

Calculating Nutritional Needs for the Older Adult

I am often asked about how to calculate calorie, protein and fluid needs. Should calculations be based on actual, usual or ideal body weight, or should ranges be used? What about the obese resident? In our practice, we utilize the current body weight in our calculations unless the person is morbidly obese. In that case we follow the suggestions below. There are many other factors involved in calculating nutritional needs of the older adult. The following information is adapted from our publications and presentations, *Healthy Weights: Preventing and Treating Weight Loss, and MNT for Pressure Ulcers*, with input from the references listed below.

Calorie Calculations

Caloric needs may be calculated using the Harris-Benedict equation, or other methods such as the following: 28 (or a range from 25-35) kcalories/kg body weight may be used to maintain weight, 35-40 kcalories/kg body weight may be used for those residents who have pressure ulcers, need to gain weight, or have increased caloric needs for other reasons. For paraplegics, 28 kcalories/kg body weight may be used to calculate caloric needs, and for quadriplegics, 23 kcalories/kg body weight may be recommended (needs are lower due to decreased lean muscle mass). (1) Note that this does not take any other medical conditions into account. For example, COPD patients who are malnourished need approximately 1.5-1.7 times BEE.

Estimating caloric needs for obese residents is a bit more difficult. There is little definitive research in the area of calculating the calorie needs of the obese client. The following recommendations are noted in the *ADA Manual of Clinical Dietetics*.

When using Harris Benedict Equation for calculation of caloric needs (for BEE):

Option 1: If BMI < 40, use actual weight
If BMI > 40, use ideal weight

Option 2: Average actual and ideal weight

Option 3: Use actual weight

Alternate methods to calculate caloric needs (for TEE):
21 calories/gram body weight for obese critically ill (2)

Note: Another alternate method is to use 21 kcalories/kg body weight for the obese resident who is critically ill. (1)

Guidelines For Estimating Protein Needs For Adults (1,2,3)

Protein needs are even more difficult to calculate. A complete nutritional assessment is required to determine the resident's needs. The following chart offers some guidelines based on albumin levels. However, there are many exceptions, so the chart also offers guidelines for residents who have specific medical conditions that will require altered protein needs.

Protein Requirements for Specific Medical Conditions

Condition	Albumin Level	Protein Requirements
Normal nutrition for healthy older adults	N/A	0.8-1.0 gms/kg/day
Normal nutrition for older adults	3.5 gm/dl	1.0-1.2 gm/kg/day
Mild depletion	2.8-3.5 gm/dl	1.0-1.2 gm/kg/day
Moderate depletion	2.1-2.7 gm/dl	1.2-1.5 gm/kg/day
Severe depletion	2.1 gm/dl	1.5-2.0 gm/kg/day
Exceptions		
Critically ill or injured		1.5-2.0 gm/kg/day
COPD, if malnourished		1.5-2.0 gm/kg/dry body wt/day
Renal Disease, Chronic:		
• Chronic Renal Disease		.06-0.75 gm/kg/day with 59% HBV protein
• Hemodialysis		≥1.2 gm/kg/day with ≥50% HBV protein
• Peritoneal dialysis		1.2-1.3 gm/kg/day with ≥50% HBV protein
Sepsis		1.2-1.5 gm/kg/day

General Guidelines For Estimating Fluid Requirements

Estimating Fluid Needs:

- 30 cc per kg actual weight
- 35 cc per kg actual weight for dehydration
- 25 cc per kg actual weight for adults with renal or congestive heart failure

Alternate Methods of Calculating Fluid Needs:

- 1 mL/kcal consumed
- 100 mL/kg for the first 10 kg body weight
+ 50 mL/kg for the second 10 kg body weight
+ 15 mL/kg for remaining kg body weight

These factors may increase fluid needs: Fever, moderate or profuse perspiration, diarrhea, vomiting, pressure ulcer, Stage II, III, or IV; draining wound, draining fistula, and/or circulating air bed for wound healing treatment.

These factors may cause a resident to require decreased fluid intake: CHF (congestive heart failure), edema or ascites, SIADH, and/or renal failure (severe).

Signs of over-hydration may be indicated by: decrease in sodium, potassium, albumin, BUN, creatinine; edema, increase in blood pressure, decrease in pulse rate.

Note: Most sources recommend a minimum of 1500 cc/day unless otherwise restricted by a physician.

Nutrient Needs for Pressure Ulcers

Nutrient Needs: Based on individual assessment	Prevention	Stage I	Stage II	Stage III	Stage IV (or Unstageable***)
Calories/kg body weight*	28-30 30-35 if additional calories needed	30-35	30-35	35-40	35-40
Protein, grams/kg body weight to promote a positive nitrogen balance	1.0 1.2-1.5 if additional protein needed (Increase fluids/Monitor renal function)	1.2-1.5 if additional protein needed (Increase fluids/Monitor renal function)	1.2-1.5 if additional protein needed (Increase fluids/Monitor renal function)	1.2-1.5 if additional protein needed (Increase fluids/Monitor renal function)	1.2-1.5 if additional protein needed (Increase fluids/Monitor renal function)
Fluids, cc/kg body weight**	30	30-33	30-33	30-33	30-33

* **Note:** Alternate method of calculation: BEE X Activity Factor X Injury Factor of 1.2-1.6

****Note:** Adjusted depending on condition, with less fluid possibly needed for residents with severe renal problems or CHF; and additional fluids needed for air fluidized beds, dehydration, draining wounds, ostomy losses, etc. Alternate calculation: 1 mL/calorie or 1500 mL minimum per day. Additional 10-15 cc/kg body weight fluids needed for draining wounds, air fluidized beds, fever

***Unstageable may be defined as pressure ulcers with eschar and/or necrotic tissue covering wound; deep tissue injury (may appear as a stage I, but has underlying damage or necrotic underlying tissue, such as boggy or mushy heels, etc.)

Sources for chart: 5,6,7,8

Final Thoughts

Nutritional needs should be recalculated for any significant change in status (such as significant unintentional weight loss, development of pressure ulcer, new onset of disease, etc.)

No matter how the calculations are done, the more pertinent issue is, *are your nutrition and hydration interventions working?* If the interventions you have in place are not achieving the goals you set for the resident, the interventions need to be altered to meet the individual's needs.

References:

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Becky Dorner, RD, LD is a speaker and author who provides publications, presentations, and consulting services to enhance the quality of care for our nation's older adults. Visit www.BeckyDorner.com for free articles, newsletters, ezine and information, or call 1-800-342-0285