Nutrition of the Severely Ill Child/Adult in Hospital

Presentation by:

Geoffrey Axiak

CLINICAL NUTRITION NURSE

B.Sc. (Nursing), S.R.N.,
Dip. R. & C. Hypnotherapy (T.O.R.C.H.),
P.G. Dip. (Nutrition & Dietetics)

Indications for Feeding of Children in Hospital

- Congenital defects
- Inherited metabolic disorders
- Swallowing problems
- Malnutrition
- Lactase deficiency
- Coeliac disease
- Cystic fibrosis
- P.K.U.
- Food allergies & sensitivities

Indications for Feeding of Adults in Hospital

- Metabolic disorders
- Swallowing problems
- Absorption problems
- Malnutrition
- Lactase deficiency
- Coeliac disease
- Food allergies & sensitivities
- Post-G.I. surgery
- I.T.U. / sedated patients

Choices for Feeding a Patient in Hospital

- Sip feeding / bars / yoghurt-like cans
- Enteral feeding
  - via N.G. / N.J. / P.E.G. / Gastrostomy tube
- Parenteral feeding
  - via central line
- Special parenteral feeding e.g. intradialytic TPN

✓advantages & disadvantages exist!

Choices of Route for Feeding a Patient in Hospital

- In order of preference:
  1. Sip feeding
     1. Most natural method
  2. Enteral nutrition
     1. Uses normal routes for feeding and handling of food
     2. Poses less risks of complications
  3. Total parenteral nutrition (T.P.N.)
     1. When nutrient digestion is impaired, e.g. G.I.T. insult or severe haemodynamic alterations impairing gut function.

Sip feeds, bars, yoghurt-like cans

Enteral Feeding Methods

Enteral Feeding Methods

Enteral Feeding Methods

Percutaneous Endoscopic Gastrostomy

3-Compartment Bag of OliClinomel - Total Parenteral Nutrition (TPN)

Lipid emulsion (20%)

Amino acids (10%)

Glucose (40%)

- 2 litre bag
- 2400 kCals
- Balanced feed
- Hanging time: max. 2 days
- Strict aseptic technique
- Light-sensitive
- Reserved central line

Types of Oral Diets Available by Consistency

- Clear Liquid
- Full Liquid
- Soft
- Solid

Types of Oral Diets Available by Consistency

- Clear Liquid
- Full Liquid
- Soft
- Solid

→

•Clear snack drinks like HiC, Koolaid, and most juice boxes
•Jell-O
•Popsicles
•Bullion or clear broth (skimmed of fat)
•Cranberry, grape and apple juices
•Some types of soda pop; non-caffeinated, no artificial sweeteners, and most carbonation (fizz) should be gone

Types of Oral Diets Available by Consistency

- Clear Liquid
- Full Liquid
- Soft
- Solid

→

•Milk, milkshakes, eggnog, ice cream, custard, pudding
•All vegetable juices or nectar
•Cooked refined cereals; farina, grits, oatmeal, cream of rice, cream of wheat
•No meat or meat substitutes
•Butter, margarine, cream
•Sherbet, sugar, hard candy, plain gelatin, fruit ice, honey, syrups
•All beverages
•Broth, bouillon, strained creamed soups

Types of Oral Diets Available by Consistency

- Clear Liquid
- Full Liquid
- Soft (1)
- Solid

→

•Milk - all types
•Cheese - cottage, cream, cheddar, all other mild cheese without spices
•Yoghurt
•Meat and Meat Substitutes
•Ground and tender beef, lamb, veal, pork
•Liver, poultry, turkey, seafood
•Egg
•Peanut butter, hummus

Types of Oral Diets Available by Consistency

- Clear Liquid
- Full Liquid
- Soft (2)
- Solid

→

•Tofu, soybean products
•Fresh fruit - without membranes; peeled; without seeds
•Fruit juice
•Ripe banana
•Canned or cooked fruit without skin
•Applesauce
•Vegetable juice
•Cooked vegetable
•Vegetable soup

Types of Oral Diets Available by Consistency

- Clear Liquid
- Full Liquid
- Soft (3)
- Solid

→

•Starch/Bread/Grain Products
•Bread - fine whole grain, white, rye without seeds, roll
•Plain crackers
•Cooked cereal - cream of wheat, oatmeal, cream of rice, grits
•Macaroni, spaghetti, noodles
•Rice
•White or sweet potato - peeled
•Refried beans

