizations providing any kind of support to HIV positive children in the entire district numbering 1200 villages with a population of 2.6 million people.

There are no accurate statistics for the rate of infection especially with regards to child infection. There are 365 children registered as positive with the only hospital in the district which caters for HIV, which conducts testing, CD4 monitoring and the provision of ART (anti retroviral treatment).

The two doctors at this hospital value our project and make regular requests to us for more assistance.

*(Nellore district 13,076 sq. kms. Northern Ireland 14,300 sq. kms. Wiltshire: 3483 sq. kms. Hampshire: 3769 sp. kms, Somerset: 3455 sq. kms. Devon: 2655 sq.kms = 13,362).

Current provisions of the project in Nellore District.

Nutrition values:

- i/ Milk - 250 ml every other day.
- ii/ An egg every day.
- iii/ Green leaf - 2 bunches a week.
- iv/ Banana - daily. (Seasonal alternatives when available).

Milk Nutrition Facts

Carbohydrates: 250 gm of milk contains approximately 13 gm of [carbohydrates](#). Carbohydrates found in milk are in a di-saccharide (made of two sugar units) form called lactose. It is also sometimes referred to as milk sugar. One molecule of lactose is made of one molecule of glucose and fructose each. There is no dietary fiber or starch found in milk.

Fats: The fat content in 250 gm of milk is 2.5 gm. Out of this 2.5 gm of fats, 1.7 gm is saturated fats while the rest is unsaturated. The amount of monounsaturated fats is 0.7 gm and that of polyunsaturated fats is 0.1 gm. Milk is also rich in essential fatty acids. The amount of omega-6 and [omega-3 essential fatty acids](#) present in 250 gm of milk is 73.2 mg and 9.8 mg respectively.

Proteins: 250 gm of milk has 8.2 gm of proteins. The proteins mainly present in milk are casein and [whey proteins](#). The amount of casein is 0.2 grams and that of whey proteins is 0.0252 grams. Milk has alpha-s1, alpha-s2, beta and gamma casein. In the category of whey proteins, milk has beta-lactalbumin, immunoglobulin and blood serum albumin. Milk also has fat globule membrane proteins and certain enzymes.

Vitamins: Milk is a very rich source of [vitamins](#). 250 gm of milk meets approximately 44% of your body's daily requirement of vitamins. The amount of [vitamin A](#) is 478 IU, vitamin D is 127 IU, vitamin K is 0.2 mcg, riboflavin is 0.5 mg, niacin is 0.2 mg, folate is 12.2 mcg, vitamin B6 is 0.1 mg, vitamin B12 is 1.1 mcg, betadine is 1.5 mg,

pantothenic acid is 0.9 mg and that of choline is 43.2 mg. Milk lacks vitamin C, E and B1.

Minerals: 250 gm of milk has 290 mg of calcium , 6.3 mcg of fluoride, 0.1 mg of iron, 8.1 mcg of selenium, 26.8 mg of magnesium, 1.0 mg of zinc, 232 mg of phosphorus, 107 mg of sodium and 366 mg of potassium. Copper is absent in milk. You will get all these [minerals](#) by drinking a single glass of milk.

Others: 250 gm of milk has some other essential components of your diet as well. It has 12.2 mg of cholesterol and 220 gm of water.

By knowing the milk [nutrition facts](#), you must have understood the significance of drinking milk everyday. It is almost equal to a [balanced diet](#). Make sure that you are drinking at least a glass of milk daily. This will not only fulfill your nutritional requirements but also make your body strong and more resistant to diseases. Milk gives you a healthy life.

By [Kalpana Kumari](#)

<http://www.buzzle.com/articles/milk-nutrition-facts.html>

Nutritional Facts and Information of Eggs: An egg is one of the most nutritious [food](#) items in our diet. It is rich in [minerals](#), proteins, and vitamins, all of which are easily absorbed by the body.

Eggs are a good source of essential [minerals](#) such as [calcium](#), [iron](#), [phosphorus](#), [zinc](#) and [iodine](#). When it comes to calories, a medium sized egg has about 75-76 kcal. The most commonly eaten eggs are that of chicken. Eggs of other birds such as duck, quail and turkey are similar in their nutritional value to eggs of chicken, with the prominent different being that the eggs of these birds have higher mineral content as well as higher cholesterol content as compared to chicken eggs.

Vitamin Content of Eggs: Eggs are rich in vitamin B, especially vitamin b12, [vitamin A](#), [vitamin D](#), [vitamin E](#) and [vitamin K](#). It should be noted that very few [food](#) items that contain [vitamin D](#), egg being one of them.

Protein Content of Eggs: An egg is composed of about 11% proteins. Further it contains all the amino acids necessary for body metabolism. This makes eggs an essential part of the diet of those who wish to increase weight and build muscles. Most of the proteins are concentrated in the white part of the egg, known as albumin (albumen) or egg white.

Egg White and Egg Yolk: There are two essential parts of an egg; the albumen or the white part and the yolk or the yellow part. The yolk is suspended in the albumin and contains about 80% of the calories and almost all fats present in the egg. It contains [vitamin A](#), D, E and K and [minerals](#) such as [iron](#), [calcium](#), and [phosphorus](#). The egg albumen mostly contains [water](#) and proteins.

Health Benefits of Eggs: The nutritional value of eggs makes it good for immunity, strong vision, treatment of macular degeneration, cataract treatment, skin care, nervous system, strong bones, and blood formation. Recent research has also shown that consuming eggs does not lead to increase in serum cholesterol levels.

