GP FACTSHEET

Grace Kelly
Ladybird Trust

Children's
Cancer and
Leukaemia
Group

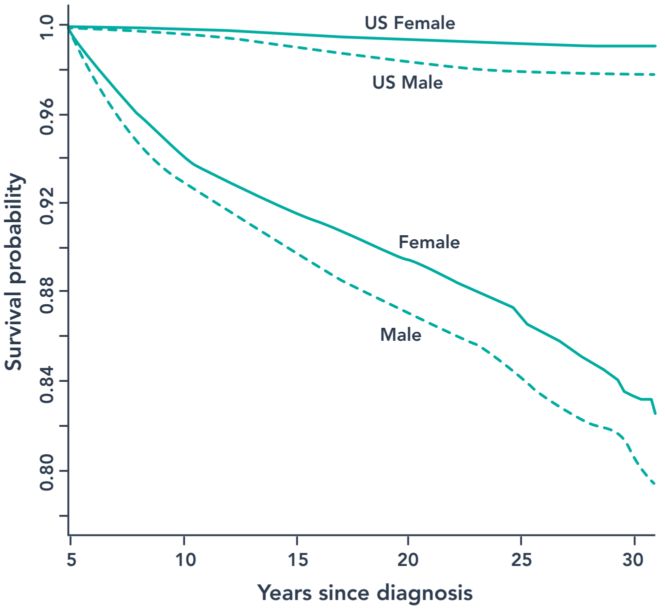
Childhood cancer: Health of survivors in adulthood

Information for general practitioners (GPs)

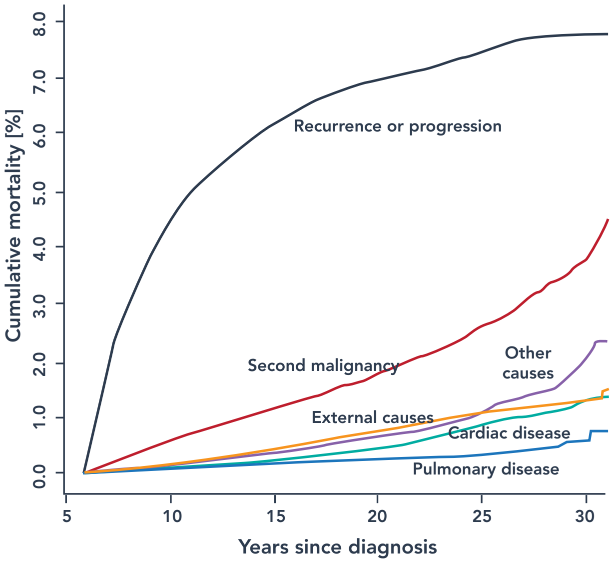
Improvements in care since the 1970s mean that more children are now surviving after complex multi-modality childhood cancer treatment. The current UK five year survival rate for childhood cancer is 82%[1] and it is thought that there are over 35,000 childhood cancer survivors (CCS) living in the UK, and this number is set to rise.[2, 3]

Survivors present with one or more of a unique set of medical and psychological challenges (late effects) and the spectrum of these is ever changing as primary therapies evolve through the decades. Furthermore, the impact of biological ageing on these existing late effects is yet to be fully understood.

Death rates in survivors exceed age-matched controls, with death from subsequent cancer, pulmonary and cardiac complications being the most frequent.[4]



Above: Overall survival according to sex in the Childhood Cancer Survivor Study cohort and expected survival based on age-, year-, and sex-matched US population mortality rates. Top right: Cumulative mortality due to recurrence of cancer, second malignancy, cardiac disease, pulmonary disease, external causes, and all other causes. Mertens, et al; Cause-Specific Late Mortality Among 5-Year Survivors of Childhood Cancer: The Childhood Cancer Survivor Study, JNCI: Journal of the National Cancer Institute, Volume 100, Issue 19, 1 October 2008, Pages 1368–1379, by permission of Oxford University Press



In view of these excess risks, lifelong follow up of survivors is recommended, in a risk stratified manner, to ensure that they receive early diagnosis, counselling and, where possible, timely initiation of appropriate treatments or interventions for these late effects.[4] This will require a multi-disciplinary team approach with cooperation between primary, secondary and tertiary care.

Late effects services

Specialist Late Effects or Aftercare services exist to provide expert, evidence-based clinical care that aims to reduce the frequency and severity of late side effects of treatment. Following the NICE Improving Outcomes Guidance (2005) and strengthened by the National Cancer Survivorship Initiative, all children's, teenage and young adult cancer units in the UK are required to provide these long-term follow-up services for survivors.

These services exist to interpret the risks related to the cancer and its treatment and to identify opportunities for intervention, recommend appropriate surveillance and co-ordinate the management of the consequences of treatment. These services should be seen to supply information not only to the survivor but to make that knowledge available to other health care professionals.

