Answers to your questions from our medical experts

1. What harm can genetically modified foods do?

Are genetically modified foods safe? How can they potentially harm us?

Submitted by:
Paul Stephan, MD
Scarborough, Ontario

This month's topics:

Genetically modified means a plant, animal, or bacterium has had its genetic material altered in some way. Often, this involves moving one or more genes from one organism to another, even between non-related species. There are 48 genetically modified, or biotechnology-derived foods approved for sale in Canada.

Health Canada conducts safety assessments on all genetically modified foods before they are allowed on the market. The safety assessment of each new food looks at:

- the process used to develop the product,
- composition,
- nutritional quality,
- toxicants, and
- the potential for an allergic reaction.

There is currently no scientific evidence to suggest that genetically modified foods in Canada are less safe than traditional foods, even with long-term use.

If a genetically modified food is potentially allergenic, or if the nutritional composition of the food has been significantly changed, in Canada, it is mandatory these products be labelled.

Answered by:
Sheri Taylor, BSc (Nutr), RD
Public health nutritionist
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2. Advanced liver failure management

What would you suggest for the symptomatic treatment of patients in advanced liver failure with jaundice?

Submitted by:
Ronald Nicholson, MD, CCFP
Summerside, Prince Edward Island

Optimal management of a patient with end-stage liver disease and jaundice requires a collaborative interaction between the family physician and the consulting medical specialist.

End-stage liver disease implies decompensated cirrhosis (which has a poor long-term prognosis) and the development of esophageal varices, ascites, and hepatic encephalopathy. It must be ascertained whether the patient is a possible candidate for liver transplantation and if so, a referral should be made to the regional transplant centre.

The specific question of management of jaundice will depend on the cause.

Biliary obstruction, which may be coincidental or part of the disease's natural history, may be amenable to biliary stenting, stone removal, *etc.*

In cholestatic liver diseases, such as primary biliary cirrhosis or primary sclerosing cholangitis (in the absence of a dominant stricture), jaundice may be disproportionate to the other manifestations of end-stage cirrhosis; medications, such as ursodeoxycholic acid, may be beneficial.

In the case of alcoholic liver disease, there may be a component of reversible alcoholic hepatitis and abstinence is required. Some experts may recommend the use of corticosteroids or pentoxifylline as adjunctive agents in this situation.

In general, however, if the jaundice is a non-specific manifestation of end-stage cirrhosis, there is little that can be done other than treating the other sequelae of the disease and providing supportive measures for both patient and family.

Answered by:
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3. The role of bisphosphonates in osteoporosis

What role do oral bisphosphonates play in cancer patients and/or osteoporosis patients?

Submitted by:
Jean-Yves Plourde, MD
Cap-Pelé, New Brunswick

The role of oral bisphosphonates in the prevention and treatment of osteoporosis is well-established. The newer bisphosphonates, alendronate and residronate, increase bone mineral density and reduce fracture rates at vertebral and nonvertebral sites.

In addition to post-menopausal osteoporosis, these agents have also shown beneficial effects in males with osteoporosis and in the prevention and treatment of glucocorticoid-induced osteoporosis. Both are now recommended as first-line agents by the Osteoporosis Society of Canada.

Etidronate is less potent and is recommended as a second-line agent.

In patients with cancer, the intravenous bisphosphonates, pamidronate and zoledronate, are used in patients with bone metastases to prevent pathologic fractures and for malignancy-induced hypercalcemia. The oral bisphosphonates have not been as extensively studied in this particular patient population and the available evidence suggests that they are less effective than their intravenous counterparts for the prevention and treatment of bone metastasis in patients with cancer.

Answered by:
Hasnain Khandwala, MD, FRCPC
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4. When are liothyronine sodium tablets used?

In which cases of hypothyroidism would a liothyronine sodium tablet be used? Is it a first-line prescription, or only adjuvant therapy? If it's the latter, when would it be added?

Submitted by:
Belinda Lategan, MD
Brandon, Manitoba

Liothyronine (also called triiodothyronine [T3]) is used most frequently in the management of thyroid cancer patients who are taken off their thyroxine (T4) in preparation for treatment or scanning. T3 is fast-acting and has a short half-life compared to T4 and is used for short-term replacement (usually in suboptimal dosage in the range of 25 µg twice daily). These same properties make T3 a less reliable drug for long-term replacement. An elevated thyroid-stimulating hormone is required for scanning and treatment, so T3 is stopped one to two weeks prior to giving radioactive iodine, whereas T4 is stopped four to six weeks prior.

The use of T3 as an adjuvant therapy to thyroxine has been used in selected patients over the last few years, but recent studies have shown no significant benefit in the patients studied. In some instances, T3 may be used in the management of thyroid hormone resistance syndrome.

Answered by:
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5. Rehab after hip replacement surgery

What would an exercise and rehabilitation specialist advise for an elderly hip replacement patient?

