

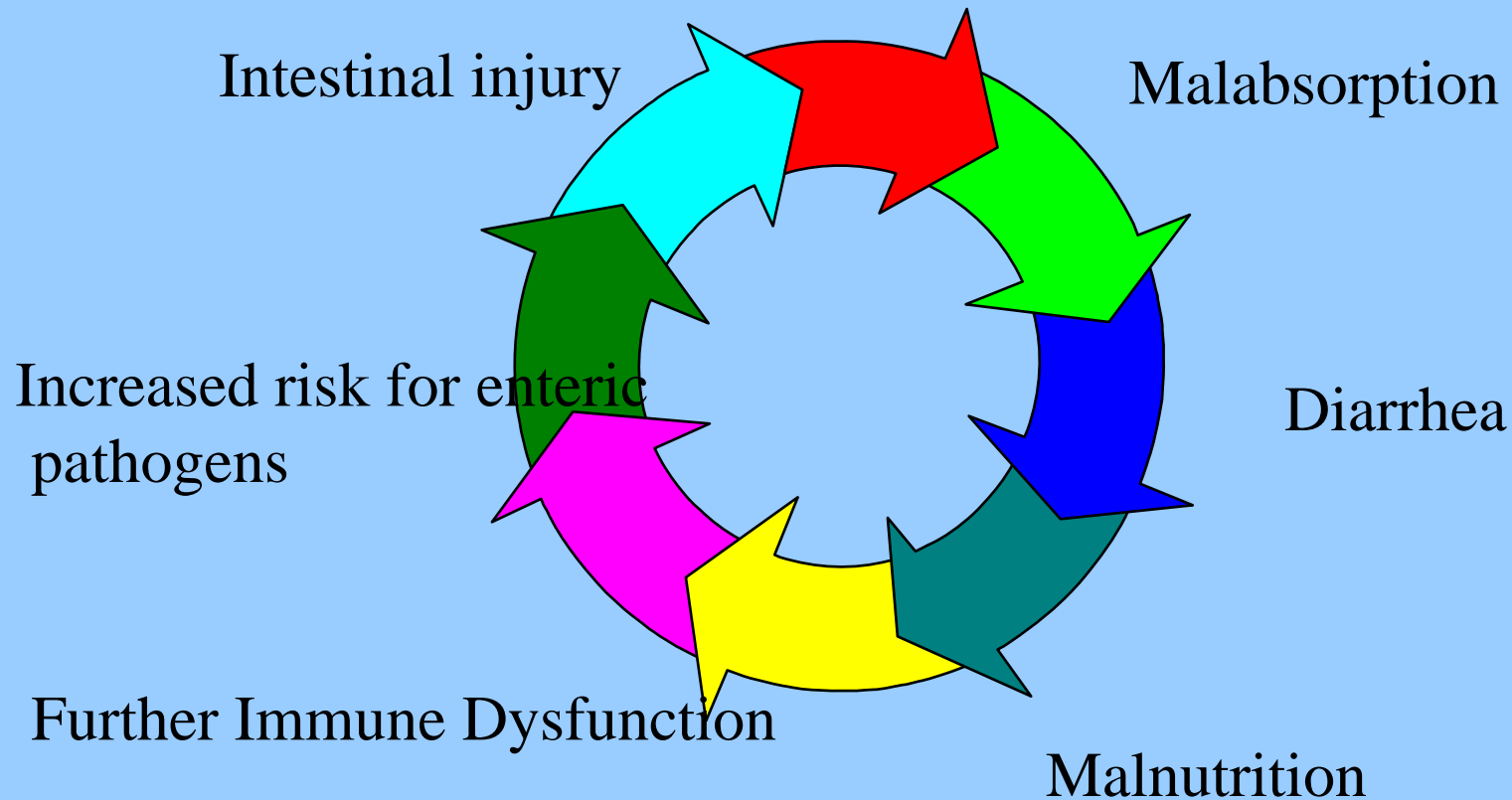
Nutritional Issues in HIV

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Impact of Malnutrition in HIV





Weight loss pre-HAART

- Death associated with weight less than 66% of ideal body weight
- Death associated with lean body mass falling below 54%
- Independent risk factor for death in HIV
- Weight loss also associated with increased risk for hospitalization
- As little as 5% weight loss was associated with mortality and increased risk of opportunistic infection (pre-HAART)

» Chlebowski RT, 1989; 6. Guenter P, 1993; Palenicek JP, 1995;.Cohan GR, 1992. Turner J, 1994.Wheeler DA, 1996..