<http://www.organicfacts.net/nutrition-facts/animal-products/nutritional-value-of-egg>

Nutrition in Spinach / green leaf.

Spinach has a high nutritional value and is extremely rich in antioxidants, especially when fresh, steamed, or quickly boiled. It is a rich source of [vitamin A](#) (and especially high in [lutein](#)), [vitamin C](#), [vitamin E](#), [vitamin K](#), [magnesium](#), [manganese](#), [folate](#), [betaine](#), [iron](#), [vitamin B₂](#), [calcium](#), [potassium](#), [vitamin B₆](#), [folic acid](#), [copper](#), [protein](#), [phosphorus](#), [zinc](#), [niacin](#), [selenium](#) and [omega-3 fatty acids](#). Recently, [opioid peptides](#) called [rubiscolins](#) have also been found in spinach.

Nutritional Value of Banana:

Nutrition Facts and Information about Banana: Banana is rich in [potassium](#). It also contains other [minerals](#) such as [calcium](#), [iron](#), [magnesium](#) and [phosphorus](#) in large quantities. It is also rich in fibers making it a useful laxative and good for easing constipation.

Vitamin Content of Banana: Banana is rich in [vitamin C](#). It also contains other vitamins such [vitamin A](#), and Vitamin B, especially folate.

Calorie Content of Banana: Banana contains about 90 to 93 calories per 100 g. This energy is easily absorbed by the body and hence eating 3-4 bananas daily, especially with

[milk](#), is often recommended to gain weight. At the same time, [banana](#) is useful for losing weight. Since it has only 90 calories per 100 g (butter has about 700 calories per 100 g), [banana](#) reduces your calorie intake and thus helps in weight loss. Overweight people, should of course, stop eating banana chips to lose weight.

Health Benefits of Banana: The nutritional value of [banana](#) makes it useful for weight gain as well as weight loss, constipation, bowel problems, anemia, blood pressure, heart problems, ulcers, brain stimulation, depression, nervous disorders, stress, morning sickness, menstruation, etc.

- The high nutrition content of the food we provide makes a proven change to the health and well being of the children.
- The children enjoy a return to health, including returning to school.
- They enjoy longer periods of health as compared to other children not receiving our nutrition support.
- There are less instances of secondary infections.
- Provided along with ART medication the children are able to respond to the medication while children still malnourished do not have the strength to respond to the aggressive medication.
- Our intervention has saved at least four children from certain death.
- Our intervention maintains the health of 87 children who would otherwise be likely to return to a condition of malnutrition, heightened vulnerability from secondary infections, a lowering of their CD4 count, a decline in their immunity, spiraling into sickness and lethargy and often early mortality.

All the children currently receiving nutrition were previously suffering varying degrees of malnutrition. Given the proven relationship between malnutrition, HIV infection and premature death - there is a clear case to be made that our provision is life saving.

Age	Calories per day	
	Boys	Girls
1-3	1,230	1,165
4-6	1,715	1,545
7-10	1,970	1,740
11-14	2,220	1,845
15-18	2,755	2,110
Adults	2,550	1,940

Calorific Content of Rice: There is no other [food](#) item that provides calories and energy to the world as provided by [rice](#). It is not wrong to say that most of the people in the world as able to do their daily activities due to [rice](#). Rice has about 345 calories per 100 g. Further, it is very easy to digest rice and hence most of these calories are absorbed by the body. How many times has it happened with you that you have eaten stomach full of rice and have felt hungry just one hour later?

Calorie count for average child on nutrition project.

Item	100 g/ ml / or item	gr / ml per day	total calories
Rice	345	375	1293
Milk - cow	66	250	165
Milk - buffalo	97	250	242
Egg	75		75
Banana	105		105
Total + cow			1638
Total + buffalo			1715
Other	50	150	1800*

*The staple diet is rice - in addition to this staple there might be included in their daily intake a range of food items, none of which in and of themselves amount to substantive nutrition. These items include vegetable oil, some basic curry item, containing some dahl or lentil. The total calorie intake would amount to anywhere between 50 - 150 calories a day,

The majority of the children are between the age of 4 - 14 and so by the ratings in the above table the calorie target is reached.

The nutrition we deliver in conjunction with the rice staple consumed ensures that children are no longer in danger of malnutrition and receive close to the RDA amounts of vitamins and minerals in a variety of high value fresh food items.

What we provide is as per the World Health Organization's prescriptions and is in line with the findings of leading health experts, all of whom have concluded that good nutrition is linked to survival in children with HIV.

“it is the first time we have seen people do what they say they would.” Grandfather.

Means of delivery:

- 1/ Delivered by project co - ordinator.
- 2/ Delivered through shop outlets on a daily basis.
- 3/ Delivered to out of the way villages.
- 4/ Delivered on time each month.
- 5/ Delivered consistently over 2 year period.
- 6/ Four levels of accountability to ensure delivery:
 - i/ Shopkeepers given money and list of items to be provided.
 - ii/ Carers receive a booklet to record receipt of provisions.
 - iii/ Field worker to ensure delivery.
 - iv/ All recipients and shopkeepers have a phone number to report any malpractice.

“before you came I did not know what to do, now there is your help it has saved my grandson’s life.”