Submitted by:
Paul Jaconello, MB, BS, DRCOG(Eng), FFARCS(Eng)
Toronto, Ontario

Prior to surgery, it would be in the best interest of the patient to work on hip/knee strength and balance to improve post-operative outcome. Recommended exercises include, cycling, swimming, leg lifts, squats, rowing machine, stairmaster, yoga, Pilates, or leg extensions/hamstring curls.

In the primary post-operative phase, the goal is rapid mobilization, reduction of swelling, and full range of motion (ROM). This is best accomplished through bed exercises, such as leg lifts in forward flexion, extension, abduction, and weight-bearing, four times daily. Although every patient is different, the trend should be to progress from walker to cane to single-assist to independent ambulation within five days of surgery.

The secondary phase involves a recreation of the preoperative phase, with similar apparati in a gradual challenge (*i.e.*, five minutes of biking, followed by stetching and ROM exercises two to three times daily).

The tertiary phase involves home exercises for one to two months. This will optimize the outcome by increasing strength, balance, and bone and muscle remodelling via a prescribed graduated rehabilitation program structured by the family physician.

Answered by:
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The Healthy Performer, Nepean Sports Medicine Centre, and
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6. Foreign body ingestion

How long should you wait for a coin or other foreign object to move through the esophagus and through the bowel before taking invasive measures to remove it?

Submitted by:
Susan Bryan, MD
Thunder Bay, Ontario

Coins are the most common foreign bodies ingested by children. They are usually easy to remove endoscopically. If a coin is lodged in the esophagus, it should be removed within 24 hours, or earlier, if it is causing complete obstruction. Should the coin slip into the stomach, it can be observed for two to four weeks if the child is asymptomatic.

If endoscopy is not available, a coin causing trouble in the esophagus may be removed with a Foley balloon catheter and fluoroscopic guidance.

Rarely, coins may be a problem if there is an unknown gastrointestinal stricture. In these situations, a surgical consult may be in order.

A word about batteries needs to accompany any thoughts of foreign body ingestion in children. Button batteries contain concentrated hydroxides, which may leak and cause necrosis within hours. They are liable to cause damage, especially within the esophagus; thus, if a battery is stuck in the esophagus, it needs to be urgently removed. A battery that makes its way to the stomach may be observed and usually passes within 48 hours.

Answered by:
Robert J. Bailey, MD, FRCPC
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7. An overview on lipodermatosclerosis

Can you tell me about lipodermatosclerosis in venous stasis disease?

Submitted by:
Nathalie Bourget, MD, CCFP
St-Henri-de-Levi, Quebec

Lipodermatosclerosis refers to pigmented, indurated skin occurring on the distal one-third to one-half of the lower extremity. It is related to venous stasis disease.

Venous stasis disease is related to venous valvular incompetence and is exacerbated by calf muscle pump failure.

Brown pigmentation results from the deposition of hemosiderin from the extravasted red blood cells. Chronic extravasation of fibrin leads to deep dermal fibrosis and the classic "champagne bottle leg" appearance.

Figure 1. Acute lipodermatosclerosis.

Figure 2. Chronic lipodermatosclerosis with concurrent area ulceration.

Lipodermatosclerosis may be acute (Figure 1) or chronic (Figure 2). Acute lipodermatosclerosis is characterized by more edema and erythema, as well as less sclerosis and pigmentation. It is painful and often confused with cellulitis. Acute lipodermatosclerosis is treated with compression therapy and non-steroidal anti-inflammatory drugs (NSAIDs).

Chronic lipodermatosclerosis is treated with compression stockings or bandages, as well as with topical steroids and skin lubricants. NSAIDs or pentoxifylline may be helpful for the associated widespread chronic pain.

Early recognition of venous disease and control of venous edema with compression stockings may help to reduce the incidence of lipodermatosclerosis.

Answered by:
David Keast, MD, BSc, MSc, CCFP, FCFP
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8. Monitoring serum B_{12}

Are vitamin B_{12} levels important in monitoring regular injections? How important is the Schilling test in determining whether or not an individual will symptomatically benefit from injections?

Submitted by:
Natalie Antonenko, MD, BSc
Selkirk, Manitoba

The minimal daily requirement of vitamin B_{12} is 1 µg per day. As long as the patient is receiving at least 100 µg of parenteral vitamin B_{12} per month, there is no justification in checking the serum B_{12}.

The level of serum B_{12} depends on the time of the last injection. If you check a patient's serum B_{12} before the next injection, it may be low because body stores are low, but the patient's daily requirement is still being met and it is, therefore, unnecessary to increase the dose.

Schilling test is for determining whether the B_{12} absorption is normal or abnormal. It has no predictive value in the improvement of a patient's symptoms. If the patient's symptoms are due to B_{12} deficiency, they will improve with vitamin B_{12} therapy, irrespective of whether Schilling test is normal or abnormal. D_x

Answered by:
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