Weight Loss and Survival in Era of HAART

Amount of weight loss	Risk for mortality from study entry	Risk of mortality within 6 months
Weight loss (%)		
≥10	5.8 (1.7-19.2) [†]	4.0 (1.2-13.8) [†]
≥5 to <10	4.0 (1.5-10.8) [†]	2.8 (1.0-8.0) [†]

[†] $P \leq .05$. Adapted from Tang AM, et al. *JAIDS*. 2002;31:230-236.

Morbidity Associated with HIV Malnutrition

- Higher weight (lean body mass) was significantly associated with better physical functioning in men
 - in men: 10 kg increase in LBM was associated with:
 - Improved physical function
 - Increase in general health perceptions
 - Fewer days in bed/month
- Access to food (hunger/food insecurity)
 - Viewed as major obstacle to adherence to HAART in Rwanda

» Adapted from Wilson et al., J 2000; Au et al 2006

HIV Weight Loss:
Impact of HAART on Incidence -
NFHL Study (N = 469)

- Weight loss was seen in:
 - 48% of those on first HAART regimen after initiation of HAART
 - 31% of those on “stable” HAART (could be failing HAART)
 - 26% of those who had not progressed to the point of needing HAART

Body composition & weight in women, by CD4 strata (in NFHL)

	<u><200</u>	<u>200-500</u>	<u>>500</u>
	<u>n=30</u>	<u>n=63</u>	<u>n=37</u>
<u>Weight</u>	62.8 kg	69.3 kg *	72.8 kg *
<u>BMI</u>	23.8 kg/m ²	26.9kg/m ² *	27.2kg/m ² *
<u>% fat</u>	31.5	35.2	34.6
<u>% lean</u>	68.5	64.8	65.4

Etiology of Malnutrition in HIV

- Food access and insecurity
- Intestinal dysfunction
 - HIV enteropathy
 - Diarrheal disease
 - Tropical enteropathy: present in up to 40% in S. India
- HIV: metabolic demands of the virus
- Metabolism/OI/hormonal deficiencies

Food Insecurity

Data from the NFHL Cohort

- 36.1% classified as food insecure (unsure of food source over subsequent 72 hours)
- 7.8% classified as hungry
- Independent correlates of food insecurity and hunger:
 - Poverty
 - Current injection drug use
 - Males: lack of care-giving adult