Medical:

- 1/ CD4 count monitoring with regular and consistent follow ups.
- 2/ Medical support- including;
 - i/ Accessing medical expertise.
 - ii/ Ensuring Children attend regular check - ups.
 - iii/ Support in any emergency.
 - iv/ Knowing where to get free treatment.
(Red cross free blood etc).
 - v/ Accessing Doctors without prejudice.
 - vi/ Accessing private medical health care in extreme cases.
 - vii/ Using YRG Nellore & Chennai and their health experts.
 - viii/ Receiving free health care in excess of 25,000 rupees in Chennai Government hospital.
 - ix/ Transport to and from villages.
 - x/ Provision of food during hospital stays.
 - xi/ Support from staff during hospital visits.
 - xii/ Guidance and counselling to children and carers.
 - xiii/ Advice and support to carers.
 - xiv/ Financial aid.

“without you she would be dead. I have buried my children once - I don’t want to bury anymore.”

Overview of benefits of project.

- i/ Malnourished HIV children return to normal levels of calorie in-take, and improved health.
- ii/ Strengthens the immunity system.
- iii/ Provides enough additional dietary content to give children energy to attend school and live a normal life.
- iv/ Promotes mental and physical well - being.
- v/ Children do not need caring for - or as is usual are not abandoned on their own during the day, while carers work, leaving them isolated and alone.
- vi/ Promotes psychological well - being by getting children out of bed and active.
- vii/ Alleviates the burden on the relatives.
- viii/ Enables the carers to provide life support for these children rather than watch them die.
- ix/ Gives carers the courage to face the community stigma and accept support.
- x/ Provides real health improvement to assist in combatting onset of secondary infections.
- xi/ Provides the WHO recommended levels of increased nutrition for HIV infected children.
- xii/ May not be enough to provide energy for growth.

“Nutritional interventions should be an integral part of all HIV treatment programs so that improved diet may enhance ART acceptability, adherence and effectiveness.”

Children on ART (anti retroviral treatment) .

i/ 43% of the children on the project take ART.

ii/ ART is a very aggressive drug. Taken when a child is malnourished is dangerous and harmful.

iii/ Additional nutrition enables the children to benefit from the medicine.

iv/ The combined effects of ART and good nutrition saves lives. (World Health Organisations Report).

v/ Without nutrition support on medication the child become more ill and increase in child mortality follows.

vi/ HIV - requires an additional 10% calorie intake to assist in combatting fighting the infection. (WHO).

Analysis of Data:

Despite extensive records it is hard to draw concrete conclusions due to the virulent nature of HIV. In terms of monitoring the shifts in the CD4 count of the children, which might be one way to draw conclusions as to the benefits of increased nutrition, due to the aggressive nature of HIV there are no absolute answers.

It can be argued that the nutrition has had a number of effects, which might be considered beneficial indicators.

Over the course of some months there has been a noticeable decline in the cost of medical attention required by the children. However the cost ratio of expenditure on their medical needs cannot be charted. As one child in a month might require a single expenditure that is greater than the cost of perhaps five children's needs the previous month. Or, that several children might have received blood transfusions that are free and so the cost factor is therefore not a reliable indicator of health.

Furthermore, given there are eighty seven children on the project there is on average three children a month who require some kind of medical support. These costs vary and are judged by the project manager case by case. Those recipients who live in abject poverty will be provided their travel expenses to the hospital, those who are deemed to be able to afford it do not receive it. A rickshaw charge of anything from twenty to fifty rupees might be included in the cost of a trip to the hospital. Again where necessary we pay for medications. Nothing is provided free by the government hospital except ART medication. The local Red Cross provide free blood for HIV patients. The YRG clinic, a research based organization, provide free medical consultations once an annual fee and a full blood screen has been conducted at a cost per child of six hundred rupees. Again this is not done unless it is deemed essential.

It is possible to draw some conclusions that over the course of the project, CD4 counts, the key measure to how a patient's immunity is responding to HIV, have in large part stabilised or gone up.

It has to be noted that if a child is taking ART medication, the CD4 count should in the normal course of the body's response to the drug increase and stabilize. It would therefore be anomalous to claim that it was nutrition alone that is responsible for these improvements.

In the case of 43% of children on the project who are receiving ART, no conclusions can be drawn to support the claim that nutrition alone is responsible. However, reports show, a child taking ART needs additional nutrition for the drug to work effectively. Taken when a child is malnourished is dangerous, and can be detrimental to the child, leading to early mortality. **When ART is taken along with a healthy diet, high in nutrients, ART is life saving. So while nutrition alone is not responsible for saving lives - without it children remain in a life threatening condition,**

Of the remaining children not on ART, the constant or increase in their levels of CD4 are absolutely related to their diet and on - going well being. In this of the remaining 54% of children not on ART, whose overall condition has been stable or improved over the last two years, with occasional instances of sickness not greater than that of any child of a similar age, **it can be strongly stated, that nutrition has been the sole reason for these children's return to health and on - going well - being.**

The 3% remaining is due to death. Three children have died in the course of the two years. A like for like number with the government hospital could be drawn to indicate that the mortality on our project is significantly lower than the norm in this region and much lower than in Africa.

As we have seen in the number of reports from WHO and other agencies, the relationship between HIV, ART and good nutrition is paramount. So, while it has hard to draw scientific certainties, the circumstantial evidence - that over the period of the last two years children's conditions have in large part at least stabilized and more often improved. **There is an overall reduction in sickness and secondary infections, and there is a universal increase in the children's ability to lead more active and integrated lives.**

These shifts alone demonstrate a remarkable change. As it has to be noted that it is these smaller changes in the lives of the children that have the most impact on their overall well-being, that they no longer feel bad or tired and lethargic enables them to return to normal life, which in and of itself precipitates a sense of "feeling better", this fundamental psycho-

logical shift has an impact not just on the children but on the family and carers they live with.

