



# Mini-Tutorials in Nutrition Support



CN Magazine has joined forces with Stephen Taylor, Research Dietitian, Frenchay Hospital, Bristol – author of the book Nutrition Support and developer of FeedCalc – to bring you a special series of CNPD mini-tutorials around Nutrition Support.

The tutorials cover a range of topics around nutrition support in general with a particular focus on nutrition requirements. To facilitate the tutorials you will need to visit [www.nutrition2me.com](http://www.nutrition2me.com) for full details, support information and links to the following free downloads:

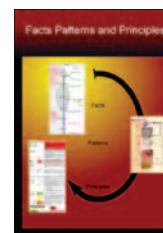
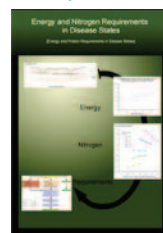
- **Nutrition Support eBook sample:** Nutrition Support is 2 books in 1 volume: 'Energy and nitrogen requirements in disease states' and 'Facts, patterns and principles'.
- **FeedCalc Trainer:** Enables the individualised care proposed within 'Nutrition Support' to be attained within health service pressure. 'FeedCalc' automates estimation of nutritional requirements and feed prescription, checks for adequacy or toxicity and makes a patient record (clinical version only) for re-use.

The Mini-Tutorial series provides you with the opportunity to increase your knowledge in the area of nutrition support, assisting continuing professional development, along with providing a taster of both the Nutrition Support book and the FeedCalc software. Each tutorial has two parts:

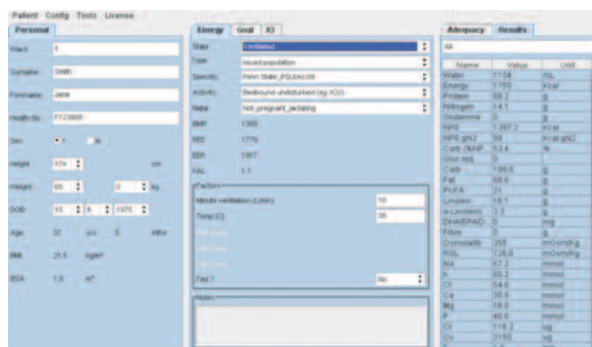
- **Clinical scenario:** A clinical state is introduced followed by technical questions and calculations facilitated through FeedCalc.
- **Practice & prescribing:** You simulate a prescribing scenario through FeedCalc to determine optimal prescription, adequacy and possible toxicity.

The second 'Mini-tutorial' covers U-pattern REE during Cancer Treatment, refer to the next page to read the background information to this tutorial.

### Nutrition Support eBook sample



### FeedCalc Trainer



'Nutrition Support' + 'FeedCalc Trainer' won the 2013 BDA Education (Elizabeth Washington) Award. 'Mini-Tutorials' are samples (± modification) from 'Nutrition Support'. The Mini-Tutorials are serialised in and downloadable from [www.nutrition2me.com](http://www.nutrition2me.com) with full links to all required downloads. Full text/Tutorials are available from: [www.nutritionsupport.info](http://www.nutritionsupport.info).

# Tutorial 2

## U-pattern REE during Cancer Treatment

Under conditions of health and physiological regulation of nutritional intake, short-term imbalances in energy intake and expenditure are unlikely to cause significant clinical harm. However, where disease ± treatments reduce physiological tolerance, imbalances may affect outcome. Under these circumstances, application of inaccurate estimates of requirements based on BMR + a static stress factor may cause harm. Rather, professionals should anticipate, monitor and account for variation. This tutorial deals with treatments that result in predictable nadir of resting energy expenditure (REE).

Glossary: %HB or %S = % of Harris-Benedict (1919)<sup>1</sup> or Schofield (1985)<sup>2</sup> equations, respectively.

