Bedside TPN: The Practicing Surgeon
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Citation

Abstract
We present an easy way to calculate the requirements and components of a total parenteral nutrition TPN.

1. CALCULATE IBW (IDEAL BODY WEIGHT)
    Male: 106 lbs for the first 5’ & 6 lbs per inch after
    Female: 100 lbs for the first 5’ & 5 lbs per inch after

    e.g. 5’10” male - 106 + 60 = 166 lbs
    (now divide by 2.2 lbs/kg)
    = 75.5 kgs

2. CALCULATE PROTEIN NEED
    1 g/kg/day - Non-Stressed
    1.5 g/kg/day - Stressed
    2.0 g/kg/day - Severe Stress

    e.g. 76 kgs x 1.5 g/kg/day
    114 g protein/day Needed

    1 g Protein = 4 kcal Energy

    114 g/day x 4 kcal/g

    456 kcal/day from protein

3. CALCULATE NON-PROTEIN CALORIES
    25 kcal/kg/day - Non-Stressed
    30 kcal/kg/day - Stressed
    35 kcal/kg/day - Severe Stress

    e.g. 76 kg x 25 kcal/kg/d
    1900 kcal/day Needed

4. DETERMINE CHO:LIPID RATIO
    65 % CHO - 35 % Lipids

    70 % CHO - 30 % Lipids
    75 % CHO - 25 % Lipids
    80 % CHO - 20 % Lipids

    estimate need based on patient disease and co-morbidities!
    (remember, CO2 may not be a good thing)

    e.g. 1900 kcal/day Needed from Non-Protein Calories

5. NOW, CALCULATE GRAMS NEEDED & ML OF SOLUTION
    1 g CHO = 3.4 kcal energy

    e.g. 1330 kcal/day Needed from CHO

    1330 / 3.4 = 391 g CHO/day needed

    e.g. 391 g Needed = 782 ml, D50 Solution
    or

    = 559 ml, D70 Solution

    1 g Lipids = 9 kcal energy

    e.g. 570 kcal Lipids Needed/day = 63 g Lipids Needed/day

    take the # kcal needed and divide by 2, to determine the
    number of ml of a 20 % lipid solution

    e.g. 570 kcal/day needed = 285 cc of a 20 % Lipid Soln.

    (29 cc/hr x 10 hrs)

6. CALCULATE TOTAL FLUIDS NEEDED
    Usual Estimate: 25 - 35 cc/kg/day (a thousand different formulas to choose from, just pick one and know how to use it)

    e.g. 76 kg Male, 30 cc/kg/day Fluid = 2280 cc/fluid/day
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(this is administered separate from the TPN Soln)
e.g. 2280 cc - 285 cc = 1995 cc TPN + Fluid/day

e.g. 1995cc / 24 hrs = 83 cc TPN Soln. / hr

7. SUMMARIZE CALCULATIONS

A. IBW

B. Protein Need:

# Grams
# Calories Provided

C. Non-Protein Calories Needed

D. CHO:Lipid Ratio

E. Total Volume Requirements

F. Rate of Infusion

G. Total Calories Provided & Percentage of Each Category

Some Other Points

References
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