



Mini-Tutorials in Nutrition Support



CN Magazine has joined forces with Stephen Taylor, Research Dietitian, North Bristol NHS Trust – 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 for full details, support information and links to the following free downloads:

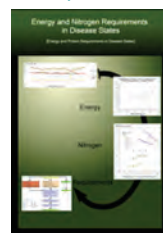
- **Nutrition Support eBook sample:** Nutrition Support is 2 books in 1 volume: 'Energy and nitrogen requirements in disease states' and 'Facts, patterns and principles'.
- **FeedCalc Trainer:** Enables the individualised care proposed within 'Nutrition Support' to be attained within health service pressure. '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:

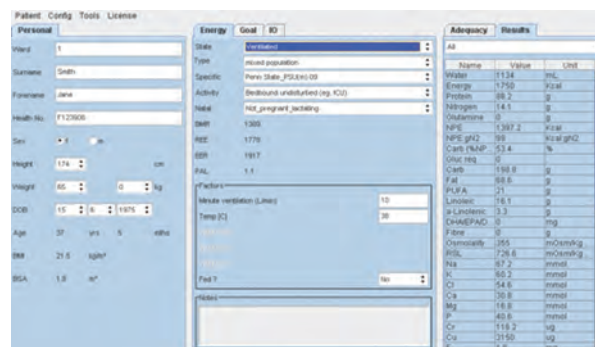
- **Clinical scenario:** A clinical state is introduced followed by technical questions and calculations facilitated through FeedCalc.
- **Practice & prescribing:** You simulate a prescribing scenario through FeedCalc to determine optimal prescription, adequacy and possible toxicity.

The fifth 'Mini-tutorial' covers Acute on Chronic Disease, see 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 with full links to all required downloads. Full text/Tutorials are available from: www.nutritionsupportinfo.com.

Tutorial 5

Acute on Chronic Disease

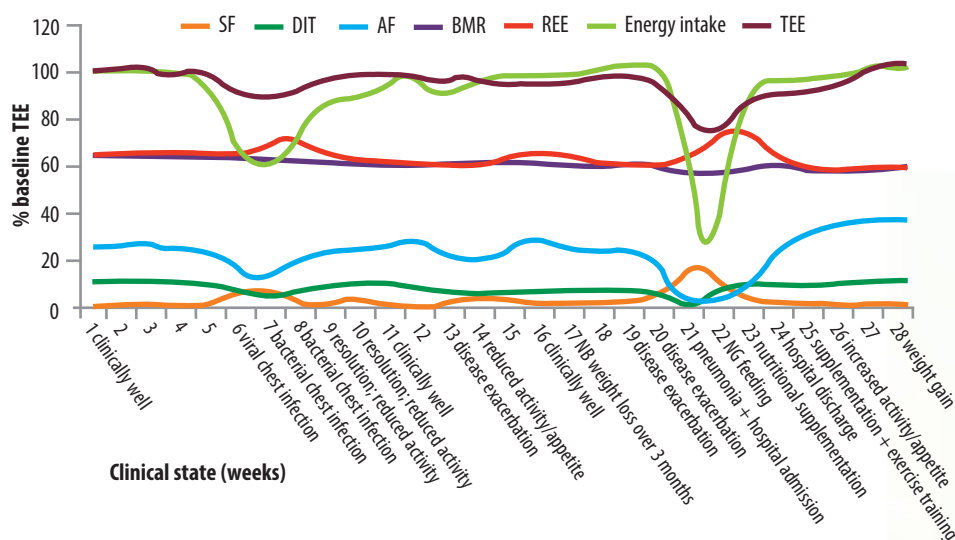
Many chronic diseases are typified by minimal to low-grade inflammatory responses with intermittent acute episodes. The acute disease varies in frequency and severity. Early and complete nutritional support minimises the extent and duration of negative energy and nitrogen balance. Combined nutritional supplementation-exercise programs (\pm anabolic drugs) offer a method of restoring fat-free mass (FFM).

Chronic disease is frequently associated with an absence of adaptation between hypermetabolism and poor intake resulting in negative energy balance, weight loss and reduced survival.¹ The increase in energy expenditure (EE) may be absolute, relative (considering malnutrition) or per kg due to a relative increase in visceral FFM. Hypermetabolism and catabolism can be compensated for by increased energy and protein intake, whereas weight loss induces hypometabolism and therefore may re-stabilise.

However, intermittent cytokine-mediated inflammation reduces activity-associated appetite by more than the activity-reduction in total energy expenditure (TEE) while at the same time REE rises; wasting (weight loss) and catabolism (FFM loss) ensue. Compensatory reduction in the physical activity level (PAL) makes it difficult to recover FFM. This results in a 'stepped' decline of weight and FFM loss followed by failure of intake to replenish loss and stabilization at a new, lower weight and FFM.² The effect of intermittent inflammatory states on components of energy expenditure can be seen at day 7 and 21 of **Figure 1**.

In older age this can lead to sarcopenia; immobility and lack of exercise have a preponderant role.³ Conversely, physical activity, with a focus on resistance exercise, appears essential to attenuating these problems.⁴ However, disease-induced anorexia may require orexigenic drug treatment and increased nutritional input (35Kcal + 1.4g protein/kg/d) to improve FFM gain.⁵

Figure 1: Components of Energy Expenditure in Chronic Disease⁶



*SF = stress factor; DIT = dietary-induced metabolic rate; AF = activity factor; BMR = basal metabolic rate; REE = resting energy expenditure; TEE = total energy expenditure.

Now visit 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 Acute on Chronic Disease.

References: 1. Bosaeus I, Daneryd P, Lundholm K (2002). Dietary intake, resting energy expenditure, weight loss and survival in cancer patients. *The Journal of Nutrition*; 132: Suppl: 3465S-3466S. 2. Donahoe M, et al (1989). Oxygen consumption of the respiratory muscles in normal and in malnourished patients with chronic obstructive pulmonary disease. *American Review of Respiratory Disease*; 140: 385-91. 3. Abate M, et al (2007). Frailty in the elderly: the physical dimension. *Europa Medicophysica*; 43: 407-15. 4. Singh M (2002). Exercise comes of age: rationale and recommendation for a geriatric exercise prescription. *Journal of Gerontology and Biological Science and Medical Science*; 57: 262-82. 5. Bos (2002) 6. Taylor SJ (2012). Energy requirements in chronic disease, Conclusion, section 2.4. In: *Nutrition Support*, page: start-finish. Silhouette Publications. Bristol. <http://www.nutrition-support.info/node/44>.