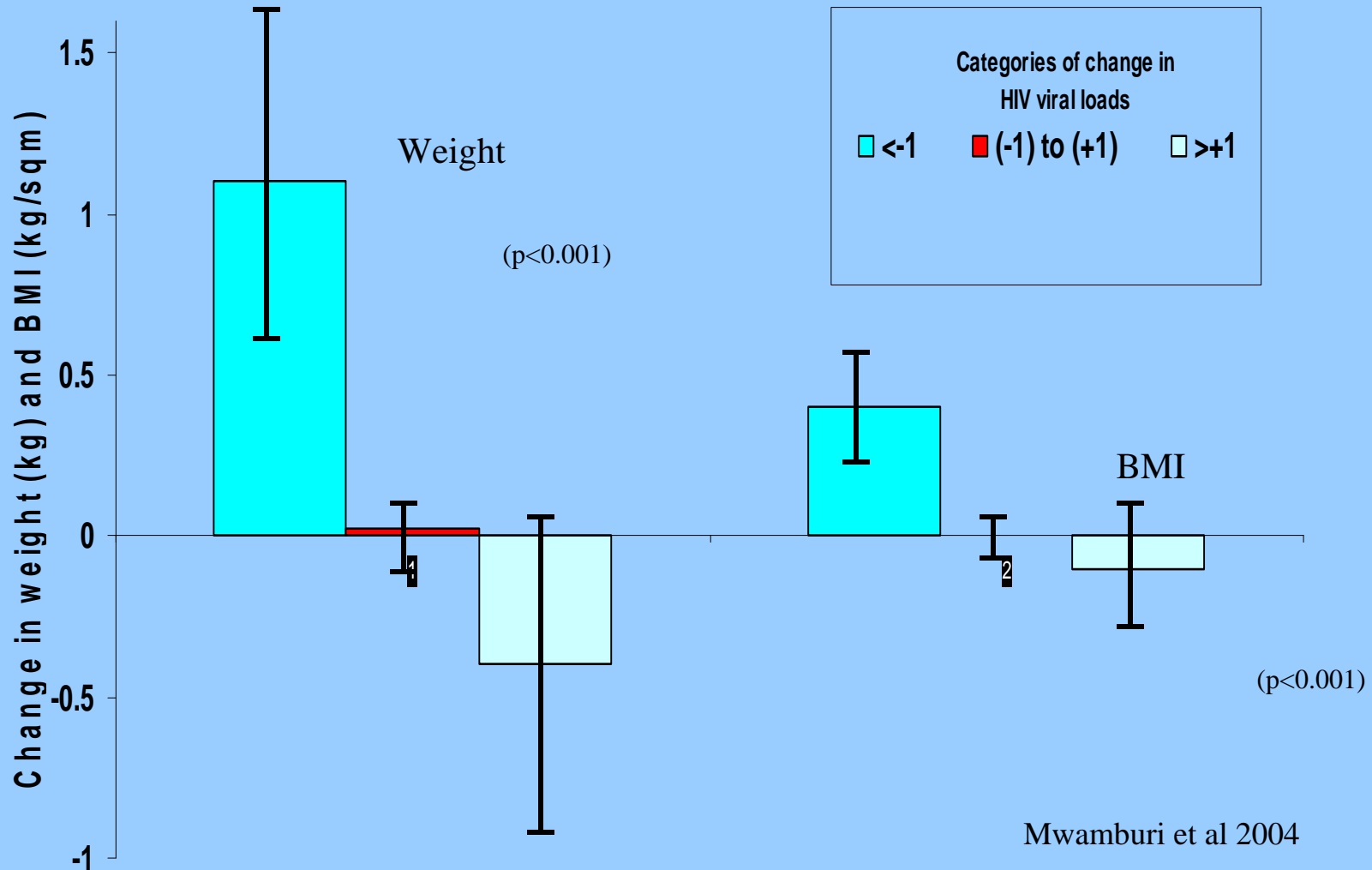
Intestinal Malfunction in HIV

- May result in diarrhea
- Malnutrition
- Micronutrient deficiencies
- Malabsorption may include:
 - Antiretrovirals
 - ATT

Intestinal Function in HIV in India

- Ongoing study in Rural Health Unit in Community Health Department at CMC, Vellore suggests:
 - Intestinal malfunction (d-xylose) occurs in 30% of HIV infected patients
 - Intestinal malfunction appears to be associated with CD4

Change in body weight and BMI by categories of change in viral load in NFHL: untreated HIV



