Summary of potential consequences of cancer and its treatment

All cancer treatments (including surgery, chemotherapy, radiotherapy and hormone therapy) carry a risk of causing long-term consequences.

These include fatigue, weight gain, lymphoedema, neuropathic pain, heart damage leading to an increased risk of cardiovascular disease, lung damage, bowel, bladder and sexual problems and increased risk of osteoporosis.

In addition, there is significant risk of cancer survivors developing a second cancer as a result of a pre-existing genetic or environmental predisposition; lifestyle behaviours that contributed to their first diagnosis; or as a consequence of their previous cancer treatment. Many people also suffer psychosocial and cognitive consequences of their cancer, including **anxiety and depression**, memory loss and problems with concentration, which can lead to lower educational attainment, increased risk of job loss, financial problems and relationship breakdown.

Long-term consequences are often missed or overlooked as the current priority of cancer care follow up is to look for recurrent disease. Individual GPs are unlikely to have many patients with complex problems after cancer treatment, and so may require guidance if these patients are to be optimally managed.

Cardiovascular disease

Cancer treatment is a risk factor for cardiovascular disease. In particular, radiotherapy to the left side of the chest and some chemotherapy agents such as anthracyclines (commonly used for breast cancer, sarcoma and haematological cancers) are known to increase risk. For example, in women who have been treated for breast cancer and survived more than five years, there is an increased risk of heart failure (hazard ratio 1.95) or coronary artery disease (HR 1.27).

As treatment for childhood cancer has become more successful over the past decades, we can expect to see rising numbers of patients who are at increased risk of developing ischaemic or valvular heart disease as a result of their treatment much earlier in life than usual.

Osteoporosis

Hormonal treatment, including the use of anti-androgens for prostate cancer and aromatase inhibitors for breast cancer, is associated with an increased risk of bone fractures due to osteoporosis. NICE recommends that women with early invasive breast cancer should have a baseline DEXA scan to assess bone mineral density, and urologists are increasingly adopting the same approach for men with metastatic prostate cancer.

Bowel and bladder problems

Having surgery or radiotherapy in the pelvic area often leads to changes in the way the bowel and bladder function. These can include diarrhoea, frequency, urgency and sometimes incontinence. These symptoms are highly stigmatising, and many patients are reluctant to describe themselves as incontinent, preferring to use words such as leakage or soiling instead. A significant proportion of patients with faecal incontinence will not seek medical advice, being either too embarrassed, or believing that medical care will not help. Other patients are able to deny their faecal incontinence by taking drastic measures, such as not leaving their home or not eating for the whole day before going out.

Sexual problems

Some people will experience sexual problems as a result of their cancer treatment, including erectile problems, vaginal dryness, dyspareunia and loss of desire. It is important to find the time and opportunity to enquire about these issues as they may not be raised unprompted, and left untreated they can significantly affect relationships and quality of life.

Fatigue

Fatigue is a persistent feeling of physical, emotional, or mental tiredness or exhaustion. It is the most common consequence of cancer treatment, and some people experience fatigue for months and even years after finishing treatment.

Risk of second cancer

Some people who have had cancer are already at increased risk of another cancer due to genetic risk or lifestyle behaviours. The development of a second cancer is also a rare but serious consequence of chemotherapy and radiotherapy, and there is often a long latent period. These second cancers are particularly likely to occur in the lung, breast and thyroid gland, especially in those receiving radiotherapy as children or young adults.

Other consequences

Primary care professionals should be increasingly aware of the possibility of other consequences of cancer treatment:

- Lymphoedema in the arms, leg or neck
- Metabolic and hormonal consequences (e.g. pituitary hormone deficiencies after whole-brain irradiation, adrenal insufficiency resulting from prolonged use of steroids and thyroid dysfunction following radiotherapy to neck)
- Adverse lipid profile and metabolic syndrome (e.g. insulin resistance, dyslipidaemias, hypertension and abdominal obesity after bone marrow transplantation)
- Fertility consequences
- Skin problems
- Neuro-psychological effects
- Chronic pain
- Eating and speaking difficulties
- Neuropathy