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Cancer: presenting symptoms of children with cancer

1. Cancer: presenting symptoms of children with cancer

He was 3 years old, the youngest of three children and not a regular attender. I had never met him before, but I could see from his records that he had been seen a few months earlier with chickenpox and then came in earlier this week with a presumed viral infection. I was expecting a quick and easy consultation...

He looked pale, but was playing with his toys as he sat in his pushchair. His mother had noticed some bruises on his back and tummy, and he just wasn't himself. She thought he was quieter than normal, and I could see she was concerned. On examination, he had bruising on his stomach, back and several on his legs. His abdomen appeared distended, but his examination was otherwise unremarkable. Further enquiry revealed there had been two or three nosebleeds this week,

which was unusual for him. Mum thought he might have lost a little weight.

He was seen that day at the hospital for urgent bloods. These were abnormal so he was admitted. Later that week, he was diagnosed with acute myeloid leukaemia.

This article was reviewed in April 2024.

You may also find the article *Brain tumours in adults and children* useful.

1.1. Childhood cancer

- *In the UK, 1 in 320 children (yes, really!) will have developed malignant disease by the time they are 20. This number is 1 in 450 by the age of 15 (BJGP 2021;71:151).*
- *A general practice will see a child or young person with cancer every 1.8 years.*
- *An average GP will see 1 childhood cancer in a 5–10-year period.*

It is something we worry about missing, and, like so many diseases, the textbook descriptions of the presentations of childhood cancer are based on how children present to hospital, rather than to primary care.

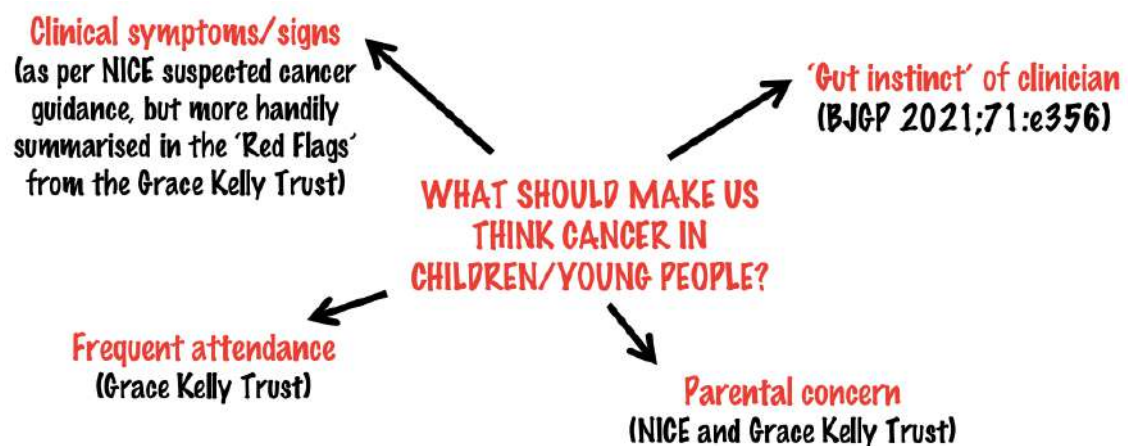
- Leukaemia is the most common childhood cancer in the UK (31% of cases) ([NHS Digital, NDRS 2021](#)).
- CNS tumours are the second most common (26%).
- The majority of childhood cancer cases are solid tumours (so, statistically, 'on average', we are more likely to encounter one of these).

A Danish population cohort study looked at all children in Denmark aged <15y diagnosed with cancer and low-grade brain tumours between 2007 and 2010. It sent GPs surveys to gather information on symptoms and the

diagnostic process (BJGP 2012;62:352).

- At first consultation, most children had only a few symptoms and these were non-specific (pain, swelling/lump and weakness).
- Only 20% of symptoms were reported as alarming at first consultation.

1.2. Finding cancer in children and young people



Clinical symptoms and signs

The Grace Kelly Trust has summarised the NICE guidance in a mnemonic and pictogram, and we find this a little easier to remember than the NICE lists. We have reproduced the Grace Kelly information (with permission) below.

- **C**oncern.
- **A**norexia.
- **N**umber of attendances (3).
- **C**omplexion (pale).

- **E**xhaustion.
- **R**ecurrent pyrexia.


REGIONAL RED FLAGS FOR CHILDHOOD CANCER

EYES:
Leukocoria (white glow to pupil), visual disturbance, new onset squint

PALPABLE MASS:
Of any location - soft tissue, bony or lymphadenopathy

ABDOMEN:
Distension, organomegaly, refractory constipation, nausea

SYSTEMIC:
Recurrent viral illnesses, weight loss, night sweats, slowed growth, precocious or delayed puberty



BRAIN:
Headaches, early morning vomiting, change in behaviour, abnormal movements, new unsteadiness

PALLOR:
increased bleeding, bruising, exhaustion

GENITOURINARY:
Haematuria or difficulty voiding

BONE:
Back pain, new limp, persistent pain of any location, slow recovery after injury

DON'T FORGET:

CONCERN ANOREXIA NO. OF ATTENDANCES (3) COMPLEXION EXHAUSTION RECURRENT PYREXIA

Early diagnosis saves lives, please listen to the concerns of the caregiver



**Grace Kelly
Childhood
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For awareness, early diagnosis, research and support

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NICE gives us guidance on organ-specific presentations:

NICE on cancer in children and young people (NICE 2015, NG12)		
Site	Symptom/sign	Action
Brain and CNS	Newly abnormal cerebellar or other central neurological function.	Very urgent referral : appointment within 48h.
Haematological	Unexplained petechiae or hepatosplenomegaly.	Immediate specialist assessment.

