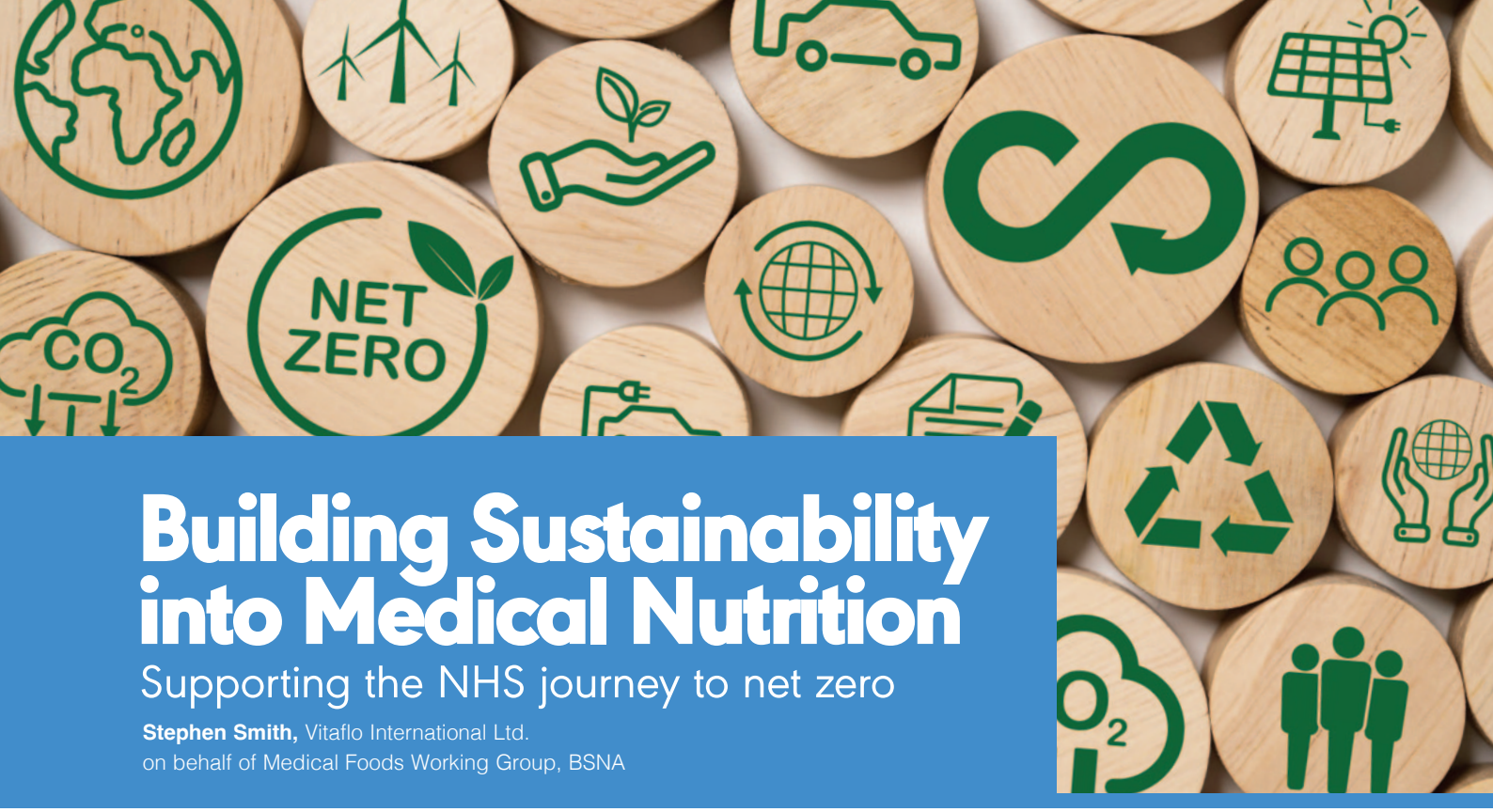

Building Sustainability into Medical Nutrition

Supporting the NHS journey to net zero

Stephen Smith, Vitaflo International Ltd.
on behalf of Medical Foods Working Group, BSNA

By taking action, and leading the way towards a sustainable future, countries, businesses, and individuals can inspire others to follow suit and create a collective effort to combat climate change. Overall, achieving net zero by 2050[1] is essential for the long-term sustainability of our planet, the well-being of future generations, and the preservation of ecosystems and biodiversity. It is a critical step towards addressing climate change and creating a more sustainable and resilient world.

