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

Nutrition and HIV Program

Implementers Meeting August 2010, Nairobi

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AED
Ideas Changing Lives

- 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

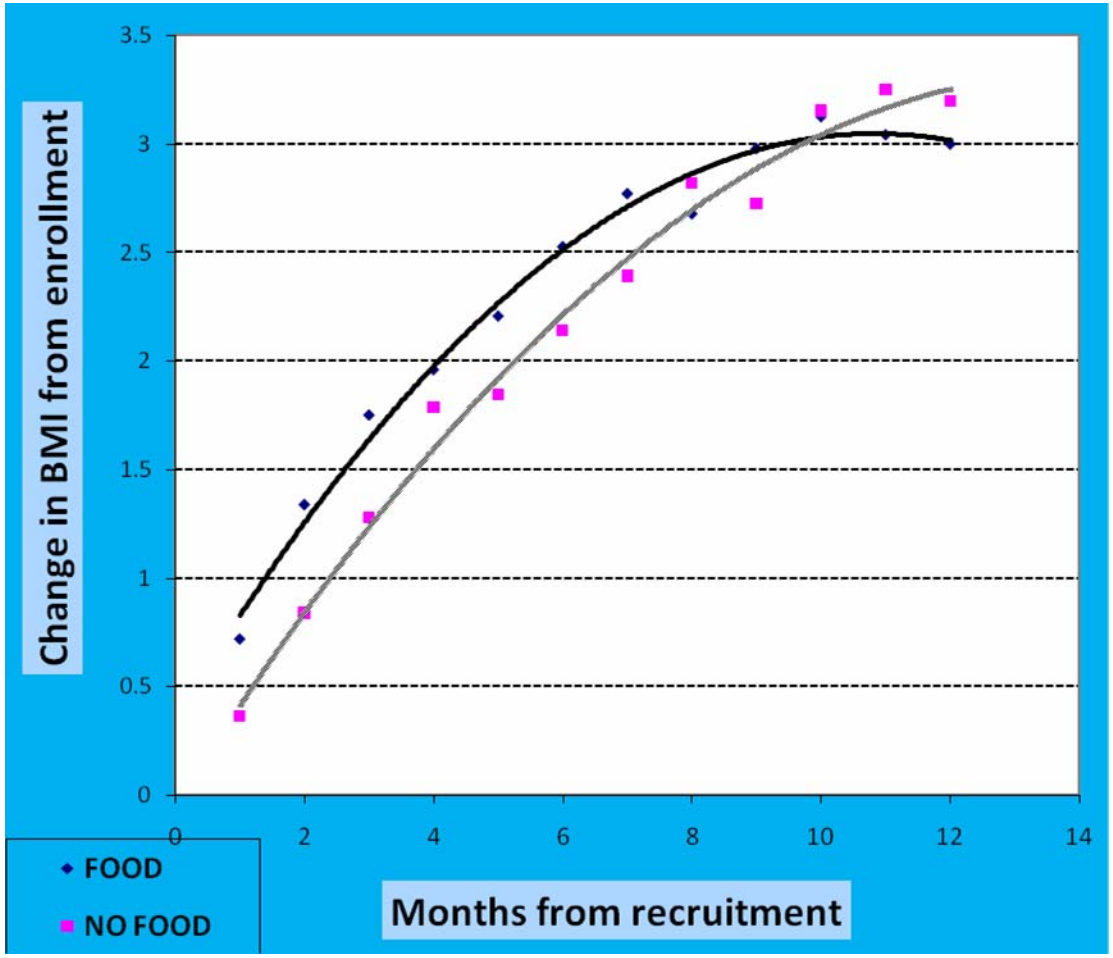
RUTF

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+

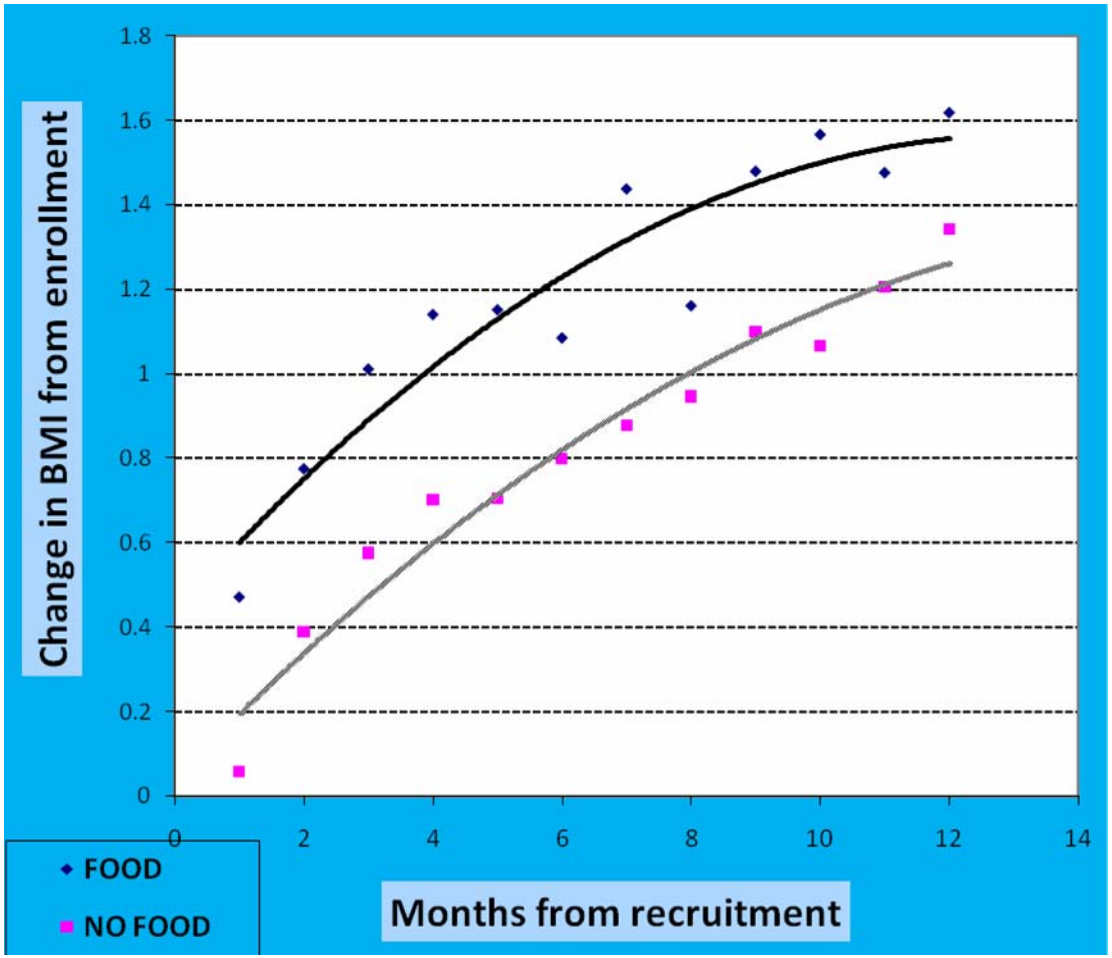
Adults: Results: ΔBMI (*ART*)



- 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

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