Quiz feedback: Special foods and nutrition

The questions and answers to the special foods and nutrition quiz are shown in the following table. The right hand column shows the percentage of GPs that selected each answer.

1.	For non-breastfed infants allergic to cows' milk protein, which infant formula(s) are recommended?	
	☐ Soy formula	4%
	☐ Goats' milk formula	2%
	☐ Partially hydrolysed cows' milk formula	30%
	☐ Extensively hydrolysed cows' milk formula	94%
2.	For non-breastfed infants who are lactose intolerant, which infant formula(s) are recommended?	
	☐ Soy formula	10%
	☐ Goats' milk formula	1%
	☐ Lactose free cows' milk formula	85%
	☐ Reduced lactose cows' milk formula	81%
3.	Soy based formula contains high levels of which substance(s)?	
	☐ Phytate	93%
	☐ Methionine	3%
	☐ Aluminium	89%
	☐ Phytoestrogens	97%
4.	Which of the following statements about nutrition in diabetes are true?	
	☐ People with diabetes should purchase "diabetic" foods	2%
	☐ Soluble dietary fibre can improve glycaemic control	93%
	☐ White bread is a low glycaemic index food	2%
	☐ Watermelon is a low glycaemic load food	64%
	☐ Honey is a better choice than sugar for people with diabetes	11%
5.	What is the recommended approach for minimising breathing difficulties when eating, for people with COPD?	
	☐ Eat only one large meal per day	<1%
	☐ Eat only pureed food	<1%
	☐ Eat small meals frequently	100%
	☐ Drink the dietary supplement, Pulmocare	22%
6.	Nutritional supplementation can be considered for people with COPD who:	
	☐ Have a BMI less than 20kg/m^2	89%
	☐ Have a weight loss of greater than 10% in the last six months	92%
	☐ Have a weight loss of greater than 5% in the last month	81%
	☐ Are needing to lose weight	1%
7.	Nutritional supplements should be offered to:	
	☐ All elderly people	1%
	☐ Elderly people who do not eat nutritious meals	19%
	☐ Elderly people who do eat nutritious meals but are unable to maintain body weight	90%
	☐ Elderly people who have eaten little or nothing in the past week	67%
8.	Which of the following solutions can help optimise nutrition in elderly people who have lost their appetite?	
	☐ Three large meals per day	1%
	☐ Smaller but more frequent meals and snacks	97%
	☐ Encourage naps just prior to mealtimes	1%
	☐ Avoid exposure to unpleasant smells	67%
	☐ Check medications for possible cause	93%
9.	Which of the following statements about folate are true?	
	☐ Folate is required during pregnancy to reduce the risk of neural tube defects.	99%
	☐ Folate status is an important cardiovascular risk factor	6%
	☐ People taking methotrexate require folate supplements	93%
	☐ A good dietary source of folate is red meat	4%
10.	Which of the following groups of people have a higher risk of vitamin B12 deficiency?	
	☐ Adolescents	2%
	☐ Pregnant women	53%
	☐ Women taking oral contraceptives	5%
	☐ Elderly people	96%
	☐ People with coeliac disease	89%

In BPJ 15 (August 2008) we covered several topics about nutrition and prescription special foods including how to select an appropriate infant formula, nutrition for people with diabetes, COPD and coeliac disease, strategies to improve nutrition in elderly people and requirements for vitamins and minerals.

GPs were invited to complete a quiz about the programme material. Dietitian Dr Lisa Houghton provides commentary on several key issues highlighted in the quiz.

Infant formula

Most GPs provided correct answers for **questions 1, 2 and 3**, however there still seems to be a need for clarity regarding indications for hydrolysed and partially-hydrolysed formula.

It appears that soy-based formula is less favoured than it has been in the past. Negative publicity about other substances contained in soy formula may have altered perceptions about its appropriateness.

Expert commentary

Cows' milk protein allergy is the most common food allergy in early childhood with an incidence of approximately 2–3% in the first year of life. Symptoms typically develop before one month of age, often within one week after introduction of cows' milk-based formula. Cows' milk allergy can also occur in exclusively breastfed infants mostly due to the transfer of cows' milk protein from the nursing mother's diet. Hydrolysed infant formulas have been designed to change the allergenic milk protein with the aim of preventing sensitisation or intolerance. They may be produced from cows' milk or soy milk, be derived from predominately whey or casein proteins and be partially or extensively hydrolysed. For non-breastfed infants, **extensively hydrolysed formula** (e.g. Pepti-Junior) is recommended for treating immediate cows' milk allergy (non-anaphylactic). **Partially hydrolysed cows' milk based formula** (e.g. Nestle NAN HA 1) contains peptides large enough to cause allergic reactions to cows' milk protein and is not suitable for treatment. These partially hydrolysed formulas have been marketed for high-risk infants before any signs of cows' milk allergy appear yet evidence regarding its prophylactic use is limited. Further large, well-designed trials are needed.