Introduction

Net zero refers to achieving a balance between the amount of greenhouse gases emitted into the atmosphere and the amount removed or offset. By reaching net zero, we can effectively halt the increase in global temperatures and mitigate the impacts of climate change. Transitioning to a net-zero economy requires a dramatic reduction in emissions through a shift towards renewable energy sources, energy efficiency, and sustainable practices. It fosters innovation and economic growth while reducing our dependence on fossil fuels and non-renewable resources.

Overall, the commitment of industries to work towards net zero is crucial in driving the necessary changes to reduce greenhouse gas emissions and transition to a sustainable future. By taking action and implementing sustainable practices, healthcare industries, including the medical nutrition industry, can play a significant role in achieving the NHS goal of net zero emissions by 2045.[2]

However, this sustainability journey has many challenges, which need to be overcome. Setting the target is just the first step. To achieve it requires collaboration and communication at many levels between government, the NHS, industry, healthcare professionals, and individuals who use the service. For example, the introduction of recyclable packaging and delivery systems is dependent on the design of the packaging, but also having both hospital and household capabilities to separate the waste and government sponsored schemes to recycle it.

Member Companies of BSNA are committed to developing more sustainable products with a lower carbon footprint. This can be achieved through a range of measures including careful selection of ingredients and packaging materials, reducing energy use and reducing waste. Our primary consideration for our products is always to meet the nutritional needs of patients and any changes to products and packaging must be fully evaluated to ensure that we continue to enable the best quality nutritional care.

Where does the carbon footprint come from in medical nutrition products?

The carbon footprint of medical nutrition products varies depending on several factors, including the ingredients, manufacturing processes, packaging, transportation, and waste management.

Internal estimates, gathered by BSNA member companies, suggest the following:[3]

- Ingredients contribute approximately 60-70% of the carbon footprint of a medical nutrition product. Animal-derived ingredients like dairy and dairy derivatives have a higher carbon footprint compared to plant-based alternatives. Additionally, the use of ingredients that require extensive land use, water consumption, or energy-intensive processes adds to the carbon footprint.
- Manufacturing processes contribute approximately 10% of the carbon footprint. This includes the energy used for processing, packing, and sterilisation.
- Packaging contributes approximately 10% of the carbon footprint. Key factors include the type, amount, and recyclability of packaging.
- Logistics and transportation contribute approximately 10% of the carbon footprint. The distance travelled, mode of transportation, fuel type and fuel efficiency of vehicles all impact the emissions associated with transportation.

- Consumer use and waste management, including the disposal of packaging materials, expired or unused product, packaging and delivery systems contributes approximately 10% to a product's carbon footprint. Implementing recycling programmes and proper waste disposal practices can help minimise the environmental impact.

The above factors enable identification of areas for improvement. Some examples of changes to products and manufacturing processes made by medical nutrition companies to reduce their carbon footprints include:

- Removal of single use items from products, such as straws and plastic scoops
- Reduction in the weight of plastic used in packaging
- Use of renewable electricity to manufacture products
- Use of electric vehicles to distribute products
- Optimisation of transportation and distribution routes
- Introduction of recyclable packaging
- Use of plant-derived ingredients to replace some dairy ingredients.

