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# INTRODUCTION TO CLINICAL DIETETICS

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*Photo credit: Name/Organization*



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## U.S. GOVERNMENT PARTNERS





## WHAT ARE DIETITIANS

- Only health professional qualified to **assess, diagnose and treat** dietary and nutrition related problems at an **individual and public-health level**

- Work with healthy and sick people



- Translate the most upto date, **evidence based** research on food, health and disease to enable people to make appropriate food and

lifestyle changes



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## WHAT DO DIETITANS DO

- Prevent and treat malnutrition
  - Starvation-related
  - Chronic disease-related
  - Acute disease-related (hospital acquired)
- Provide metabolic support
  - Hypermetabolic, critical illness
- Prevent and treat diet-related non communicable diseases
  - Diabetes Mellitus
  - Cardiovascular diseases
  - Renal disease





## DIETITIAN, NUTRITIONIST, NUTRITIONAL THERAPIST OR DIET EXPERT?

- Dietitians have university degrees from accredited programs
- Dietitians are the only nutrition experts regulated by the law
  - Protected RD title
- Dietitians are governed by a code of ethics
- Dietitians provide Medical Nutrition Therapy



## UNDERNUTRITION IN MALAWI

### Nutritional status in the community

#### Children

- 37% stunted
- 12% underweight

#### Adults

-

### Nutritional status of hospitalized patients

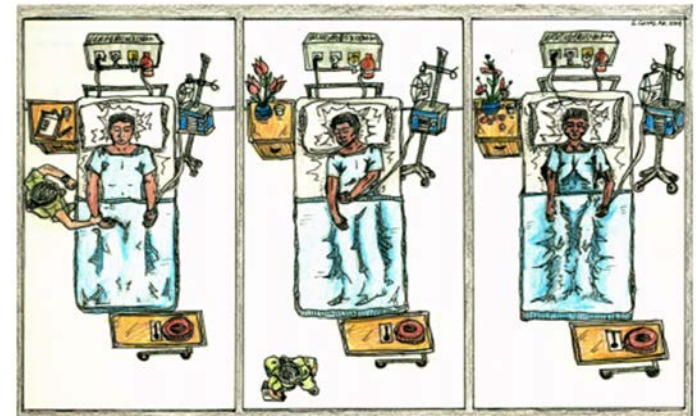
- Malnutrition #1 cause of hospitalization in HIV +ve children
- 80% adult surgical patients malnourished





## HOSPITAL MALNUTRITION: A GLOBAL PROBLEM

- Starvation in the setting of plenty of food
- Estimated half of hospitalized patients globally are malnourished
- Well nourished patients can become malnourished within 7-14
- Malnutrition is associated with **30–70% higher hospital cost**



Artwork by Sarah Gumlak



## CONSEQUENCES OF MALNUTRITION

- Increased length of stay
- Impaired wound healing
- Increased morbidity/mortality
- Increased muscle loss/functional loss
- Higher infection/complication rates
- Increased admission





## OVERNUTRITION IN MALAWI

- Overweight and obesity are emerging trends in Malawi
  - 21% of women in 21-49 year age group
  - 5% of children under 5



- NCD's on the rise
  - 13.6% elevated blood glucose/diabetes
  - 33% elevated blood pressure/hypertensive
  - 8.7% elevated blood cholesterol



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## HOW DO DIETITIANS INTERVENE?