Although studies have confirmed that soy and goats' milk formula are adequate for promoting normal growth and development in full-term infants, there are few indications for their use in place of cows' milk based formula.

Goats' milk formula is not a suitable alternative for babies who are allergic to cows' milk protein as the vast majority of these infants will also suffer an allergic reaction to goats' milk, as the proteins in the milks are quite similar. Goats' milk formula is also unsuitable for babies who are lactose intolerant as it contains comparable levels of lactose to cows' milk based infant formulas. Goats' milk infant formula has been available in New Zealand for routine use for over 15 years. It is available at similar cost to soy formulas, and is typically 20-50% more expensive than standard cow milk-based formulas. In New Zealand the use of goats milk formulas comprise approximately 5% of infant formula purchased.[1]

Soy formula were originally developed for infants who could not tolerate cows' milk protein or lactose. Current evidence

indicates that nearly 50% of children with cows' milk allergy will also have adverse reactions to soy. Furthermore soy formula is not required for lactose intolerance as there is no need to eliminate milk protein. Indications for the use of soy formulas in place of cow milk-based formulas are as follows: (a) for infants with galactosaemia when strict dietary lactose elimination is required or primary lactase deficiency (rare), and (b) for infants of vegetarian families who may want to exclude animal proteins in their child's diet. Soy protein-based formulas with sucrose as the carbohydrate are contraindicated in sucrase-isomaltase deficiency and in hereditary fructose intolerance.

One of the most common reasons for use of soy formulas by infant care providers is for relief of perceived formula intolerance (spitting, vomiting, fussiness) or symptoms of infantile colic. Controlled trials of cows' milk and soy protein-based formulas have not yet proven beneficial in the prevention or management of colic or fussiness. Theoretical concerns surrounding the high levels of soy phytoestrogens have prompted investigations on the possible adverse effect of these factors in soy formulas. Although very limited data suggests that soy phytoestrogens have a low affinity for human estrogen receptors, they have not demonstrated to have any adverse affect on human development, reproduction, or endocrine function.[2]

Lactose free and reduced lactose-containing cows' milk formula are appropriate for use in lactose intolerance.

The nutritional management of diabetes

It appears that the concept of glycaemic index versus glycaemic load is still not well understood, with only 64% of GPs correctly identifying that watermelon is a low glycaemic load food (**question 4**).

Expert commentary

Glycemic index (GI) was introduced nearly 30 years ago in an attempt to classify carbohydrate-rich foods on the basis of their effect on postprandial blood glucose. Since blood glucose is also influenced by the amount of carbohydrate consumed, the concept of **glycemic load** (GL) was introduced to better represent the impact of both the quality (GI) and quantity of the carbohydrate ingested. By definition, foods that have a low GI invariably have a low GL, while foods with a medium or high GI can range from a very low to very high GL. It has been suggested that dietary GL provides little information beyond total carbohydrate intake. In contrast, dietary GI, which does not reflect total carbohydrate intake, is thought to provide limited information with regards to the overall insulin demand induced by total carbohydrate intake. Therefore, if the GI or GL is to be used, it should be in consideration with other relevant characteristics of the food such as energy content, amount of fat and dietary fibre. Although there is disagreement in the literature concerning the use of the GI in the prevention and management of diabetes, most would agree that GI could be used as a helpful indicator of appropriate carbohydrate-containing foods to include more often in the diet.[3,4]

The nutritional management of weight loss in COPD

GP feedback tells us that the use of supplements such as Pulmocare in COPD is not widespread. However in **question 5**, 22% of respondents indicated that they would use this supplement to minimise breathing difficulties. The indications for the use of Pulmocare in patients with COPD are quite limited and include patients with a low BMI, significant involuntary weight loss and those who develop hypercapnia. Our advice would be to promote dietary changes that encourage small, frequent, high energy and high protein diets, generally with advice from a dietitian. Indications for nutritional supplements for people with COPD were correctly identified by most respondents in **question 6**.