Provision of information

Information is usually provided in the form of a treatment summary, outlining what has happened and what late side effects may develop in the future, and a care plan describing recommendations for future surveillance and follow-up care.

During childhood and teenage years, this care is usually delivered by the cancer treating team but for adult survivors it is usually transitioned to age-appropriate adult providers. Here GPs will have a pivotal role in the ongoing follow up with ongoing guidance where applicable from a late effects team.

GP care

Currently, the average General Practice would be expected to have around four childhood cancer survivors on their list.[8] General practitioners need to be aware that the survivors of childhood cancer have additional requirements and health risks compared to the general population. 60 – 75% of survivors have at least one recognisable chronic illness or adverse outcome directly related to their previous cancer or its treatment.[5] These include both issues that would not have happened (or would be unlikely) without prior cancer treatment e.g. sarcoma in a radiation field, growth hormone insufficiency after cranial radiotherapy or aortic valve disease after mediastinal radiotherapy or those issues that are an exaggeration or earlier onset of a chronic adult onset disease e.g obesity, hypertension or cardiovascular disease. Strikingly, the cumulative incidence of severe health complaints reported by fifty year old survivors was 53.6% compared to 19.8% of siblings at the same age.[6]

Causes of late effects

The risk of late effects in survivors are related to the type and location of the primary cancer and the treatments received.

- Cytotoxic drugs (chemotherapy) generally have a dose-related toxicity, and may result in organ dysfunction or secondary malignancies.
- Radiotherapy may result in secondary malignancies, organ dysfunction, and growth failure dependent on the location that received the treatment.[7]
- Surgery may result in motor or neurological deficits, bone deformities and growth problems. Children may require amputations, complex radical surgeries and reconstructions as part of the treatment of their primary cancer, leaving them with long term effects.
- Long-term toxicities of newer therapies, for example, immunotherapies, are not yet well understood.
- Significantly, cancer treatment in childhood may impact cognitive development, growth and pubertal development and fertility.

Specific late effects of treatment

This is not an exhaustive list of the complications of childhood cancer treatment as any organ or system can be affected. This list encompasses the most common issues that may require intervention or support from the general practitioner.

Malignancy

Childhood cancer survivors are both at increased risk of subsequent primary tumours and late recurrence too. These may not present with typical red flags and GPs should have a high index of suspicion for investigating survivors for subsequent cancers. Referral should be via the site specific two-week wait pathway.

Some individuals (and their families) will have underlying genetic abnormalities that make them at increased risk of subsequent primary cancers, for example, Li-Fraumeni, neurofibromatosis and hereditary retinoblastoma. GPs should note that the childhood cancer survivor may be the index case for a family that may all have an increased genetic risk.

Hormonal effects

Chemotherapy and radiotherapy can affect growth, pubertal development and endocrine function. Monitoring of growth and puberty should take place during paediatric follow up and those at risk of hypothalamic and pituitary dysfunction will be under paediatric endocrinology. Individuals requiring adult growth hormone replacement should stay under endocrine care.

GPs should be aware that individuals that received radiotherapy to the neck, spine or brain should have regular (annual) thyroid hormone monitoring and neck palpation for life.

Cardiac/vascular

Survivors of childhood cancer are at increased risk of cardiac problems including cardiomyopathy, arrhythmia, valvular defects and ischaemic heart disease.

Those who received either anthracyclines (such as doxorubicin) or radiation to a field that included the heart should be under long term monitoring using echocardiograms to monitor cardiac function every three to five years.[7,9] GPs should be aware of the need to actively monitor and treat for other predisposing cardiac risk factors e.g. hypertension, diabetes and hypercholesterolaemia. Pregnant patients should also be monitored as they are at a higher risk of developing cardiomyopathy. These patients should receive consultant-led or shared care during pregnancy.

Early onset stroke can be associated with cranial radiotherapy and managing cardiac risk factors are also important in this group.

Metabolic syndrome

Childhood cancer survivors are at increased risk of developing obesity and metabolic syndrome compared to the general population.[7] This is especially the case for those that were treated for brain tumours or acute lymphoblastic leukaemia or had a bone marrow transplant. Management of this should follow the evidence-based guidance used for the general population, and lifestyle and dietary advice given. GPs should note that survivors of childhood bone marrow transplantation conditioned with total body irradiation may have metabolic syndrome and high cardiovascular risk even if their BMI is normal or they are underweight.

Pulmonary

Lung fibrosis is a serious consequence of lung radiotherapy and may occur after childhood cancer treatment. Little can be done to reverse the decline in symptomatic individuals.

Cognitive and psychosocial impacts

Childhood cancer treatment can lead to early neurocognitive decline. Children that received cranial irradiation and or intrathecal chemotherapy at a young age are particularly susceptible to these problems. GPs should be aware of cognitive decline in survivors attending with memory problems and should consider assessing survivors using frailty tools established for cognitive decline in the elderly.[9,10,11]

Many survivors of childhood brain tumour treatment remain dependent on their parents as carers even in adulthood and the ageing of these parents should be taken into account when supporting these individuals.