Food and/or  
nutrient delivery

Nutrition  
education

Nutrition  
counselling

Coordination of  
nutrition care



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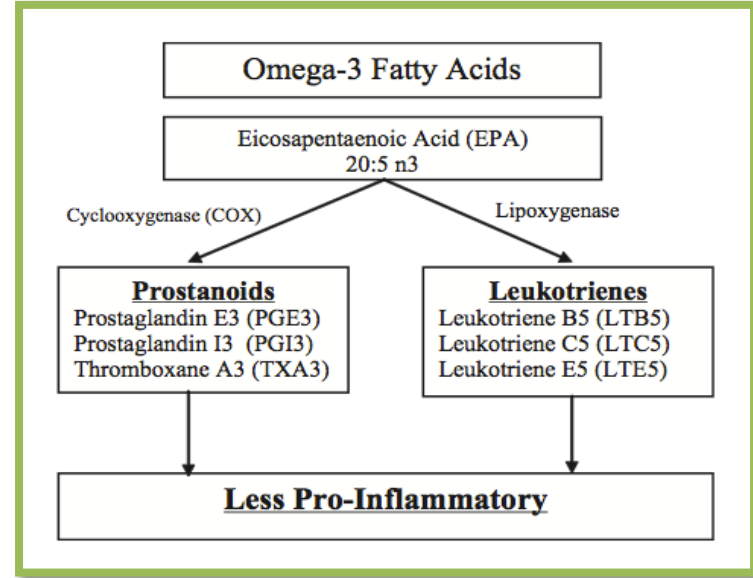
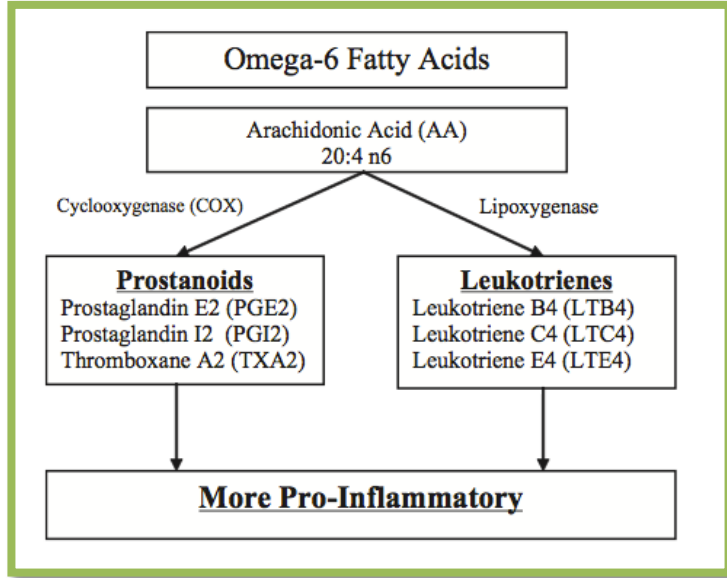
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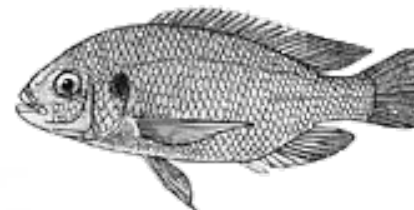


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*Translate nutrition science for the public*