As most often it is not the parents involved in the primary care, but grandparents, who in the normal course of events would be retired, but have been forced back to work to support their grand children, but are not able to work at full capacity and so do not earn a wage that can support the whole unit, and certainly cannot provide anything above subsistence.

So, while an analysis of the data does not reveal anything concrete. It does show a level of stability, a general increase in the quality of life of the child enabling it to be active rather than sick.

It might be a consideration, that if a greater degree of scientific research is required by the project we make a study next year of two groups to see if there are ways to both measure and demonstrate the differences.

A key indicator might be with regards weight. Most of our children's weight has increased, consequently lifting them out of a state of malnutrition, as opposed to those children who do not receive our nutrition and remain malnourished.

Malnutrition rather than HIV might be considered to be the killer in some of these instances, but given malnutrition is rife in Indian villages, estimated at anywhere from 26 - 42% of children, this alone would not be grounds for study.

Furthermore, it is clear from studies that HIV positive children need at least 10% more nutrition simply to combat their infection. This factor will effect growth and retardation of development, however, there are some indicators that ART also has an impact on growth. Because there have only been limited studies in this field there is again no data to support either view. The World Health Organization among others have recommended that more research be conducted into the effects of ART and growth.

As of now, and as intimated by medical practitioners, the intuition which relates the importance of good nutrition to improved overall health in HIV children does hold. In our project this intuition can be clearly supported.

(see appendix - Child Health and CD4 monitoring for full statistical overview).

General recommendation:

In this the general conclusion is that good, fresh, regular nutrition keeps children alive and healthier for longer. It promotes well - being and relative normalcy and alleviates the burdens on the primary carers. It is strongly recommended by all those involved in this project that it should be at least continued, preferably increased to cater for price rises and at best extended to include all the HIV positive children in the Nellore District currently registered at the government hospital.

Recommended by;

Stewart Botting	Head of India - Right Now Foundation
Prasana Kumar	Director Andhra Pradesh - Right Now Foundation & President of HEARTS
CG. Vejaylaksmi	Project Manager. Right Now Foundation.
Dr. Sunil	ART centre Nellore District
Dr. Surendra	ART centre Nellore District
Dr. D. V. Subbai Reddy	Pediatrician
Dr. Chendan Kumar	YRG Health Trust / Nellore / Chennai
Dr. Rama Devi	District Medical Officer - Nellore District. HIV and Leprosy Nodal Officer.

NUTRITION TRAINING.

The effects of the provision of the nutrition on the children has been incredibly beneficial. The carers have observed the changes in the children's well - being. Furthermore, due to our regular delivery of the food and the diligence of our staff, we have garnered respect in the villages where there are children on our project.

To reinforce the value of the nutrition we provide we have developed a nutrition training program, taken in part from the HIV / Aids Alliance scheme and in part developed by ourselves, we provide a training session which contains a demonstration of a number of recipes containing high value low cost items readily or usually available in remote villages.

We have delivered training to all those who care for children on our project as well as a number of other villages who have asked us for the presentation. In all we have taught conducted eleven training sessions, in eleven different mandals for over four hundred and fifty women.

The response to these sessions has been positive and the take - up of the recipes has been widespread.

The impact of the inclusion of better nutrition has been witnessed among a number of the children on the project, who have significantly improved in their overall health, and energy levels.

Budget and price rises 2010.

Nutrition	PER CHILD	per child rps	2010 item increase		increase/month
	provision	per month		per litre	
MILK	250 ML ALT DAY	98	+1.5	+6	22
EGG	Daily	60	+50		30
GREEN LEAF	2 x weekly	40			
FRUIT	DAILY	60	+1		30
Banana					
Total		258			82
					340
current total	240x 87	22446			
revised total	340 x 87			29580	7134
revised nutri- tion total					29580

Case Studies:

Shaik Musthafa.

A six year old boy. He hails from a village, Komarika of Indukurpet Mandal in Nellore District. He lives with his grand parents, Basha Saheb (75) and Gouse Bee (60). This boy lost both his parents. His father had been an auto driver. He has one elder brother, Javed who is 12 years old who also is a HIV patient. His grandfather works in a banana garden and maintains the family.

The out-reach worker of CMP Project identified him when he was suffering from fever and diarrhoea and enrolled him. Immediately he was taken to YRG Care centre preliminary treatment was rendered. Previously his grand parents used to take him to an RMP doctor who did not give proper treatment. They were very much disappointed as they find no improvement but lost lots of money. We registered him on our ART list and did all necessary clinical tests and now specialists are attending on him whenever he develops health complications. We take him to Dr. Subba Reddy, Dr. Panchala Reddy, (skin specialist)Dr. Murali Krishna(ENT) for treatment. He was miraculously saved from death with our CMP Medical support.

Regularly he is supplied with a banana daily and 250ml. of milk alternatively. We trained his grand parents how to prepare high nutritional food with low expenditure and now he is being given good diet daily which consists of Dates, Green leaves, Chapati, Ragi malt, pudding with wheat flour etc., Now he is healthy and progressing well.

Now the grandparents are happy to see their grandson is doing well and is going to school. They had been worrying about him as to his disease and future as they were already old and not in a position to look after him properly.