Treatment for childhood cancer can affect social function making integration with peers hard, compounded by the fact that the child has spent so much time away from everyday life. Problems with social function and isolation are more likely where memory has been affected.[12]

There is a higher rate of mental illness in childhood cancer survivors and their families.[13] They are more likely to suffer from anxiety, depression and even post-traumatic stress disorder as well as a fear of recurrence.

Fertility issues

Concerns about future fertility are one of the most common worries for childhood cancer survivors and specialist referral may be required. Increasingly, young people are being offered fertility preservation techniques, for example, semen cryopreservation and cryopreservation of ovarian tissue. However, this is not possible in all cases, nor have these techniques been available for older survivors.[7]

Assessment of fertility for women needs the healthcare professional not only to think about the functioning of the ovaries but also the health of the woman to maintain a pregnancy including, but not limited to, assessment of cardiac and respiratory function, endocrine function and the health of the uterus since an irradiated uterus may not carry a pregnancy to term.

Bone health

Some survivors are at increased risk of low bone mineral density. Those most at risk are those who have had prolonged use of steroids during treatment, post bone marrow transplant or post cranial irradiation.

In general practice, it is important to encourage weight bearing exercise (where possible), a healthy diet and other lifestyle factors that can aid bone density. Osteonecrosis (avascular necrosis) usually of weight bearing joints (hips and knees) may also occur and is more frequent in teenage survivors of childhood leukaemia.[7] It may be debilitating and necessitate early joint replacement.

Dental health

Childhood cancer survivors who receive head and neck radiotherapy are at increased risk of problems with orofacial development and dental growth.[7,16]

Childhood cancer survivors even when treated with chemotherapy alone are more likely to have problems with tooth mineralisation and in the development of crowns and roots of teeth compared to peers, making maintaining excellent oral hygiene important. Survivors have a lifelong risk of osteoradionecrosis of the jaw if they have received radiotherapy to this area. Dental care providers should be made aware of a history of jaw irradiation.

What can GPs do to help adult survivors of childhood cancer

Be aware that childhood cancer survivors have additional health needs compared to the general population and a greater all-cause mortality. As such, listen to their concerns and act on risk factors or symptoms promptly as required. Since many excess deaths are due to cancer and cardiovascular disease in this group, consultations should provide the opportunity to:

- Encourage a healthy diet and lifestyle
- Identify health problems early
- Encourage patient awareness and reporting of symptoms
- Encourage participation in national screening programmes
- Have a low threshold for referral for suspected cancer

Consideration should be given to coding these patients as requiring an annual review to keep up to date with their health care needs as detailed in their late effects care plan.

Further information

Sources of information and support for GPs, other professionals, and childhood cancer survivors.

CLIC Sargent Outreach Information Resource

This online resource has been developed by CLIC Sargent, in partnership with CCLG, to support professionals who are supporting a child with cancer in the community.
www.cclg.org.uk/outreach

Childhood cancer information for healthcare professionals

A range of information for healthcare professionals caring for a child with cancer is available from CCLG, including further information for GPs.
www.cclg.org.uk/professionals

Aftercure

For teenage and young adult survivors of childhood cancer

Information for teenage and young adult survivors of childhood cancer. Includes information about long-term follow-up, and answers to frequently asked questions. There is also a free booklet for survivors to order/download and a range of factsheets on specific late effects of childhood cancer treatment.
www.aftercure.org

PanCare

This pan-European collaboration focuses on the care of survivors of childhood and adolescent cancer and produces guidelines to support best practice in long-term follow-up.
www.pancare.eu

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Children's Cancer and Leukaemia Group | the EXPERTS in CHILDHOOD CANCER

Children's Cancer and Leukaemia Group (CCLG) is a leading national charity and expert voice for all childhood cancers. Each week in the UK and Ireland, more than 30 children are diagnosed with cancer. Our network of dedicated professional members work together in treatment, care and research to help shape a future where all children and young people with cancer survive and live happy, healthy and independent lives.

We fund and support innovative world-class research and collaborate, both nationally and internationally, to drive forward improvements in childhood cancer. Our award-winning information resources help lessen the anxiety, stress and loneliness commonly felt by families, giving support throughout the cancer journey. **For more information, visit www.cclg.org.uk**

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Grace Kelly Ladybird Trust

The Grace Kelly Ladybird Trust is a children's cancer charity working to raise awareness of the signs and symptoms of childhood cancer and how it may present. We fund solid tumour research in children and young people and provide support to families as well. Our evidence based publications help raise awareness and provide information both to parents, carers and clinicians. The GKLT was set up in memory of 4-year-old Grace Kelly who passed away in 2014 to help Grace fulfil her wish of helping other children. Registered charity number 1167783

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