Food by Prescription: Impact of food supplements on nutritional recovery of malnourished HIV infected clients

Nutrition and HIV Program

Implementers Meeting August 2010, Nairobi

USAID | NHP
FROM THE AMERICAN PEOPLE | NUTRITION AND HIV PROGRAM

AED
Ideas Changing Lives

In July 2011, FHI 360 acquired the programs, expertise and assets of AED.

FHI 360 is a nonprofit human development organization dedicated to improving lives in lasting ways by advancing integrated, locally driven solutions. Our staff includes experts in health, education, nutrition, environment, economic development, civil society, gender, youth, research and technology – creating a unique mix of capabilities to address today's interrelated development challenges. FHI 360 serves more than 60 countries, all 50 U.S. states and all U.S. territories.

Visit us at www.fhi360.org.

- This presentation will cover…

- Reflections on significance malnutrition in management of HIV infected;
- Treatment options and rationale for feeding regimens;
- Experiences from operations research and in service delivery;
- Conclusions and opportunities for the future

Pathophysiology of malnutrition in HIV infection

- Modified metabolism – increased resting energy expenditure, increased protein degradation, peripheral lipolysis (re-cycling fatty acids), impaired organ function
- Inadequate food intake – **food insecurity**, anorexia, pain, physical impairment, neurological impairment
- Gastrointestinal disorders - Impaired digestion, malabsorption and intestinal permeability/gut loss.
- Reduced physical activity (due to constitutional symptoms) - disuse atrophy.
- Interference with androgenic hormone production.

Treatment Options – Adjunct to HAART

- Nutritional – Nutrient dense supplemental and therapeutic foods + anti-oxidant micronutrients (vitamins and minerals)
- Resistance exercises – progressive resistance exercise training
- Hormone therapy – Anabolic compounds
- Cytokine – Blockers (TNF-α)

Most Feasible ►Nutritional + resistance exercise

Aim of nutrition treatment in PLHIV

- Improve Quality of Life;
  - Restore function
  - Reduce morbidity
  - Slow disease progression
  - Reduce stigma
- Improve adherence to medications (ARVs) & lower drug toxicity
- Reduce mortality

Supplemental and Therapeutic Feeding Regimens

- Fortified Blended Food – Pre-cooked flour
  - Energy dense foods: Whole grain cereal flour + Fat
  - Essential amino-acid + Non-EAA: Soya ~ L-glutamine, L- arginine
  - Multiple micronutrients (MM): Anti-oxidants - Se, Zn, Vit E,C;
- Ready to Use Therapeutic Food (RUTF)
  - Spreads: Peanuts-lipid paste + Milk powder + MM + Sugar
- Combination of FBF + RUTF