Types of Oral Diets Available by Consistency

- Clear Liquid
- Full Liquid
- Soft (4)
- Solid

→

- **Soup - bean, lentil, split pea**
- **Raw tomato without seeds**
- **Vegetable burger, meat analogs**
- **Avocado**
- **Pudding**
- **Custard**
- **Ice cream or frozen yoghurt - without nuts**
- **Sherbet, sorbet, popsicle**
- **Cakes or cookies**
- **Fats and Sweets - all types**

Types of Oral Diets Available by Consistency

- Solid

Types of Enteral Artificial Feeding Products Available

- Complete feeds
  - With/out fibre
- Semi-elemental
  - Partially digested
  - Contains peptides
- Elemental
  - Nitrogen as free amino acids
  - Glucose polymers
  - With/out medium chain triaglycerols
- Special formulas
  - For special diseases eg. Liver & renal failure
  - With Glutamine

Dietary Supplements

- If patient is unable to maintain sufficient oral food intake:
  - Fortification of foods
  - Sip feeds:
    - Prescribable
    - Useful for:
      - Disease-related malnutrition
      - Dysphagia
      - Short bowel syndrome
      - Intractable malabsorption
      - Bowel fistulae
      - HIV infection

Specific Supplements

- High protein supplements (not nutritionally complete)
- High energy supplements – glucose polymers
- Lipid fat emulsions (usually 50% with water)
- Thickeners

Planning of Feeding Regimens

- This depends on:
  - Choice of suitable feeding route
  - Choice of appropriate products &/or supplements
  - Choice of equipment

Assessment of Nutritional Requirements

- Nutritional intake
  1. Dietary history
- Nutritional requirements
  2. Energy
  3. Nitrogen (protein)
  4. Fluid
  5. Electrolytes

1. Factors to Consider when Taking a Dietary History

- Underlying disease state
- Is under-nutrition present?
  - How long & to what extent?
- Drug-nutrient interactions
- Increased nutrient requirements
  - Which ones & why?
- Will present situation change?
  - In what way & consider relevance

2. How to Estimate Energy Requirements

- Estimate basal metabolic rate (B.M.R.)
- Adjust for stress (using nomogram)
- Add a combined factor for activity
  - + 10% bed-bound / immobile
  - + 15-20% bed-bound / mobile / sitting
  - + 25% mobile on ward
- Allow for weight gain (if required)
  - + 400-1000 kcal/day

How to Estimate Basal Metabolic Rate (Harris & Benedicts' Equation)

B.M.R. (women):