### U-pattern REE

#### Breast cancer

REE tends (ns) to be higher post-breast cancer excision compared to age-matched healthy controls (%HB: 100.5±8 v 94.5±8.4).<sup>3</sup> However, REE (Table One) and activity (Figure 1) fall during chemotherapy, returning to pre-chemotherapy levels at one year, whereas energy intake increases from commencement up to three months post-chemotherapy.<sup>3,4</sup> Although these are only trends (ns), it resulted in a positive energy balance and increased central fat mass (FM) which is associated with poor outcome.<sup>5</sup> This suggests the necessity of a combined exercise-dietary restriction programme.<sup>6</sup>

#### Head and neck cancer

Similarly, radio-chemotherapy in patients with stage 3 or 4 head and neck cancer without distant metastases appears to produce a similar U-shaped pattern of REE (%HB: radio-chemotherapy course: pre=110.5±24.2, 2wk=104.1±22.7, 4wk=101.5±21.8, end=109.4±21.6, 2wk post-therapy=113.2±20).<sup>7</sup> The absolute reduction in REE may relate to weight loss but relative REE (%HB) is higher in head and neck compared to breast cancer.

Figure 1: Effect of Chemotherapy on Body Fat (%), Activity and REE Activity<sup>3</sup>

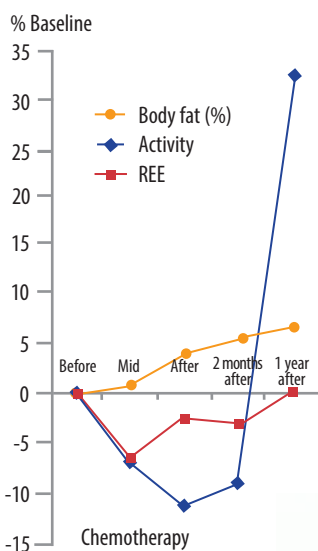


Table One: Effect of Chemotherapy on REE (n=22)<sup>3,4</sup>

Time in relation to chemotherapy	REE		
	%HB	%S	Kcal/Kg FFM
Pre-	99.5±6.9	99.1±7.0	31.7±3.2
Mid-	92.4±6.3	92.1±6.7	29.0±2.8
1 month post-	95.8±6.2	95.6±6.7	31.8±3.2
1 year post-	97.5±7.0	97.8±7.7	33.2±3.0

Now visit [www.nutrition2me.com](http://www.nutrition2me.com), and access the 'Mini-Tutorials in Nutrition Support' under the CNPD section – here you will find all the information you need and will be able to complete the CNPD questions linked to this issue's 'Mini-Tutorial' on U-pattern REE during Cancer Treatment.

References: 1. Harris JA, Benedict TG (1919). Biometric studies of basal metabolism in man. Publication number 279. Carnegie Institute of Washington, Washington DC. 2. Schofield WN (1985). Predicting basal metabolic rate, new standards and review of previous work. Human Nutrition: Clinical Nutrition; 39C (supplement 1): 5-41. 3. Harvie M, Campbell I, Baillam A, Howell A (2004). Energy balance in early breast cancer patients receiving adjuvant chemotherapy. Breast cancer research and treatment; 83: 201-10. 4. Harvie MN (1999). Energy Balance in Cancer and its Treatment: Intake, Expenditure and Body Composition. A Thesis submitted to the University of Manchester for the degree of PhD in the Faculty of Medicine, University Department of Anaesthesia. 5. Kumar N, Cantor A, Allen K, Cox C (2000). Android obesity at diagnosis and breast carcinoma survival: evaluation of the effects of anthropometric variables at diagnosis, including body composition and body fat distribution and weight gain during life span, and survival from breast carcinoma. Cancer; 88: 2751-7. 6. Harvie M, Howell A, Thatcher N, Baillam A, Campbell I (2005). Energy balance in patients with advanced NSCLC, metastatic melanoma and metastatic breast cancer receiving chemotherapy- a longitudinal study. British Journal of Cancer; 92: 673-80. 7. Garcia-Peris P, et al (2005). Prospective study of resting energy expenditure changes in head and neck cancer patients treated with chemoradiotherapy measured by indirect calorimetry. Nutrition; 21: 1107-1112.