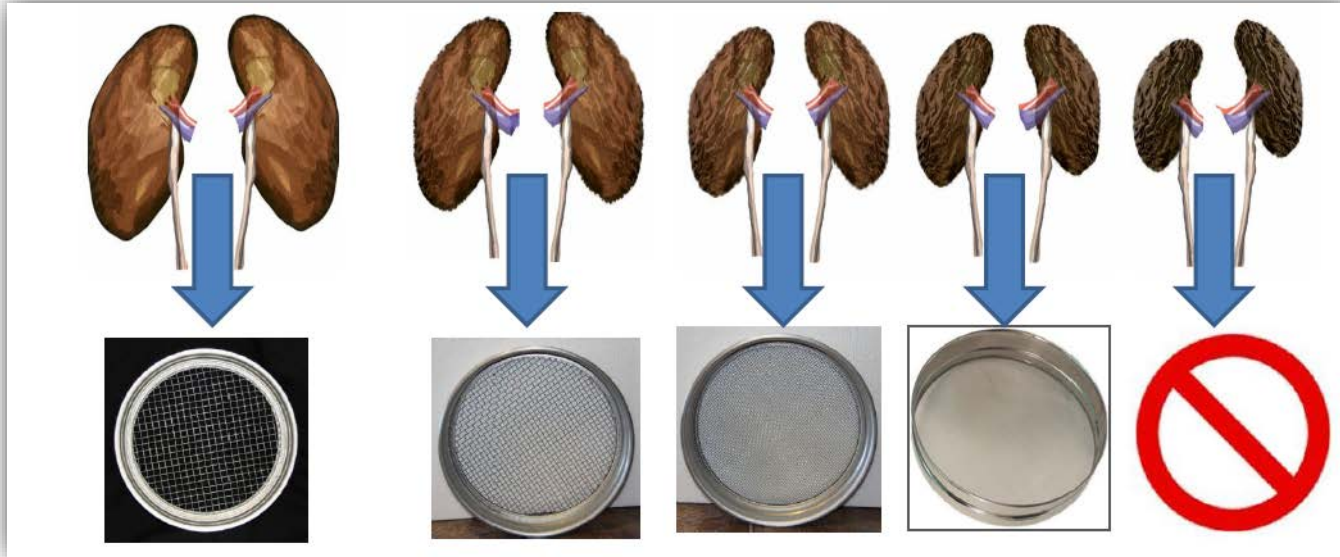


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***Teach individuals  
to modify diet***

**Protein  
Portion**



**Carbohydrate  
Portion**



**Vegetable  
Portion**





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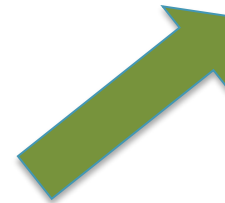
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***Counsel  
individuals to  
change  
behaviour***



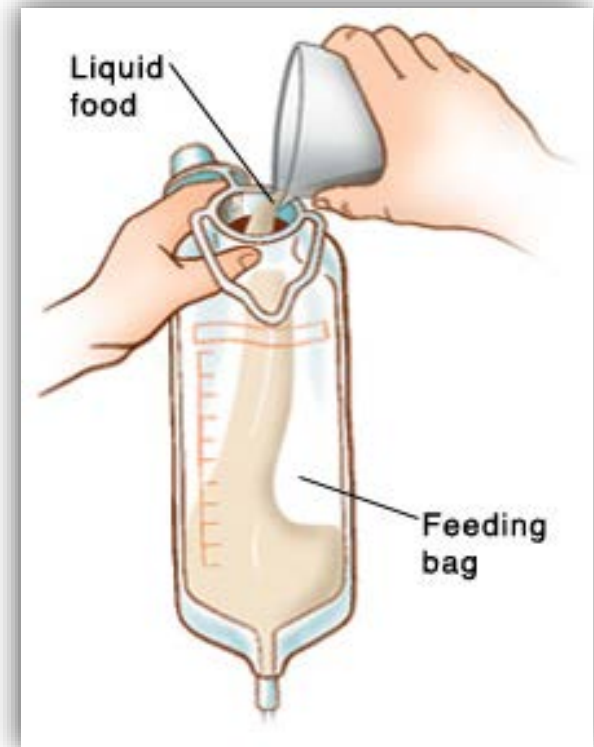
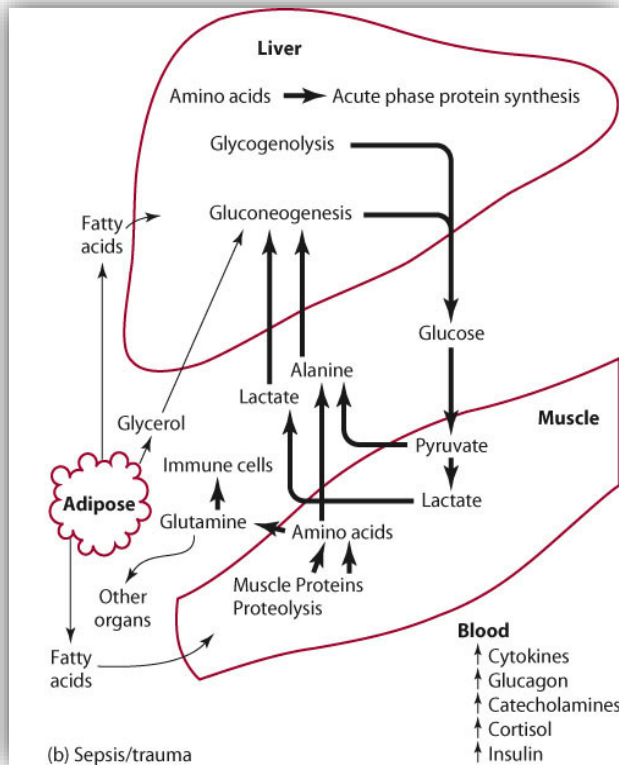
***Design  
community  
based  
interventions***







## Prescribe enteral nutrition support





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Tufts Medical Center

### Adult Parenteral Nutrition Order Sheet

Orders should be written and sent to pharmacy by 12:00PM. Only standard solutions are available after 12 noon.