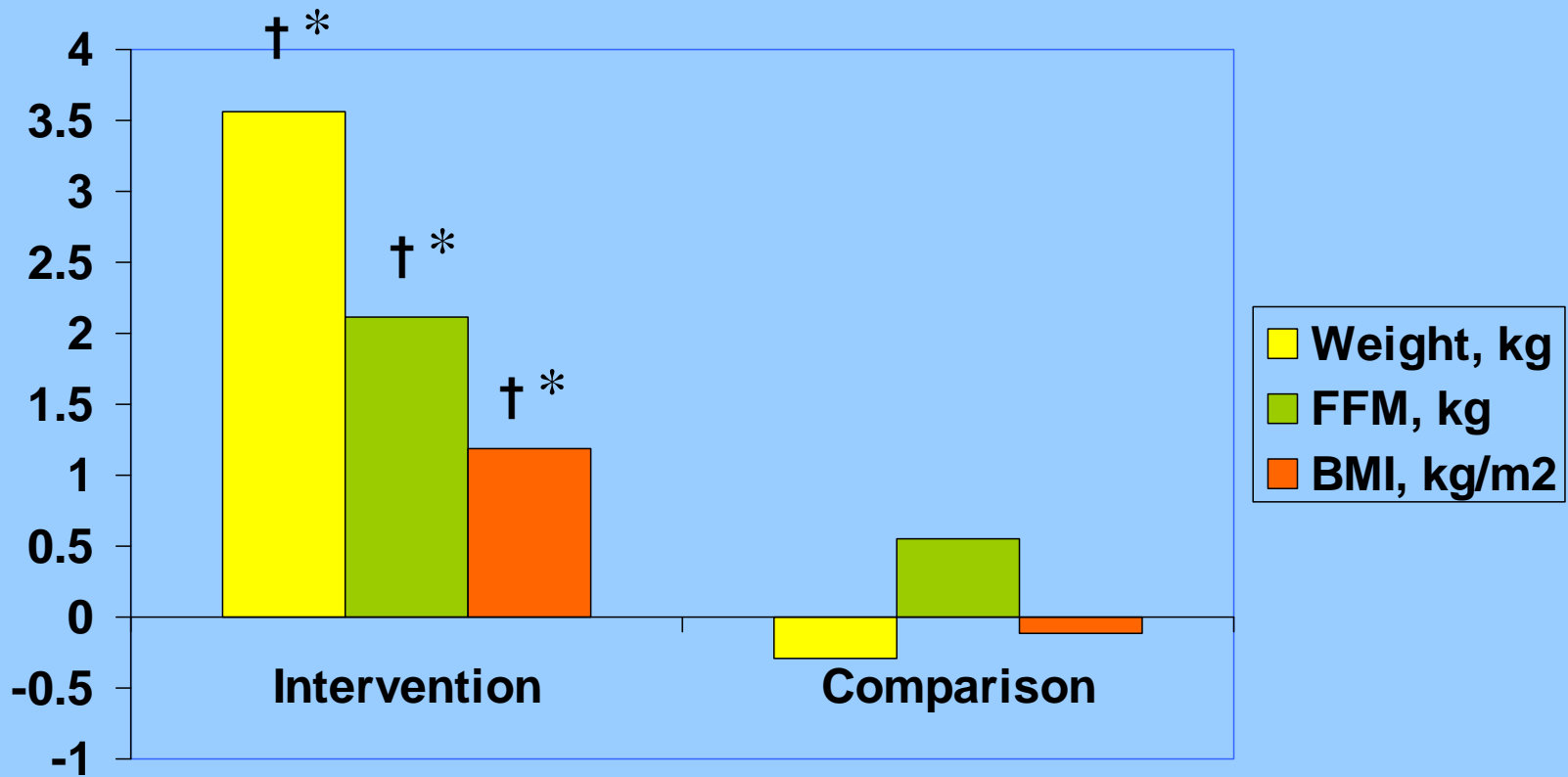
Does Suppression of HIV Lead to Resolution of Malnutrition?

- Change in CD4 associated with change in weight is HAART treated; change in VL associated with change in weight in naïve
- YRG CARE, Chennai, South India:
 - Successful initiation of HAART led to
 - Increase in weight in 50%
 - No change in weight in 30%
 - Weight loss in 20%