Food Products

FBF

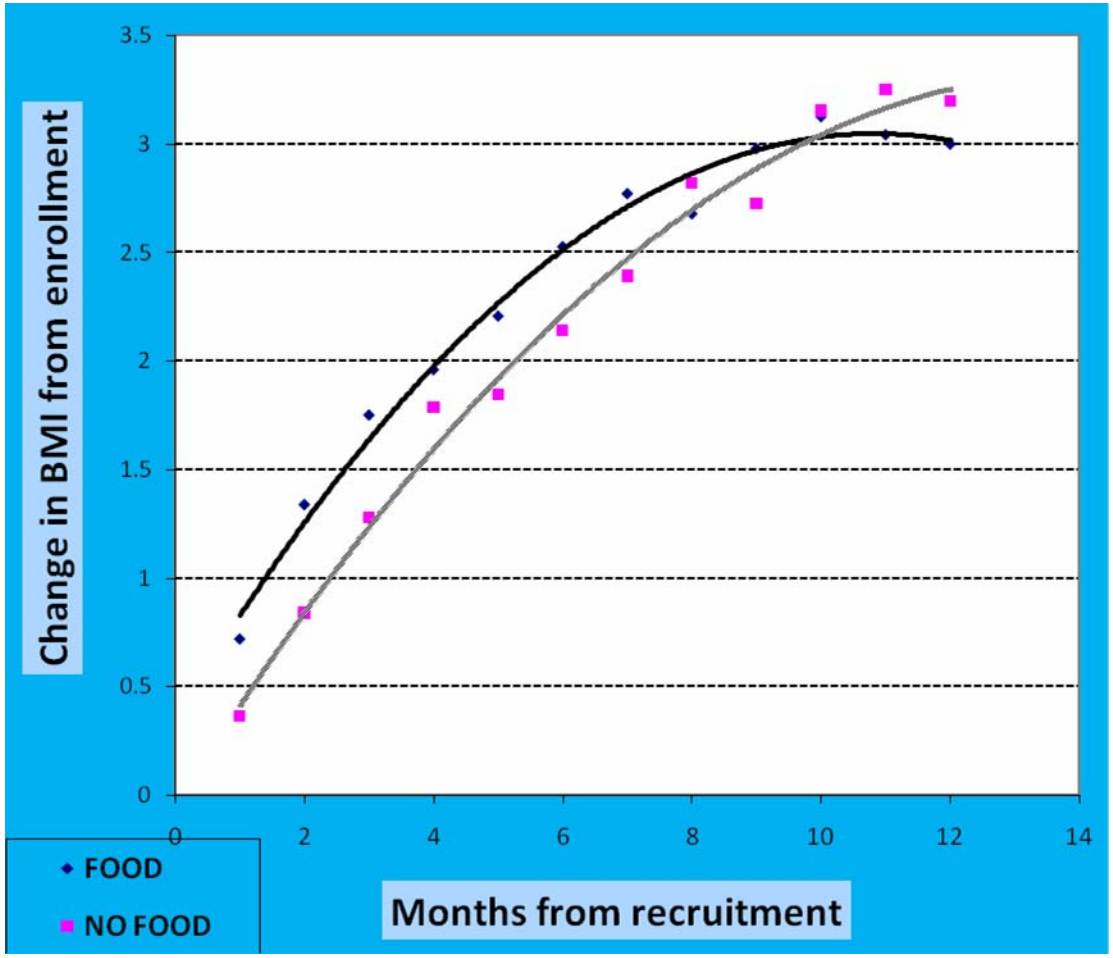
RUTF

Effectiveness of FBP in treatment of malnutrition in PLHIV

Ndeka MJ et al 2009; Malawi	Patients with BMI < 18.5 starting ART Supplemented with energy dense peanut-lipid based spread vs corn-soy blend for 14wks; Rapid wt gain in 1st 2 wks. BMI increase 2.2 ± 1.9 vs 1.7 ± 1.6; No obvious effects on mortality at 3.5 mo (26% vs 27%)
Muttunga JN et al 2010; Kenya (FANTA/ KEMRI)	FBF supplement + nutrition counseling vs nutrition counseling alone on malnourished adult patients starting ART & pre-ART. Wt gain 1.9 & 1.0 kg in 1st mo and 4.6 & 3.4 kg by 3rd mo on food & non-food respectively

Evidence? FBF vs. No Food for HIV+

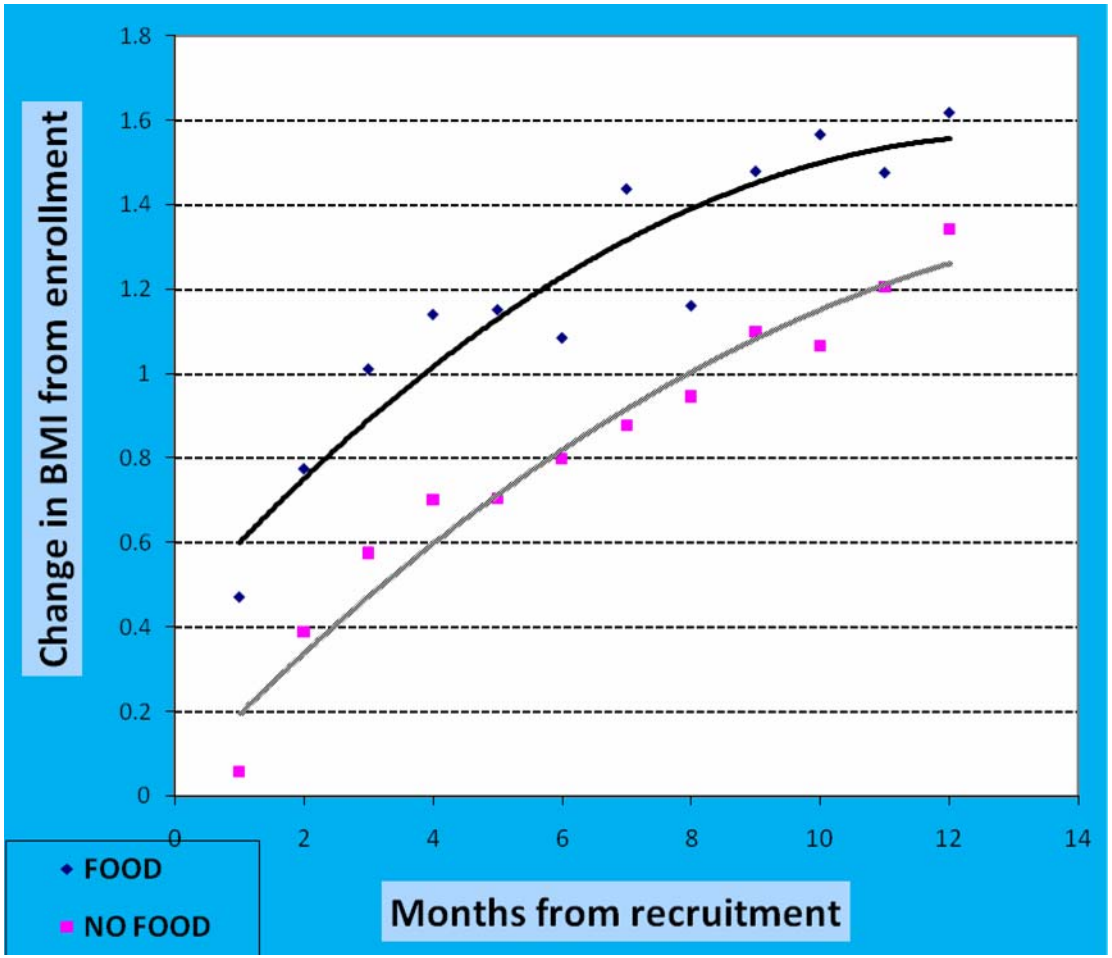
Adults: Results: ΔBMI (*ART*)