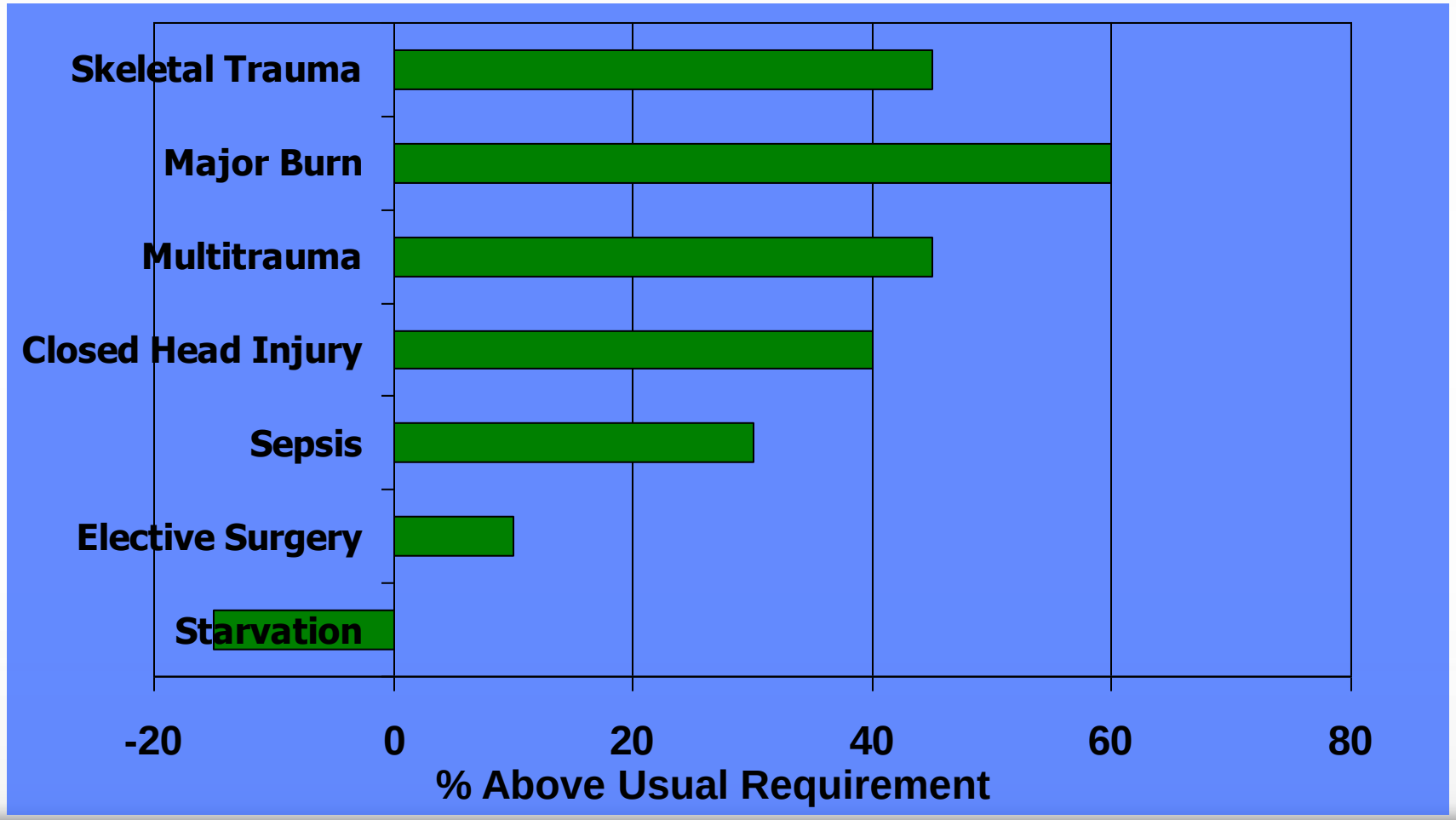
655 + (9.6 x weight in kilos) + (1.8 x height in cm) - (4.7 x age in years).

B.M.R. (men):

66 + (13.7 x weight in kilos) + (5 x height in cm) - (6.8 x age in years)