B. Srinadh

A boy, aged 8 years, was born in Nellore town. This boy was born after nine years after his elder sister. While his mother was pregnant, she responded positive to HIV. All her relatives and doctors suggested her to go for an abortion. But as this was a male child she refused to do so. His father also had shown positive while his sister negative. His mother died two years after she gave birth to this child. His father who is aged 45 years now, working as a watchman. His aunt i.e sister of his father took the responsibility of this child as her husband and children died and living alone. She is aged 50 years and she works as a labour in a pickle factory for a meagre wage of Rs.50 per day.

By the time his mother passed away, he had been suffering from diarrhoea and weakness. On the advice of the local doctors, he was taken to Tambaram T.B. sanatorium, Madras where his liver trouble was set right. But it was highly impossible for his aunt to take to Madras every time as she cannot afford it. At that time our worker found him and registered on our rolls. Later he was taken to hospital where the tests proved positive to HIV. From then onwards he was put on treatment and given nutritious diet i.e., 5 eggs, green leaves for 2 times per week and a banana daily and 250ml. of milk every alternate day. We entrusted him to a shop keeper who supplies these to the child @Rs.772.50 for three months. We have also trained his aunt how to prepare nutritional diet with less cost. Now she know how to prepare fruit salads, vegetable salads, laddus, payasam with bajra and wheat flour with less cost.

After this, TB attacked him and the treatment in Government hospital did not suit him. When we approached YRG, Nellore, the doctor, Chandran

Kumar asked us to hurry him to Madras as his condition is precarious. So with the support of CMP and with the cooperation of Dr. Devadanam, we could join him in the best children's Hospital, RIZID. But it cost him Rs.25,000 for treatment. We have given some monetary support through our CMP. His condition turned so bad that his aunt and father thought it would be better for the boy to die than to undergo

such strenuous treatment. The boy suffered a lot while the doctors were removing the fluid, accumulated in his lungs with the help of electric equipment. Unable to bear that pain the child also wanted to die. But now he wants to live and he got all confidence that he would live. We gave him counselling and encouraged him.

His father and aunt expressed their gratitude to the CMP. They told that they are not in a position to manage all this except with the project. All the expenses such as food, medicine, travel, clothing might have cost them beyond their capacity if the CMP is not there. All of them are happy; the boy along with his friends is going to school happily. Now the boy is in the VII standard. We are more satisfied to see him so healthy and happy; in fact it is a great achievement.

A. Sireesha

Sireesha is a girl of 13 years, a resident of Kothakaluva which is 12km away from Nellore. She lives with her mother, Venkataramamma. Both are HIV affected. Her father who died 4 years back was the cause for this. He had many extra marital contacts with several women. Now they live in a poor hut near to her grand parents who are stricken in years and they cannot expect any help from them.

Our CMP worker identified the mother who was depressed both physically and mentally after the death of her husband who had been the bread winner for the family. She was enrolled in our list. We took her to the Government hospital and got her treated. She responded quickly and now there is no need for ART medicine. But she is very poor and weak that she can hardly go for any work to earn a living. Both the mother and child are in our care. They are being supplied with nutritious food. We paid to a shopkeeper of their village, for three months to supply them 5 eggs and the green leaves twice a week; 250ml. of milk in alternate days; 1 banana daily; besides this, they were trained to cook high nutritious food with low cost. Now they are healthy. The mother goes for work in fields and maintains the family. Their economic condition is also good.

They expressed their gratitude for bringing back to health. They themselves were not in a position to take good diet. Though they have some money, they neglect to take balanced diet.

Because the shopkeeper supplies the ration they are able to take good diet regularly. They told that the CMP has filled happiness in their lives.

The girl has joined in a school and is in VIII class now. She is showing good progress in studies also. They were happy to hear that they would be given clothes for Christmas; they said that it would be of great help for them. Now they are physically and mentally alright. The CMP is proud of this family. It definitely had filled cheer in their lives.

Nutrition and HIV/AIDS

UNICEF's nutritional priorities for support to people infected or affected by HIV/AIDS are threefold: helping HIV-infected mothers make informed infant-feeding decisions, supporting the nutritional needs of children living with HIV and assisting the millions of children orphaned or made vulnerable by the virus.

Scaling up:

After running this project for two years, and having learned a great deal from it, in terms of how to deliver a complicated logistical project in rural India, and having ironed out those problems. We are in a very strong position to take this project further.

There is little doubt as to its merit and benefits. And there remains great need. 387 children are registered as HIV positive in the Nellore District alone. There are a further 511 children registered in the Vijaymanikkan district, to say nothing of the hundreds more across the state and the hundreds of thousands across the whole country.

As our focus has been primarily on the Nellore District, it seems right that we extend our nutrition project to include all the HIV positive children whose lives are in danger and threatened by the double horror of malnutrition and HIV.

A project of this scale and reach would be something to be incredibly proud of. To deliver life saving nutrition to all the positive children in the district, the size of a small European country, would I think be a great accomplishment and one I am sure we could garner support for from other sources.

Cost of scaling up.

Scale up costs	2010
number of children	387
cost per child	340
Nutrition total	131,580
cost of staff	
Project Manager	8250
Asst proj man	5000
Asst proj man	5000
Travel for asst proj man x 3	3000
Average medical est. on current multiple	1200
total	154,757

APPENDIX I.