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Unit: \_\_\_\_\_ ADDRESS/ROOM: \_\_\_\_\_

- TOTAL DEXTROSE/AMINO ACID VOLUME:**  
Rate: \_\_\_\_\_ mL/hr x 24 hrs (new starts less than or equal to 40 mL/hr) \_\_\_\_\_ Total mL  
To cycle: START: \_\_\_\_\_ mL/hr x \_\_\_\_\_ hr \_\_\_\_\_ mL/hr x \_\_\_\_\_ hr \_\_\_\_\_ mL/hr x \_\_\_\_\_ hr \_\_\_\_\_ Total mL
- Use "Custom Adult Periphera" or "Adult Periphera" to modify content of base solution prior to 12 noon. Note amount to be added or subtracted per liter and final totals per liter. INFORMATION FOR INITIATING AND/OR MODIFYING THESE SOLUTIONS ARE ON THE BACK OF THIS FORM.

3. The "STANDARD SOLUTIONS" are the only solutions available if ordered after 12 noon AND CANNOT BE MODIFIED.

Each Liter Provides:	Custom Solutions (not available after 12 noon)						Standard Solutions		
	Adult Central			Adult Peripheral			Adult Central 500	Adult Central Electrolyte Free 500	Adult Peripheral 2,500
	Base Solution	Change	Total	Base Solution	Change	Total	Standard solution	Standard solution	Standard solution
<b>Amino Acid</b>	50 gm/L			42.5 gm/L			50 gm/L	50 gm/L	42.5 gm/L
<b>Dextrose</b>	200 gm/L			50 gm/L			200 gm/L	200 gm/L	50 gm/L
<b>Sodium</b>	75 mEq/L			40 mEq/L			35 mEq/L	0 mEq/L	35 mEq/L
<b>Potassium</b>	30 mEq/L			30 mEq/L			30 mEq/L	0 mEq/L	30 mEq/L
<b>Calcium</b>	4.5 mEq/L			4.5 mEq/L			4.5 mEq/L	0 mEq/L	4.5 mEq/L
<b>Magnesium</b>	10 mEq/L			10 mEq/L			5 mEq/L	0 mEq/L	5 mEq/L
<b>Phosphate</b>	15 mM/L			15 mM/L			15 mM/L	0 mM/L	15 mM/L
<b>Chloride</b>	60 mEq/L			39.88 mEq/L			39 mEq/L	20 mEq/L	39 mEq/L
<b>Acetate*</b>	60 mEq/L			39.88 mEq/L			60 mEq/L	42 mEq/L	70 mEq/L
<b>Zinc Sulfate</b>	4 mg/day			4 mg/day			10 mL/bag	10 mL/bag	10 mL/bag
<b>Methylcobalamin</b>	10 mcg/day			10 mcg/day			10 mL/bag	10 mL/bag	10 mL/bag
<b>Phytonadione (Vitamin K)</b>	300 mcg/gram/100 mL			300 mcg/gram/100 mL			---	---	---
<b>Trace Elements</b>	2mL/day			2mL/day			2mL/bag	2mL/bag	2mL/bag

\* 40 mg of L-cysteine per gram of protein is added when using Hepateme.

4. Special Additives: (available before 12 noon)

Medication	Dose	Medication	Dose	Medication	Dose
Basaloid (Iron-Amino Acids [Aspartate/K] + Lysine)*	g/L				
Insulin	Units/L				
Famciclovir (Procid)	mg/day				

\* 40 mg of L-cysteine per gram of protein is added when using Hepateme.