- Differences significant through the 3rd month.
- Food significant determinant of ΔBMI at 3 months in multivariate regression but not 6.
- Greater difference for women than men.
- Rapid weight gain: 1.9 & 1.0 kg in 1st month and 4.6 & 3.4 kg. by 3rd month on food & non-food respectively.

FANTA & KEMRI, 2010

Evidence?; FBF vs. No Food for HIV+ Adults: Results: ΔBMI (*pre-ART*)



- Differences significant through the 6th month.
- Food significant determinant of ΔBMI at 3 and 6 months in multivariate regression.
- Greater difference for women than men.
- After 6 months differences not significant (n quite low by then).

FANTA & KEMRI, 2010

Experiences from NHP

- Sub-sample of data drawn from 292 primary and satellite sites during the period January – June, 2010

- Clients with 2 consistent follow-up visits after baseline were selected

- Estimated changes in weight and BMI

Profiles of clients enrolled Jan-June 2010 (n=17,065)

- **Gender distribution** Male=33.3%, Female=66.1%
- **Mean Age:**
  Male=39.84(SD=12.75),Female=35.84(SD=21.61)

- **ART Status:** Pre – ART = 48.4%, ART = 51.6%
- **Mean Overall Treatment time:** 62.7 days
- **Clients on TB treatment :** 16.1% (72% reporting)

BMI Profile of beneficiaries

BMI Category (kg/m²)	Pre ART		ART	
	Number	%	Number	%
< 16	1918	27.5	1535	21.7
16 - 17	1398	20.0	1275	18.1
17 - 18.5	2500	35.8	2694	38.2
18.5 – 21.9	1158	16.6	1557	22.1
Total	6974	100.0	7061	100.0

**p<0.005 between Pre-ART and ART groups*

Mean weight and BMI changes for a sample of clients

Category	Indicator	Response	% Clients	Mean	(IQR)
Pre-ART	Weight (n=358)	Gain	76.8	3.7	(1.5,5.0)
		Loss	23.2	-3.0	(-4.0,-1.0)
	BMI (n=546)	Gain	73.1	1.09	(1.23,1.5)
		Loss	26.9	-1.04	(-1.4,-0.4)
ART	Weight (n=937)	Gain	73.2	3.7	(1.4,5.0)
		Loss	26.8	-2.93	(-4.0,-1.0)
	BMI (n=1452)	Gain	72.6	1.1	(0.3,1.6)
		Loss	27.4	-1.15	(-1.5,-0.4)

Age: Comparable to the cohort; Nutrition profile: similar to the cohort

Percentage weight change among clients

% weight change	Pre ART		ART	
	Number	%	Number	%
< 10%	280	78.2	746	79.7
> 10%	78	21.8	190	20.3
Total	358	100.0	936	100.0

Conclusions

- The NHP findings are similar to those reported in the Kenyan OR study;
- The reported weight gains did not attain the 10% threshold (~ assumed nutrition reconstitution threshold); Longer supplementation period/improved adherence required.
- Strengthening nutrition education and counseling, improve client follow-up mechanisms and data quality assurance

Future 1: Fully Mainstream Nutrition services in care & treatment – Action Points

- Alignment – include adult height & BMI in the BLUE CARD and Reporting
- Integrate Nutrition Services in Strengthening Data Quality Assurance in
- Demystify nutrition care and integrate in pre and in-service training
- Provide Intensive Nutrition Counseling at first contact & reinforce in follow-up contacts + IEC materials;
- Strengthen the fight against stigma

Additional Opportunities

- Future 2: Improve knowledge and capacity to manage gut health
- Future 3: Improve FBP regimens + Targeted Cytokine Blockers
- Future 4: Include inflammatory burden assessment – key Acute Phase Proteins in patient assessment

Acknowledgments

- MMS & MPHS- NASCOP
- Insta Products Ltd
- Participating sites
- Partners: APHIA II Nyanza, Coast, CDC, CRS, ICAP
- USAID/K