BODY COMPOSITION ASSESSMENT IN HIV-INFECTED MEN: CORRELATION OF ANTHROPOMETRY AND BIOELECTRICAL IMPEDANCE WITH NEUTRON ACTIVATION ANALYSIS

C. OLIVER*, A.ROSE**, B.J. ALLEN**and J. GOLD*.

Severe weight loss and wasting which are common clinical signs in advanced HIV infection contribute to morbidity and mortality. Body composition changes in HIV infection do not necessarily imitate simple starvation and therefore weight *per se* is not a sensitive marker of muscle depletion. As weight loss usually precedes the onset of opportunistic infections and may be a clinical entity in itself, methods for detecting changes in lean body mass are necessary for the implementation of early nutritional support and anti-viral therapy.

Estimation of body protein was performed on twenty-seven asymptomatic HIV-positive men. Lean body mass was determined by bioelectrical impedance analysis (Holtain BC Analyser, Crosswell, Wales) and anthropometrically by two standard equations (DW - Durnin and Womersley 1974, JP - Jackson and Pollock 1979) whose skinfold sites were independent of one another. Muscle mass (MM) was determined by the only cadaver-validated equation (Martin et al 1990) using skinfold-corrected circumferences. Total body nitrogen was determined by neutron activation analysis and indexed against height, sex and age (NIM) and height squared. Lean body mass was also calculated from total body nitrogen (NLBM) (Forbes 1987). The correlation coefficients for the comparison of neutron activation to anthropometry and bioelectrical impedance analysis (BIA) are presented in the table below.

	Mean ± SD	DW	JP	BIA	MM
N g	2146 ± 294	0.86 *	0.85 *	0.82 *	0.84 *
NIM	0.996± 0.13	0.50 **	0.46 **	0.56 **	0.56 **
N g/Ht2 m	0.699± 0.086	0.62 **	0.59 **	0.66 *	0.68 *
NLBM kg	65.0 ± 8.9	0.86 *	0.85 *	0.81 *	0.84 *

* P<0.0001, ** P<0.05

This group of HIV asymptomatic men have a normal body nitrogen content as shown by the nitrogen index (NIM). Overall there is a lower, but still significant correlation, with index nitrogen than with total body nitrogen. These results show that anthropometry and impedance provide a reasonable estimate of body nitrogen in asymptomatic HIV-positive males. Further work is required to see if these correlations hold true in the symptomatic phase of HIV disease.

DURNIN, J.V.G.A. and WOMERSLEY, J. (1974). Br. J. Nutr. 32: 77.
FORBES, G.B. (1987). 'Human Body Composition' (Springer-Verlag: New York).
JACKSON, A.S.and POLLOCK, M.L. (1978). Br. J. Nutr. 40: 497.
MARTIN, A.D., SPENST, L.F., DRINKWATER, D.T. and CLARYS, J.P. (1990). Med. Sci. Sports Exercise 22: 729.

* Albion Street Centre, Sydney Hospital, Sydney, NSW 2010
** Australian Nuclear and Scientific Organisation, Menai, NSW 2234