WORLD HEALTH ORGANIZATION

FIFTY-NINTH WORLD HEALTH ASSEMBLY A59/7 Provisional agenda item 11.34 May 2006

Nutrition and HIV/AIDS Report by the Secretariat

SECTION III

8. Nutritional Considerations in the Use of ART in Resource-limited Settings Key Findings:

- HIV-infected adults and children being considered for ART and while on ART need to be screened and assessed for nutritional problems: basic anthropometry and dietary assessment are appropriate.
- Documentation is needed of dietary supplement use including use of herbal and botanical therapies (that can potentially cause drug/supplement interactions which in turn affect the efficacy, safety and/or compliance with ART) and participation in government-sponsored food and/or micronutrient supplementation programmes.
- ART can reverse but not rectify the loss of body mass (including muscle mass) that results from HIV infection.

13 Interim version April, 2005

- Metabolic complications of long-term ART are documented in HIV-infected adults, infants and children include lipodystrophy, dyslipidaemia, insulin resistance, derangements in glucose tolerance, lacticacidaemia and mitochondrial toxicity, and problems with bone mineral metabolism.
- Risk estimates vary for lipodystrophy and the ART metabolic syndrome but there is a consensus that although nucleoside reverse-transcriptase inhibitors drugs (NRTIs) such as stavudine have also been implicated, protease inhibitors (PI) are the class of drugs most commonly associated with these effects.
- These effects appear in men, women, and children, and present risks in terms of adherence with ART protocols, long-term health and quality-of-life issues and increased risk of chronic diseases including cardiovascular disease and diabetes.
- Bone problems have been associated with ART in HIV-infected adults and children. However the implication and importance of this is yet unknown and at present this does not effect the current recommendation for selection of first and second level therapies in resource-limited settings.

Evidence Base:

ART has made a significant reduction in the prevalence of wasting, largely through the reduction in viral replication. The exact mechanisms of wasting are complex (e.g. reduced intake, increased resting energy expenditure mediated by factors such as cytokine or androgenic hormones, opportunistic infections) and remain to be fully understood, weight loss remains a problem even among people on ART and continues to be an important predictor in resource-constrained areas, of poor or failing response to therapy and mortality.

Resting energy expenditure is increased in HIV-infected patients but data on changes with highly active antiretroviral therapies (HAART) are mixed, with reports of decreased, increased and neutral effects of HAART on resting energy expenditure. Differences among studies may be secondary to differences in study populations e.g. stage of HIV infection, nutritional status, anorexia, or specific drugs used.

Although the use of ART has greatly improved the long-term outlook for HIV-infected adults and children, there are well documented long term complications in some patients. Metabolic complications documented in adults, infants and children include lipodystrophy, dyslipidaemia, insulin resistance, derangements in glucose tolerance, lacticacidaemia and mitochondrial toxicity, and problems with bone mineral metabolism. Much of the data is derived from studies in nutritionally replete HIV infected individuals, and it is not yet clear whether background malnutrition will increase the likelihood of these complications.

14

Interim version April, 2005

RIGHT NOW FOUNDATION

HIV CHILD NUTRITION PROJECT

The prevalence of poor status of calcium and vitamin D and nutritional rickets associated with calcium and/or vitamin D deficiency is high in many areas where HIV has become endemic, including Africa. Vitamin D requirements independent of HIV status may be significantly higher in highly pigmented populations. There is some limited evidence indicating problems with calcium and vitamin D homeostasis in HIV-positive people before and during ART in industrialized countries. It is unclear whether these problems interact in any significant way and what sort of assessment and interventions may potentially be required.

Data addressing the potential interaction of ART with nutritional status during pregnancy and lactation are limited. However, the body of evidence about the metabolic consequences of ART—whether used for prophylaxis against prenatal and postnatal mother- to-child-transmission or for the long-term care of the HIV-positive mother—is sufficient justification for attention to nutritional status for both HIV-infected women and their children. Data on the effect of HIV on a mother’s nutritional status or the status of her infant are limited. Furthermore, data are limited for evaluating the potential effect of ART on the nutritional needs of lactating women particularly in resource-limited settings where breastfeeding is the predominant mode of infant feeding.

Data are limited regarding the effect of ART on growth in infants and children and very little experience has been gained with ART in resource-limited settings to date. Because non- standard measurements have been used in large multicentre studies, pretreatment growth rates have not been routinely measured in clinical studies, studies have not had sufficient statistical power to detect changes in growth outcome, most studies excluded or had inadequate assessment of nutritional status including lack of biochemical and/or dietary intake data, and results of analyses of viral load (e.g. among responders versus nonresponders) have been inconsistent.

ART in children contributes to anomalies in lipid and carbohydrate metabolism, including lipodystrophy, dyslipidaemia, glucose intolerance and insulin insensitivity, similar to those seen in adults, although glucose intolerance and insulin insensitivity appear to be less of a problem in younger children. It has been suggested that although long-term monitoring of the HIV-infected children receiving ART would be necessary, no intervention—dietary or other—is warranted in the short term.

Knowledge Gaps:

- Only limited data exist about the prevalence of metabolic complications on long term use of ART in resource-limited settings and how best to manage them clinically; the impact of nutritional status upon these complications especially in those that are chronically undernourished needs to be established.
- Data are needed about the potential effect of ART on the nutritional needs of lactating women particularly in resource-limited settings where breastfeeding is the predominant mode of infant feeding.