Ingredients

Ingredient selection for clinical nutrition products historically has been made based on nutritional value, clinical requirements, and suitability. We now need to consider other factors such as the ingredient carbon footprint. This can be related to the source of the ingredient (e.g. dairy), the associated agricultural and farming practices (e.g. regenerative farming techniques), land use (e.g. deforestation), processing and transportation.

General foods used as part of a mixed diet can be more easily formulated to contain ingredients with lower associated carbon emissions. Medical nutrition products are often used as sole or significant part of nutritional intake for nutritionally vulnerable individuals and this needs to be taken into account when developing recipes, including alternative ingredients that satisfy both nutritional and sustainability criteria.

Ingredients form around 60-70% of the contribution of carbon from a medical nutrition product. These ingredients are necessarily sourced from third party suppliers. Therefore, for medical food manufacturers these are scope 3 emissions (outside of their direct control). Manufacturers must work closely with suppliers to ensure alignment in moving towards their sustainability goals.

Packaging designed for recycling

Significant developments in food packaging have occurred over the last 50 years. Packaging has become more convenient and portable with the rise of on-the-go lifestyles. Lightweight portion-sized packaging and resealable options have been developed together with improvements in barrier properties. These are key for reducing transport emissions and minimising product waste but also to enhance food safety and preservation. Complex laminate technology together with modified atmosphere packaging has enabled maintenance of product quality and freshness over extended shelf-lives. These developments have resulted in packaging which provides adequate safety, preserves the product and ensures easy transportation but historically little consideration was given to 'end of use' and the environmental impact of packaging.

Clinical nutrition products have benefitted from high-tech packaging material developments and are now presented in a wide range of packaging formats – including, sachets, pouches, plastic bottles, tins, pots, tubs, cartons. Consequently, a challenge is faced when transitioning to more sustainable packaging alternatives, which are in the early stages of development, to ensure that they are as robust and technically suitable to the manufacturing process and machinery.

Progress has been made to ensure the recyclability of specific clinical nutrition packaging formats. Industry is working to source other alternative innovative recyclable packaging materials with the correct barrier properties, which are key to ensuring that medical nutrition products can be delivered safely to patients and the nutritional quality is maintained over the shelf-life. Products supplied to global markets often contain complex mixtures of essential nutrients required to meet a specific label claim with a long shelf-life, typically up to 18 months. Packaging provides barriers to moisture and oxidation thereby protecting labile nutrients from degradation. Use of single-material laminates in packaging, such as sachets and pouches to make them suitable for recycling, can lead to differences in these barrier properties. Extensive shelf-life/stability testing of nutrients and sensory qualities is therefore required to ensure product quality throughout shelf-life. Maintaining a long shelf-life is also important to minimise waste.

The recycling of packaging is also dependent on having the appropriate waste separation and recycling infrastructure, both in the home for those patients in the community and in hospital settings.

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It is recognised that there are varying recycling capabilities within hospitals and healthcare facilities. As medical nutrition products are packaged in a variety of formats, effective collection and sorting of these items provides an additional challenge. Collaboration and harmonisation are required to ensure that packaging that is designed for recycling can be collected, processed and returned to the circular economy.

As well as redeveloping packaging to be designed for recycling, manufacturers of medical nutrition products are reducing the weight of virgin plastic used in plastic packaging, which in turn reduces the use of fossil fuels. Although there are challenges with the availability of the infrastructure required to produce recycled material that is suitable to be in contact with food, industry are also working on solutions to include recycled content into medical nutrition packaging, in line with promoting the circular economy.

Communication and education

It is important for consumers and users of medical nutrition products to understand how packaging can be disposed of in a sustainable way. This is generally done via communication on labels. It is recognised that recycling advice and information is currently confusing to patients and consumers. The on-pack recycling labels (OPRL) system of communication is a well-recognised and user-friendly system to advise patients and consumers in the UK of the recycling instructions for packaging components. Clear OPRL-style recycling labelling advice will be a legislative requirement from April 2027.[4] However, medical nutrition products are often labelled in multiple languages, with a significant amount of mandatory information required to ensure the appropriate use of the product, which is critical for the patient. In addition, recycling symbols and information are not harmonised across different geographies. Therefore, it would be preferable to be able to provide information on recyclability to consumers of medical nutrition products via digital means – on a website or behind a QR code – to ensure the correct guidance can be shared with the patient or carer, tailored to their specific location.