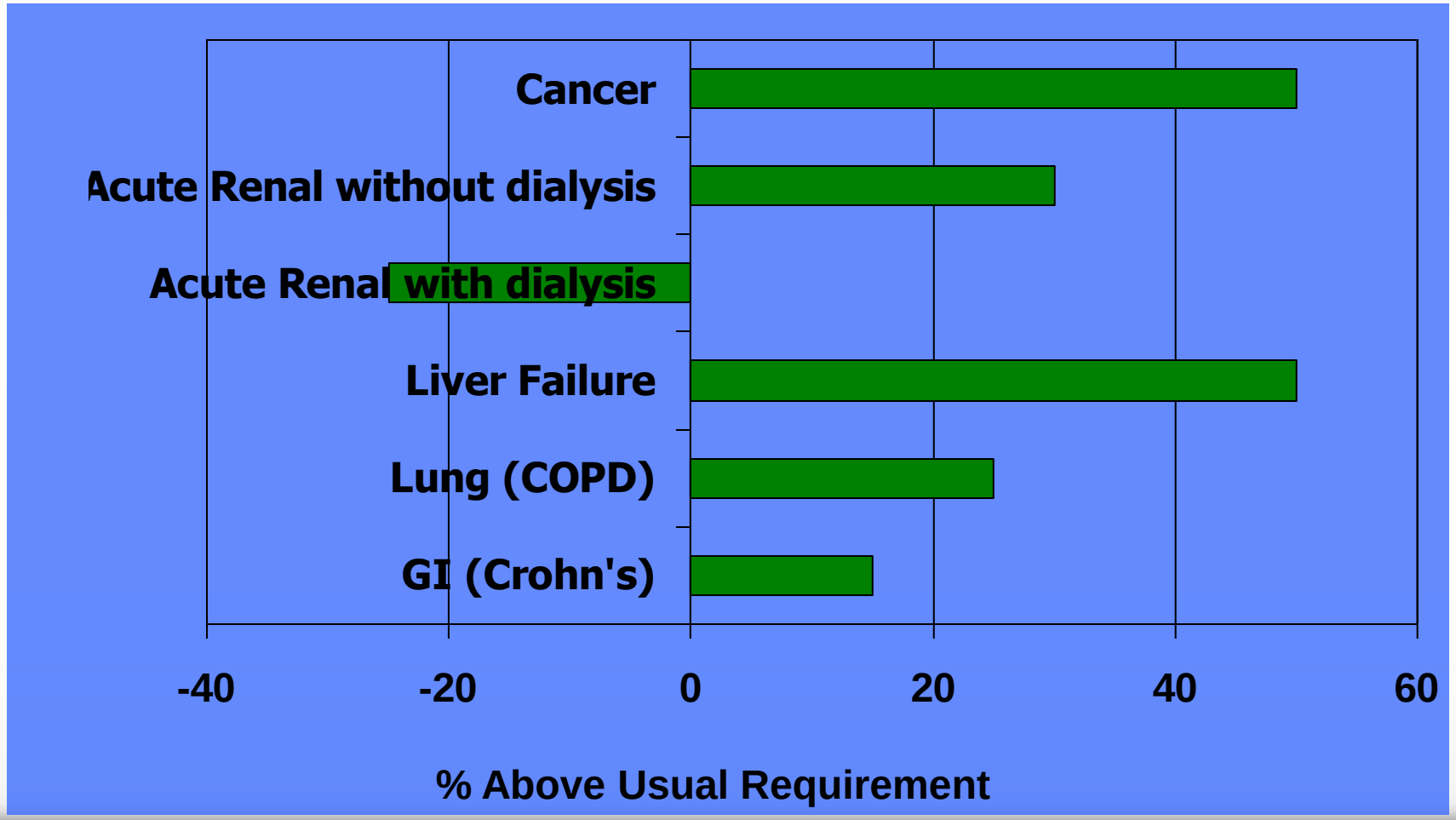
2. Estimating Energy Requirements

– Change in Resting Energy Expenditure in Trauma



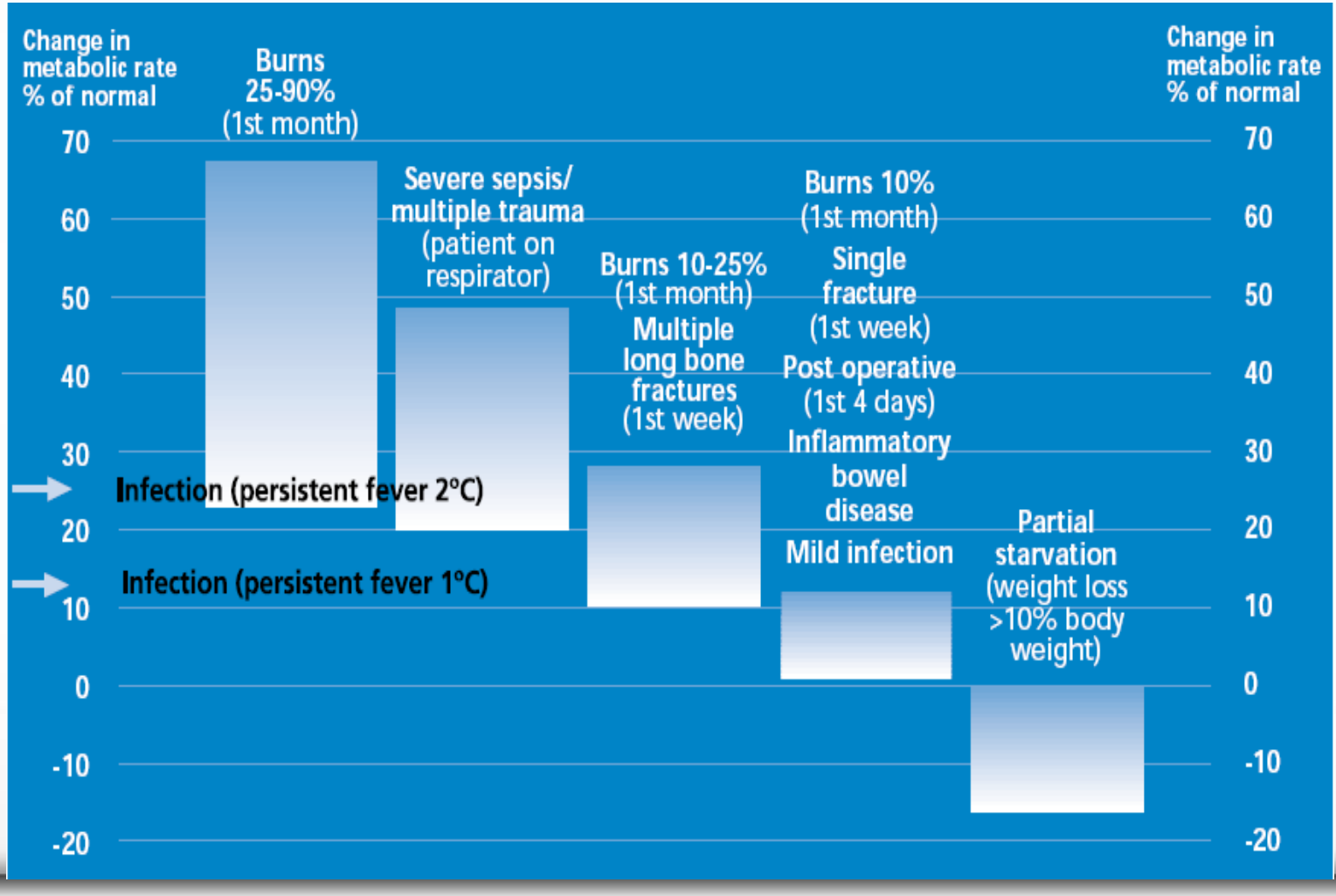
2. Estimating Energy Requirements

– Change in Resting Energy Expenditure in Disease



2. Estimating Energy Requirements -

Nomogram (Elia, 1990)



3. How to Estimate Nitrogen Requirements

		Nitrogen g/kg/d	(Range)
Normal		0.17	(0.14-0.25)
Hyper-metabolic	5 – 25%	0.20	(0.17-0.25)
	25 – 50%	0.25	(0.30-0.30)
	> 50%	0.30	(0.25-0.30)
		0.30	(0.20-0.40)

Implementing a Feeding Regimen via Continuous Tube Feeding

- Start a regime slowly & gradually
  - E.g. if final aim is 120 mls/hr of feed (3L/day):
    - Start at 40 mls/hr and increase gradually, or
    - Start by giving only 500 mls feed per day, increasing slowly by 500 mls per day, until the 3000 mls of feed are given per day.
  - Watch patient for diarrhoea (malabsorption) & increase feed if no such symptoms occur.

In case of Complications

- The main complication is diarrhoea. Others are cramps & G.I. disturbance. Then:
  - Decrease feed intake & replace with water – in mild, short-term cases.
  - Stop feed intake & replace with water – in severe, long-term cases.
  - Reduce rate of feeding, ie. total amount of feed, if no other solution is found.
  - Consult a doctor to examine for absorption problems & check treatment being taken (antibiotics prescribed).
  - Check for any contamination of feed or apparatus used for feeding.

Care of a Patient Being Given Supplemental Feeding

- Mouth care for patients being fed via N.G., N.J., P.E.G. or gastrostomy
- Stool monitoring
- Strict intake & output charting
- Fluid balance charting
- Regular H.G.T. charting
- Blood investigations
- Watch for feed-medication interactions
- Correct handling and storage of feeds & feeding apparatus

Care of a Patient Being Given Total Parenteral Nutrition (TPN)

- Mouth care
- Stool monitoring
- Strict intake & output charting
- Fluid balance charting
- Regular H.G.T. charting
- Regular temperature charting
- Blood investigations
- Correct handling of central line using strict aseptic technique
- If possible, use of central line solely for TPN purposes

Psychological Care of Patients

- Patients/relatives are often very anxious due to:
  - Body image changes
  - Fear of the unknown
  - Risks of:
    - Aspiration
    - Infection
  - Abnormal way of feeding
  - Lack of mobility
  - Social stigma
  - Dependence on others
  - Dependence on health services
  - Need for support