15

Interim version April, 2005

- Evaluation of the potential impact of ART on growth and nutritional status of infected and uninfected infants born of HIV-infected mothers in areas where malnutrition is common is a high priority..
- Data are needed on the interaction between poor nutritional status of bone-related nutrients (calcium and vitamin D) and ART in resource-limited settings.
- Because of the potential long-term health consequences of the metabolic complications of ART, appropriate research is needed on potential management for lipodystrophy and related conditions (e.g. diet or lifestyle changes) in adults and children, particularly those in resource-limited settings.
- It is not yet clear whether nutritional supplementation can prevent or reduce the occurrence of long-term complication due to ART in adults or children.
- Evaluation of the impact of acute or chronic severe malnutrition in children on CD4 levels, response to ART or likelihood of ART side effects.

APPENDIX II)

WORLD HEALTH ORGANIZATION

FIFTY-NINTH WORLD HEALTH ASSEMBLY A59/7 Provisional agenda item 11.34 May 2006

Nutrition and HIV/AIDS Report by the Secretariat

1. Resolution WHA57.14 urged Member States, as a matter of priority, to pursue policies and practices that promote, inter alia, the integration of nutrition into a comprehensive response to HIV/AIDS. During its discussion on nutrition and HIV/AIDS at its 116th session, the Executive Board expressed its support for the recommendations for action issued at WHO's technical consultation on nutrition and HIV/AIDS in Africa (Durban, South Africa, 10-13 April 2005).¹ The recommendations were based on the main findings of a detailed review of the latest scientific evidence on the macronutrient and micronutrient needs of HIV-infected people, including pregnant and lactating women and patients receiving antiretroviral therapy. A complementary international conference on HIV/AIDS and Food and Nutrition Security (Durban, South Africa, 14-16 April 2005), convened by the International Food Policy Research Institute immediately after the consultation, reviewed the growing evidence on links between HIV/AIDS and food security and the implications for policy and programming.

2. The following paragraphs describe activities undertaken at national, regional and global levels relating to nutrition and HIV/AIDS and highlight efforts made since May 2004. These activities were strengthened after the recommendations of the Durban consultation and the deliberations of the Executive Board, which formed the basis for drawing up priorities and a plan of work to guide WHO's work in this area.

3. The Executive Board discussed the report at its 117th session, and noted the scope of work and progress made in this area.²

4. **Technical and programmatic support.** In view of the lack of strategies to tackle the impact of HIV/AIDS on food and nutrition security, WHO, in collaboration with other organizations of the United Nations system and concerned partners, is providing opportunities for Member States to frame policies and to draw up, strengthen and implement intersectoral food and nutrition plans that address the impact of HIV/AIDS. Training workshops were conducted in the Africa, South-East Asia and Western Pacific regions.

¹ See documents EB116/12 and EB116/2005/REC/1, summary record of the second meeting. ² See document EB117/2006/REC/2, summary record of the fourth meeting. **A59/7**

5. Guidance on nutrition for HIV-infected women and their children was published in 2004 as part of a series on care, treatment and support for women living with HIV/AIDS in resource-poor settings.¹ The Inter-agency Task Team on Prevention of HIV Transmission in Pregnant Women, Mothers and their Children provided technical support on HIV and infant feeding in several African countries. WHO provided inputs in 2004 for practical guidance on integrating food and nutrition programmes in support activities for people with HIV/AIDS among refugee populations and host communities. A training module on infant feeding in emergencies was developed for health and nutrition workers and includes infant feeding options in environments where HIV testing is available.

6. Building on the results of a consultation on nutrient requirements for people living with HIV/AIDS² and the recommendations of the Durban consultation, a number of African countries have updated or prepared new guidelines on nutrition and HIV/AIDS. For example, Kenya has published guidelines which target frontline service providers and the health, agriculture, education and social- services sectors.

7. In close collaboration with the Global Fund to Fight AIDS, Tuberculosis and Malaria a meeting was organized in March 2006 on including nutrition as a component of national funding proposals.

8. WHO is joining other organizations in assessing existing technical guidelines. Gaps identified thus far include guidelines for mid-level health workers on nutrition care and support for people living with HIV/AIDS; for hospital-based nutritional management of HIV-infected individuals, particularly children; and for nutrition support for high HIV-prevalence population affected by emergencies; simple assessment and support tools for health-care workers providing HIV services; and recommendations for community-based man-

agement of severe malnutrition, including among HIV-positive children. WHO and WFP are working on an approach to food assistance in care and treatment programmes to enable WFP staff to collaborate with clinical staff managing patients receiving antiretroviral treatment, and with community groups providing support to patients and their families.

9. In collaboration with institutions in the United States of America, the Secretariat is developing a triage tool covering broad intake and anthropometric questions and assessment of specific nutrient needs. The tool, which will be field-tested and distributed in 2006, is intended for use in health facilities and community-based programmes to identify nutritionally vulnerable adults and children living with, or affected by, HIV/AIDS.

¹ *Nutrition counselling, care and support for HIV-infected women: Guidelines on HIV-related care, treatment and support for HIV-infected women and their children in resource-constrained settings*. Geneva, World Health Organization, 2004.

² Nutrient requirements for people living with HIV/AIDS: Report of a technical consultation, World Health Organization, Geneva, 13-15 May 2003. Geneva, World Health Organization, 2003.