Carbon Footprint Life Cycle Assessment

Life Cycle Assessment (LCA)[5] is a systematic and comprehensive method used to evaluate the environmental impacts of a product, process, or service throughout its entire life cycle, from raw material extraction to disposal of the product. The goal of conducting a LCA is to provide a holistic and science-based analysis of the environmental impacts associated with a product or process.

LCA analysis is a highly technical assessment requiring expertise and independent verification. Consequently, a LCA is an expensive and resource-intensive undertaking. While it would be the ideal for manufacturers to conduct a LCA for individual products, the reality is that there are a large number of medical nutrition products produced in very small volumes. There are also gaps in the data on specialised ingredients which then require the use of multiple assumptions. This makes conducting LCAs for all products at present impractical or unfeasible with time and resource better invested in progressing sustainability action plans across the supply chain.

The future

Sustainable considerations are essential as companies seek to develop new products while minimising negative impacts on the environment. Factors affecting product carbon footprint should be assessed within all product development and manufacturing stages from product concept, development trials, manufacture, launch, distribution to end of life of the products. Lower emission ingredients, recyclable packaging, and sustainable formats, in addition to clinical benefits, should be a fundamental part of product design.

Ensuring sustainability across the entire supply chain, including sourcing sustainable materials, working with ethical suppliers, and monitoring environmental and social practices is essential to meet our sustainability goals. Developing sustainable products requires innovation using new technologies, and may require significant research and investment. This is a long-term project that has to be progressed in stages, and will require collaboration and partnerships with all stakeholders, bringing the whole community of farmers, ingredient suppliers, packaging manufacturers, manufacturing and logistics partners together, to achieve the end goal of net zero carbon emissions, whilst ensuring we continue to meet the nutritional needs of our patients.

We believe the Government and regulatory bodies play a crucial role in creating an enabling environment through incentives, standards, and regulations that promote sustainability. Although, ultimately, these challenges require a holistic approach, involving collaboration between all stakeholders, innovation, patient education, supportive policies, and a long-term commitment to sustainability.

British Specialist Nutrition Association Ltd

bsna

About the British Specialist Nutrition Association

BSNA is the trade association representing the manufacturers of products designed to meet the particular nutritional needs of individuals; these include specialist products for infants and young children (including infant formula, follow-on formula, young child formula and complementary weaning foods), medical nutrition products for diseases, disorders and medical conditions, including oral nutritional supplements, enteral tube feeding and parenteral nutrition, as well as companies who aseptically compound chemotherapy, parenteral nutrition and CIVAS.

References: **1.** Department for Business and Trade (DBT), the Department for Energy Security and Net Zero (DESNZ) (2022). Policy Paper: Executive Summary. What is net zero and why do we need to act? Accessed online: www.gov.uk/government/publications/net-zero-strategy/executive-summary (Jun 2024). **2.** NHS England (2022). Delivering a 'Net Zero' National Health Service. Accessed online: www.england.nhs.uk/greenernhs/wp-content/uploads/sites/51/2022/07/B1728-delivering-a-net-zero-nhs-july-2022.pdf (Jun 2024). **3.** BSNA (2024) Data collated by BSNA member companies. **4.** Defra. Draft Producer Responsibility Obligations (Packaging and Packaging Waste) UK Regulations April 2024 Part 3 Chapter 2 Recycling information. **5.** Gathorne-Hardy A (2015). A Newcomer's Guide to Life Cycle Assessment - Baselines and Boundaries. Accessed online: www.gov.uk/research-for-development-outputs/a-newcomer-s-guide-to-life-cycle-assessment-baselines-and-boundaries (Jun 2024).