

Malnutrition screening; can measurement of prealbumin aid detection?

E. Ito¹, W. K. Cheung¹, J. Opsypiw¹, O. B. Kennedy² and M. A. Gosney³

¹Royal Berkshire NHS Foundation Trust, Reading, UK, ²Hugh Sinclair Human Nutrition Unit, Dept of Food Biosciences and ³Institute of Health Sciences, University of Reading, Reading RG1 5AN, UK

Malnutrition among the elderly population is reported to be as high as 60%⁽¹⁾. Malnutrition cannot be diagnosed by simple physical observations and weight measurements but requires thorough nutritional assessment on admission to hospital. Prealbumin or transthyretin is emerging as one of the indicators of nutritional status and a marker for malnutrition since it correlates with patient outcomes in a wide variety of clinical conditions⁽²⁾. The aim of the current study was to investigate the effectiveness of prealbumin as a measurement of malnutrition compared with albumin and other anthropometric nutritional assessment techniques.

Fifty-nine patients aged ≥65 years (mean age 78 (SD 7.8) years) who were admitted to the orthopaedic wards at the Royal Berkshire NHS Foundation Trust (RBFT) were recruited. Initial blood samples provided serum for the measurement of albumin and prealbumin using the VITROS 5.1 FS chemistry system (Ortho Clinical Diagnostics, Cardiff, South Glamorgan, UK), anthropometric measurements were undertaken including BMI, mid upper arm circumference (MUAC), arm muscle circumference (AMC) and triceps thickness and the nutritional risk score (NRS, local nutrition screening tool⁽³⁾) currently in use in RBFT, a modified version of the original nutrition risk score⁽⁴⁾ was calculated.

Malnutrition risk	NRS (n 57)		Prealbumin (n 55)		Albumin (n 40)		BMI (n 59)		AMC (n 59)	
	n	%	n	%	n	%	n	%	n	%
Severe risk	0		0		0		–		–	
Moderate risk	7	12	8	15	5	12.5	8	13	15	25
Low risk	50	88	47	85	35	87.5	51	87	44	75

Of the eight patients having two or more anthropometric measurements consistent with malnutrition, four (50%) also had low prealbumin (100–170 mg/l). Not all the patients had albumin measured as they were not deemed to be malnourished by the admitting team. Two of these patients with low prealbumin had normal albumin. The NRS failed to identify these patients. One patient with normal anthropometric measurements had a high NRS and both prealbumin and albumin levels were low (this patient died in hospital), but otherwise there was no correlation between NRS and the biochemical markers.

Prealbumin seemed to identify more individuals who were at risk of malnutrition compared with albumin. Despite malnutrition being a widespread problem in hospitals, it is still being overlooked by staff as the NRS assessment fails to identify many of those patients most at risk and anthropometric measurements are not routinely undertaken. The addition to a patient's nutritional screening programme on hospital admission of a simple blood test to measure prealbumin may therefore aid detection of malnutrition and hence ensure that appropriate nutritional support is implemented for all those patients at risk during their hospital stay.

1. National Institute for Health and Clinical Excellence (2006) New NICE guideline will help tackle the problem of malnutrition in the NHS. <http://www.nice.org.uk/guidance/index.jsp?action=download&o=29985>
2. Beck FK & Rosenthal TC (2002) *Am Fam Physician* **65**, 1575–1578.
3. Nutrition Risk Assessment Tool, Dietetics Department, Royal Berkshire NHS Foundation Trust September 2006.
4. Reilly HM, Martineau JK, Moran A & Kennedy H (1995). Nutritional screening – evaluation and implementation of a simple nutrition risk score. *Clin Nutr* **14**, 269–273.