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10. **Capacity-building for improved feeding and prevention of mother-to-child transmission of HIV.**

A framework for priority action in HIV and infant feeding, a review of the evidence, guidelines for decision-makers and health-care managers and supervisors, and an operations research manual were widely disseminated during 2003 and 2004.¹ Counselling aids, such as flipcharts, orientation and reference guides, and take-home flyers were produced in 2004 and 2005 for front-line health workers.

11. Financial and technical support was provided for training-of-trainers courses in several African countries during 2004 and 2005 in order to ensure appropriate guidance to mothers on feeding in the context of HIV/AIDS. A number of African countries are expanding training to provincial and district levels so that health workers have the skills to support mothers, including those who are HIV-positive, in choosing and implementing appropriate feeding options for their infants. Others have revised their policies and guidelines on HIV and infant feeding, which have been disseminated widely to health and community workers.

12. A regional workshop (Cotonou, February 2005) organized by WHO, UNICEF, IBFAN, Helen Keller International, and the West African Health Organization dealt with action plans for infant feeding in the context of HIV.

13. WHO and UNICEF are revising the training manual and assessment tools for their joint Baby-friendly Hospital Initiative, in the light of the HIV/AIDS pandemic. After field-testing these materials in Zimbabwe, a three-day workshop was held to orient national focal points on the importance of revitalizing the Initiative in the context of HIV (Harare, November 2005).

14. The Secretariat elaborated a five-day integrated course on infant and young child feeding for health personnel and, possibly, lay counsellors, which was introduced in seven countries in the Western Pacific Region after field-testing in Ghana, Jamaica and South Africa.

15. Policy and programmatic guidelines for feeding older infants and young children, including infants of HIV-positive mothers who are not breastfed, were published after a meeting to discuss pertinent evidence-based findings.²

16. WHO regional offices have intensified their support for programme planning and capacity building. The **Regional Office for Africa** conducted planning meetings for English-, French-, and Portuguese-speaking countries using the HIV and infant-feeding tools, and provided support for national training-of-trainer courses on infant-feeding counselling in 19 countries. By the end of 2004, over 250 national trainers and 2000 health workers had been trained. The **Regional Office for the Americas** provided support for training on HIV and infant-feeding counselling, and conducted intercountry planning meetings for countries in Central America, the Caribbean and the Southern Cone, among others. The **Regional Office for South-East Asia** organized an intercountry training course on breastfeeding and HIV and infant-feeding counselling for seven countries. The **Regional Office for Europe** adapted for the Region three-day counselling courses on breastfeeding and on HIV

¹ *HIV and infant feeding: framework for priority actions*. Geneva, World Health Organization, 2003; Newell M-L, *HIV transmission through breastfeeding: a review of available evidence*. Geneva, World Health Organization, 2004; UNICEF/UNAIDS/WHO/UNFPA, *HIV and infant feeding: Guidelines for decision-makers*. Geneva, World Health Organization, 2003; *HIV and infant feeding: a guide for health-care managers and supervisors*. Geneva, World Health Organization, 2003.

2005.

² *Guiding principles for feeding non-breastfed children 6-24 months of age*. Geneva, World Health Organization,

A59/7

3

A59/7

and infant-feeding. The **Regional Office for the Eastern Mediterranean** prepared training materials in Arabic, and created a pool of regional training facilitators. In the **Western Pacific Region**, health workers were trained in infant feeding.

17. **Capacity-building for improved care and support for people living with HIV/AIDS.** WHO and FAO issued a manual¹ and prepared a short course to provide caregivers with practical knowledge about nutritional care and support for people living with HIV/AIDS. Regional meetings were held in Jakarta (October 2005) and Johannesburg (November 2005) to give trainers from health institutions information and materials for caregivers and their families on provision of practical nutritional care and support to people living with HIV/AIDS.

18. **Operational and clinical research to support evidence-based programming.** Recent WHO-supported research in various countries has focused on clarifying issues related to feeding infants of HIV-positive mothers, including assessment of the quality of feeding counselling to prevent mother-to-child transmission of HIV, development of feeding recommendations for HIV-infected women, and factors influencing the feeding practices of HIV-positive mothers. The last study is crucial for understanding HIV transmission associated with modes of breastfeeding. New evidence suggests that exclusive breastfeeding may be associated with lower transmission of HIV than is mixed feeding.² Results from similar studies and others on treating breastfeeding mothers with high active antiretroviral therapy will become available in 2006.

19. Micronutrient deficiencies are a significant problem for people living with HIV. However, little is known about interactions between micronutrients and physiological status or the impact of micronutrient status on disease progression. People infected with, and affected by, HIV/AIDS need a diet that provides the full range of essential micronutrients. Current evidence is inconclusive about the effect of micronutrient supplementation on transmission and progression of HIV in the absence of a specific nutritional deficiency. After a scientific review of available data, WHO recommended that multiple micronutrient supplementation for people living with HIV should not exceed one recommended daily allowance.³

ACTION BY THE HEALTH ASSEMBLY

20. The Health Assembly is invited to consider the draft resolution contained in resolution EB117.R2.

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¹ Living well with HIV/AIDS. A manual on nutritional care and support for people living with HIV/AIDS. Geneva, World Health Organization and Rome, Food and Agriculture Organization of the United Nations, 2002.

² Iliff PJ et al. Early exclusive breastfeeding reduces the risk of postnatal HIV-1 transmission and increases HIV-free survival. *AIDS*, 19:699-708, 2005.

³ Nutrient requirements for people living with HIV/AIDS.

APPENDIX iii)

See attached:

Child Health and CD4 monitoring records.