Haematological: leukaemia	<p>Any of the following:</p> <ul style="list-style-type: none"> • Pallor. • Persistent fatigue. • Unexplained fever. • Unexplained persistent infection. • Generalised lymphadenopathy. • Persistent or unexplained bone pain. • Unexplained bruising. • Unexplained bleeding. 	<p>Very urgent full blood count (<48h).</p>
Haematological: lymphoma	<p>Unexplained lymphadenopathy or splenomegaly. Also consider if:</p> <ul style="list-style-type: none"> • Fever. • Night sweats. • Dyspnoea. • Pruritis. • Weight loss. 	<p>Very urgent referral: appointment within 48h.</p>
Sarcoma	<p>Unexplained bone swelling or pain.</p>	<p>Very urgent (<48h) X-ray.</p>
	<p>Unexplained lump that is increasing in size.</p>	<p>Very urgent (<48h) ultrasound.</p>
	<p>X-ray or ultrasound suggests sarcoma.</p>	<p>Very urgent referral: appointment within 48h</p>
Neuroblastoma	<p>Palpable abdominal mass or</p>	<p>Very urgent referral:</p>

or Wilm's tumour	unexplained enlarged abdominal organs.	appointment within 48h.
Wilm's tumour	Unexplained visible haematuria.	Very urgent referral: appointment within 48h.
Retinoblastoma	Absent red reflex.	Consider urgent ophthalmology referral.
	Loss of red reflex occurs with new-onset squint.	Refer immediately.
Non-site-specific symptoms	<ul style="list-style-type: none"> • Consider referral for children if their parent/carer has persistent concern or anxiety about their symptoms, even if a benign cause is most likely. • Take into account insight and knowledge of parents when considering referral. 	

Gut instinct

Two BJGP editorials have some useful pointers (BJGP 2021;71:e356 and BJGP 2021;71:151):

- Gut feelings are based on a fusion of medical knowledge and experience, and influence our decisions. They may prompt further action in the absence of frank red flag symptoms, and should not be ignored.

Frequent attendance

There are 12 key symptoms which raise the prior probability of childhood cancer by 10 times, although a benign cause for each symptom (except an abdominal mass) remains much more likely than cancer (BJGP 2013;63:e22). These 12 symptoms are included in the Grace Kelly summary image/NICE guidance.

If a child presents for the third time in 3 months, for any reason, with any of these 12 key symptoms, the risk of cancer increases further.

Parental concern

NICE and the Grace Kelly Childhood Cancer Trust remind us to consider referral for suspected cancer in a child or young person if their parent or carer has persistent concern or anxiety about the child's symptoms (NICE 2015, NG12).

Ewing's sarcoma

Although not specifically mentioned in the NICE guidance, this may be an opportunity to remind ourselves about Ewing's sarcoma:

- An aggressive bone and soft tissue cancer of children and young adults.
- 10 times more common in those of European than African ancestry.
- It accounts for 2% of childhood cancers, with peak age at diagnosis of 15 years.
- 80% arise in bone, but 20% are extra-osseous.

Ewing's sarcoma presents with localised pain and swelling, and initially may be mistaken for a minor injury. Pain is worse at night (*big red flag!*) and after exercise. Pathological fracture is present in 10–15% of cases, and

constitutional symptoms may occur (weight loss, night sweats, fever, fatigue).

X-ray shows a 'moth-eaten' appearance in bone. Blood test may show raised lactate dehydrogenase, but raised alkaline phosphatase is non-specific.

Treatment is multimodal, and prognosis has improved dramatically in recent years due to new therapeutic options (NEJM 2021;384:154).



Cancer: presenting symptoms of childhood cancer

- Childhood cancer is not as rare as we think, and is a serious event for GPs.
- It often presents initially with non-specific symptoms such as pain, a lump or tiredness.
- If these persist, are getting worse or are unexplained, refer.
- Remember safety-netting and early referral of alarm symptoms when they are present.
- Ewing's sarcoma typically affects bone in children, but may occur in other sites and can affect adults.



Useful resources:

Websites (all resources are hyperlinked for ease of use in Red Whale Knowledge)

- [Grace Kelly Childhood Cancer Trust](#) (booklets and support for children with cancer, siblings and parents).
- [Grace Kelly Childhood Cancer Trust – regional red flags for clinicians](#) (this is a link to a helpful PDF of a 1-page poster that summarises the key red flags for childhood cancer. Consider downloading and laminating it to add to your other cancer resources. Copies of these posters and awareness cards and other information booklets can be ordered free of charge [here](#).)
- [Young Lives vs. Cancer](#) (separate sections for parents, children, adolescents and professionals)
- [Teenage Cancer Trust](#) (for teenagers and adolescents – stories, information and support)
- [Children's Cancer and Leukaemia Group](#)
- [Macmillan – children's cancers forum](#) (peer support for families of children with cancer)
- [NIH National Cancer Institute – coping with cancer for young adults](#) (an American but very useful resource)

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