5. FAT EMULSION (20%):  NO FAT EMULSION

Rate: \_\_\_\_\_ mL/hr x \_\_\_\_\_ hrs = \_\_\_\_\_ mL/day over  12 hours or  24 hour (check 1) (Recommend 12 hour hang time. If patient receiving peripheral nutrition (PPN), lipids must be hung for 24 hours)

MD Signature: \_\_\_\_\_  
 Pager # \_\_\_\_\_  
 RD Signature (MD co-sign required): \_\_\_\_\_  
 Pager # \_\_\_\_\_  
 RN Signature: \_\_\_\_\_  
 Secretary's Signature: \_\_\_\_\_

Nurses Signature Log	DATE	TIME

# Prescribe parenteral nutrition support



## ARE DIETITIAN LED INTERVENTIONS EFFECTIVE?

- Decrease morbidity and mortality
- Decrease hospital length of stay
- Decrease risk of hospital readmission
- Decrease time to return of baseline functional status after illness
- Improve health outcomes for type 2 diabetes, hypertension, and cardiovascular disease





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## NUTRITION INTERVENTIONS IMPROVE OUTCOMES

Pressure ulcers

**25%**

reduction  
in pressure ulcers<sup>1</sup>

Complications

**63%**

reduction  
in complications  
in GI surgery<sup>2</sup>

Falls

Significantly  
**fewer falls**

in the treatment  
group<sup>3</sup>

Readmissions

**28%**

reduction  
in hospital  
readmissions<sup>4</sup>

1. Stratton RC, Elia M. *Proc Nutr Soc. Annual meeting of the Nutrition Society and BAPEN.* 2010;1-11. 2. Stratton RJ, et al. *Eur J Gastroenterol Hepatol.* 2007;19:353-358. 3. Gray-Donald K, et al. *J Nutr.* 1995;125:2965-2971. 4. Gariballa S, et al. *Am J Med.* 2006;119(8):693-699.



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## COST-BENEFIT

Analyses in other countries found that for every

**1 dollar spent** on clinical nutrition services,

**2–5 dollars are saved**

Kruizenga et al. Effectiveness and cost-effectiveness of early screening and treatment of malnourished patients. *Am J Clin Nutr* 2005;82:1082-9.



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## WHERE DID WE BEGIN



Identifying the need

Discussions with partners and stakeholders

Obtaining donor technical support

Implementation

Malawi National STEPS Survey for Chronic Non-Communicable Diseases and their Risk Factors



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## PROGRAMME STRUCTURE

**18 months**

30 weeks academic (classroom)

- Medical Nutrition Therapy
- Nutritional Biochemistry
- Nutritional Epidemiology
- Nutritional Counseling & Behaviour Change
- Biometric Research Methods & Design
- Biostatistical Data Analysis
- Global Nutrition Programmes
- Health Care Ethics





## PROGRAMME STRUCTURE

### 30 weeks vocational (practical)

- 4 weeks food service management
- 4 weeks community nutrition
- 8 weeks paediatric
- 6 weeks adult medicine
- 6 weeks adult surgery, trauma, and critical care
- 2 weeks research



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## A LICENSED HEALTH CARE PROFESSIONAL



Programme was  
Accredited March 2016

Registered Dietitian



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## ENTRY INTO KCH

Completed didactic instruction

5 weeks surgical/critical care rotation at UCT

4 weeks of food service management at BAH

4 weeks of community nutrition

**RD'S  
AT  
KCH**



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## STUDENT ACTIVITIES IN HOSPITAL

- Attend relevant morning meetings
- Contribute to management of patients under supervision
- Document patient care in notes – notes need to be co-signed by supervisor
- Integrate food service system in nutrition service delivery
  - Training
  - Develop menu's for therapeutic diets
- Journal clubs





## PATIENTS TO REFER TO AN RD

- Adult and pediatric patients
- At risk of malnutrition or malnourished
- In need of altered nutrition intake for therapeutic benefit
  
- Patient groups
  - Undernutrition (SAM, MAM)
  - Endocrine
  - Infectious diseases
  - Burns
  - Gastrointestinal surgery
  - Renal (acute and chronic)
  - Cardiovascular  
(hypertension, stroke, hyperlipidemia)
  - Trauma
  - Prematurity and low birth weight
  - Critical illness (HDU/ICU)



## LOGISTICAL CONSIDERATIONS

- Referral to RD's
- Human resource constraints
  - 2 supervisors for 5 students.
  - Students not allowed to intervene without supervisor authority
- Food service system





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## FUTURE DIRECTIONS

- Dietetics Department at KCH and other referral hospitals
- RD should become a nutrition resource for all other medical professionals
- 



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