Role of AIDS Defining Illnesses in Weight Loss in the NFHL Cohort

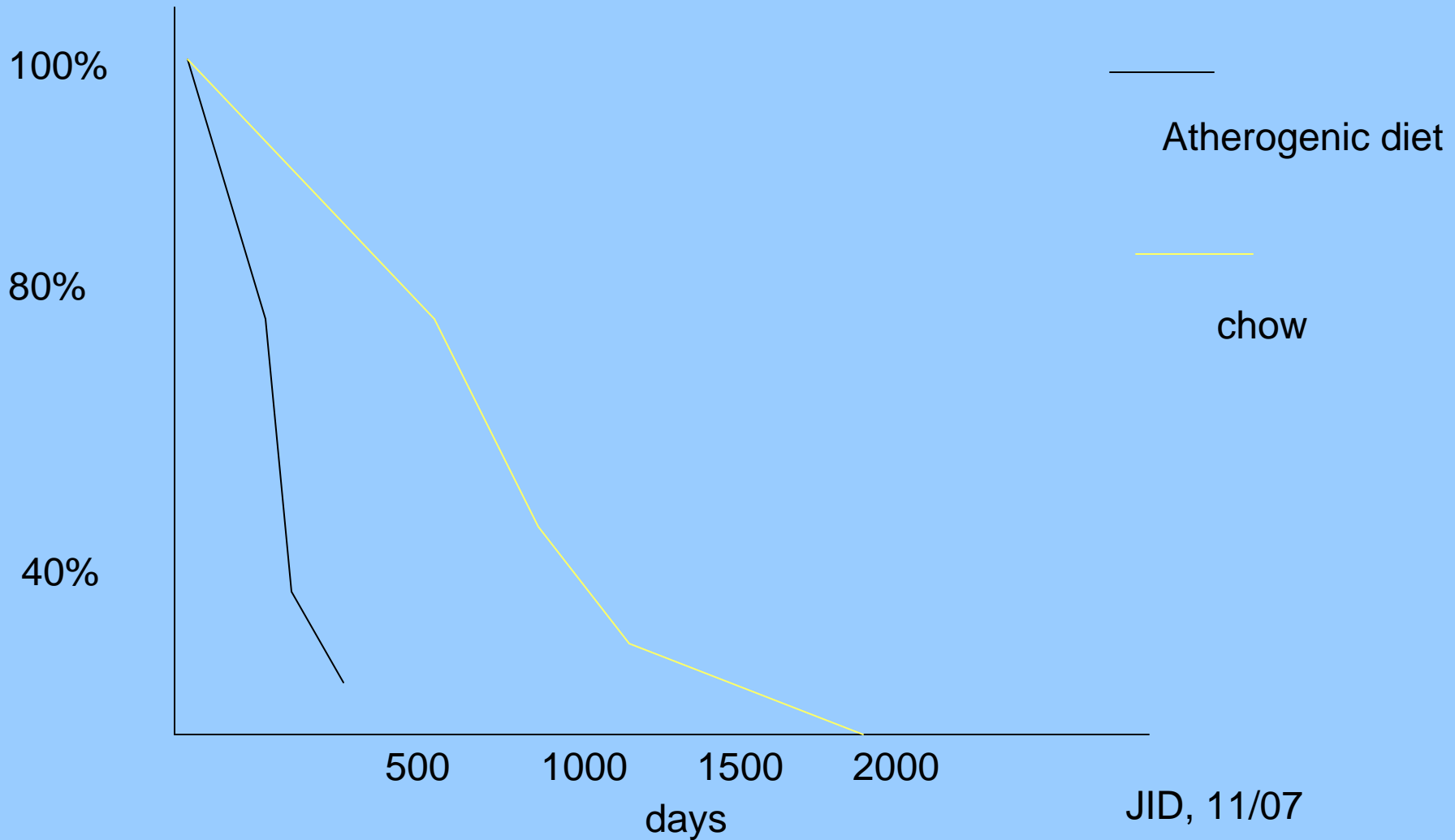
- One previous ADI did not predict any wasting outcome
- More than one ADI at study entry was significantly associated with increased risk of BMI falling $< 20 \text{ kg/m}^2$ (RR 1.2)
- The RR increased as the number of ADI increased
- Any ADI in the prior 6 months predicted a wasting outcome (RR 1.78)
- There was no difference in the incidence of wasting among the participants who developed AIDS by ADI and those who developed AIDS by CD4 count

Dietary Intervention vs. Comparison Group: Change from baseline weight, FFM, BMI



*All $P < 0.001$ between groups
† $p < 0.01$ within group

Survival SIV Infected Macaques



Goals in Treating HIV Weight Loss

- **Increase body weight (BMI):**
 - Appetite stimulant and anabolic with dietary advice can increase BMI to normal range
- **Increase Lean Body Mass**
 - Appetite stimulant and anabolic with dietary advice can increase LBM
 - More weight is not necessarily better
- **Increase strength and endurance, Improve QOL**
 - Appetite stimulant and anabolic with dietary advice can improve QOL
- **??Improve survival??**
 - » Mwamburi et al 2003, 2004

Malnutrition in HIV

- Weight loss is likely multi-factorial
- Interventions for weight loss must be specific to the etiology to be beneficial
- Although it seems intuitive, the benefit of controlling diarrhea and restoring weight remains to be determined
- Need to understand causes of weight loss/malnutrition in specific regions to implement appropriate interventions