Expert comment

Malnutrition commonly occurs in patients with COPD. Nutritional management can be complicated as eating may increase the respiratory quotient (RQ) (ratio of CO_2 produced to O_2 consumed) and increase the work of breathing. The RQ produced from the metabolism

of carbohydrate, fat and protein is 1.0, 0.7, and 0.8, respectively. Therefore, for a given amount of oxygen consumed, more carbon dioxide is produced from the metabolism of carbohydrate than from fat or protein. The primary goal of nutritional support is to adopt a strategy that corrects the malnutrition without increasing the RQ. Pulmocare is a high-calorie, low-carbohydrate formula designed to help reduce CO_2 production. Fat replaces carbohydrate as the major source of calories and thus, consumption of this formula potentially decreases CO_2 retention. Further, 20% of fat is provided as medium chain triglycerides to enhance fat absorption. One study demonstrated that consumption of Pulmocare when used as a nutritional supplement resulted in significantly lower RQ, CO_2 production and O_2 consumption as compared to a group of patients consuming a high-carbohydrate diet.[5]

Nutrition in elderly people

A good understanding of nutrition for elderly people was reflected in answers for **questions 7 and 8**, however GPs tell us that there is often a discrepancy between what should be done and the reality of what can be done. There are many interwoven reasons for poor nutrition and it can often be difficult for people to change. GPs are familiar with giving advice about reducing the energy and calorific content of meals and there are many resources available to reinforce this, however it is more difficult to provide information for when appetite and nutrition are poor.

Advocating access to day programmes, often run by rest homes or community organisations, where lunch and social contact was provided is a solution used by some GPs. Other tips for dealing with poor appetite included encouraging people to choose their favourite foods, having small attractively presented meals and promoting the value of company while eating. Anxiety should be considered as both a cause and a consequence of poor nutrition.

Expert commentary

Evidence for the effectiveness of nutritional supplements prescribed to improve the nutritional status of older people is limited. Recent systematic reviews of oral protein and energy supplementation in older people at risk from malnutrition suggested a small but consistent weight gain.[6,7] Early screening for the risk or presence of malnutrition and implementation of early nutritional care programmes demonstrate improved outcomes.[8]

Vitamins and minerals

GPs are very familiar with the fact that folic acid is required during pregnancy (**question 9**), but they say that the message of pre-conceptual use of folic acid is still not well known in the general population and that in the majority of cases, women tend to present when they are already pregnant rather than for pre-conceptual counselling. Wider dissemination of information is required to encourage pre-conceptual use of folic acid.

It was not well known that pregnant women are also at risk of vitamin B12 deficiency (**question 10**). The need for iodine supplementation in pregnancy may also be new information for some GPs.

Expert commentary

Iodine requirements increase during pregnancy to ensure maternal thyroid hormone (T4) production can be maintained at almost double that of the non-pregnant state. Studies of pregnant women conducted in New Zealand suggest ongoing, and even worsening, iodine deficiency in this group.[9,10] It should be noted that not all multivitamin supplements available for pregnant and lactating women contain iodine (e.g. Elevit). There are no oral iodine preparations available as registered medicines in New Zealand. By September 2009, mandatory fortification of bread by means of replacing non-iodised salt with iodised will serve to increase the daily iodine intakes of adults by about 30-70 micrograms. There are concerns that the current fortification programme will not provide the adequate intake levels for pregnant and lactating women (RDI of 220 and 270 micrograms, respectively).

Beyond folate deficiency, current data suggest that maternal **vitamin B12** deficiency may be associated with an increased risk for neural tube defects. A study in

Canada recently revealed that about 1 in 20 women may be deficient in B12 in early pregnancy.[11] In the study, the rate of vitamin B12 deficiency nearly doubled after 28 days gestation, which the researchers highlight may be due to the known hemodilutional effect of pregnancy. Vitamin B12 deficiency during pregnancy may also contribute to deficiency in the foetus and infant, and lead to preterm delivery. The full implications of starting pregnancy and lactation with low vitamin B12 status have not been sufficiently researched.

The achievement of an optimal vitamin B12 status is difficult for many older people due to age-related decreases in gastric acid production, which may prevent the release of B12 from food. Long-established as a rare but serious medical condition requiring medical management, vitamin B12 deficiency is now seen to be common worldwide, albeit subclinical in nature.[12] The prevalence has been dramatically increased by also including persons with "low-normal" vitamin B12 levels. One study estimated that as many as 10% and 20% of British people aged 65-74 and greater than 75 years, respectively were at high risk of vitamin B12 deficiency.[13] Theoretically, older people with mild vitamin B12 deficiency should be able to absorb free (crystalline) vitamin B12 found in fortified foods and supplements. The high prevalence of low vitamin B12 status among older adults, and treatment therefore is an important public health issue that requires further investigation. Studies are needed to define the still unproven health benefits of vitamin B12 fortification, the optimal levels of supplementation, interactions with other nutrients, and any possible adverse effects on healthy persons.

The full version of the quiz feedback, including GP panel commentary can be accessed on the bpac website:

www.bpac.org.nz keyword search "quiz"

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