complications. Warfarin dosage is age and weight dependent, so needs to be carefully monitored to achieve the correct dosing. The 2 year old has experienced symptoms of transient ischaemic attacks with an INR of 1.8 and extensive bruising with an INR >2.7. There is also the psychological and emotional impact involved with the frequent hospital admissions and blood tests. This is all in addition to the impact of the neurodisability, which has resulted from the initial thrombotic insult.

G412(P) TO EVALUATE THE MANAGEMENT OF ACUTE PAINFUL CRISIS, OUTCOMES OF SAFETY AND EFFICACY OF CODEINE IN CHILDREN WITH SICKLE CELL DISEASE

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Method A retrospective audit was performed on all admissions with diagnosis of sickle cell pain from January to December 2013. Case notes of 54 patients were reviewed using pre-specified audit criteria. Types of analgesics administered at home and in hospital and pain scores were recorded where available from the case notes.

Results Over the one-year period, 91 admissions were recorded. The average age was 6.6 years (±4.1), with the majority of children (45%) aged between 1 and 5 years. The most prevalent haemoglobinopathy was HbSS (82%). The majority of patients (61%) had a single painful crisis admission, 33% had 2–3 admissions, and the remainder presented with four or more admissions.

Most patients (93%) received one or more analgesics prior to admission. The drug of choice varied, with paracetamol and ibuprofen been the most frequently utilised combination (43%), while 22% received opioids (20% had codeine). Similar to the pre-admission trends, a wide range of analgesics were utilised in hospital with the majority of patients receiving paracetamol and ibuprofen combination (43%). The doses utilised at home were considerably less than those given on admission, suggesting inadequate pain management at home. Codeine was given in 37% of the cases in and it was observed that patients who received codeine had significantly higher initial pain scores on admission compared with those who did not receive codeine. However the administration of codeine did not greatly improve the pain scores and additional step up analgesia was required in 10% of cases who received codeine in hospital.

Conclusion Clear analgesic benefits could not be demonstrated for codeine use with regards to the outcome of efficacy. Although dihydrocodeine is now the weak opioid of choice at our unit added safety measures similar to those with codeine are in place. The audit was limited by poor documentation which have been addressed by the introduction of clearer updated local documents.

G413(P) PROSPECTIVE STUDY OF PROCALCITONIN LEVELS IN CHILDREN WITH CANCER PRESENTING WITH FEBRILE NEUTROPENIA

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Febrile neutropenia is an important cause of morbidity and mortality in children receiving treatment for cancer. Although cases of severe infection need inpatient treatment with broad-spectrum antibiotics there are a number of children with non-severe infection who are over treated. Previous meta-analysis showed further research is needed into the use of biomarkers, such as procalcitonin, as part of risk prediction in febrile neutropenia. No previous studies have looked at the use of biomarkers as an addition to existing clinical decision rules. Procalcitonin is currently being reviewed by NICE as part of it's diagnostics assessment programme.

Aims To determine if procalcitonin can be used to diagnose or exclude severe infection on presentation with febrile neutropenia and if it has additional benefit when used with existing clinical decision rules.

Method This is a prospective cohort study of a diagnostic test. Patients between birth and 18 years old were who were admitted to the paediatric oncology and haematology wards with febrile neutropenia were included. Blood was taken for a procalcitonin level at admission as well as routine investigations.

Results Forty-one episodes were included from 26 patients. Procalcitonin level of >2 ng/dL has a likelihood ratio of 14.6 [95% CI 1.8, 120.4] and a sensitivity of 43% and specificity of 97%. For none of the clinical decision rules did the procalcitonin odds ratio reach significance although all of the odds ratios were over one.

Conclusion This study does not show a benefit in using procalcitonin in febrile neutropenia. The cut off of 2 ng/dL has a high likelihood ratio for severe infection but poor sensitivity. There is no significant additional benefit of procalcitonin when used with existing clinical and laboratory features in clinical decision rules.

G414(P) A RETROSPECTIVE ANALYSIS OF STEROID INDUCED BRADYCARDIA IN CHILDHOOD MALIGNANCY: CLINICAL RELEVANCE?

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Aims Determine incidence, clinical significance and management of steroid induced bardycardia in children undergoing cancer chemotherapy

Methodology Retrospective, observational, case note review of children treated at a tertiary paediatric oncology centre between 1st January 2013 and 1st September 2014 (21 months). Patients were subdivided into four groups based on steroid type, dose and indication.

- High dose dexamethasone (10 mg/m^2/day)
- Standard dose dexamethasone (6 mg/m^2/day)
- Non-Hodgkin Lymphoma prednisolone (60 mg/m^2/day)
- Other (variable dosing)

Simultaneous data collected on age, baseline heart rate (HR) at presentation, lowest HR on steroids, blood pressure (BP), ECG and intra-ocular pressure (IOP).

Statistics: P values calculated

Bradycardia of ≥30% was considered significant as it correlated with a Paediatric Early Warning Score (PEWS) of 2.

Abstract G414(P) Table 1 Results of data collection

Treatment group	Patient Numbers (n = 47)	Mean HR Reduction	Confidence Interval
High dose dexamethasone	14	45.1%	39.1%–51.0%
Standard dose dexamethasone	23	42.9%	38.5%–47.4%
Prednisolone	4	48.0%	33.9%–62.1%
Other	6	36.3%	29.9%–42.6%

Results Total of 136 patients were diagnosed, 6 notes were not located. 60/130 had steroid treatment. 47/60 (78.3%) experienced significant bradycardia (Table 1).

There was no statistically significant difference in the degree of bradycardia between the different dosages and types of steroids used.

Infants were not at a significantly higher risk for bradycardia (n = 3).

ECG on 11/47 patients showed either no change or sinus bradycardia. IOP was raised in 2/3 measured patients.

Conclusions This is the first clinical study reviewing the clinical relevance of steroid induced bradycardia in paediatric cancer.

Majority of patients on steroid treatment for cancer showed significant bradycardia with no clinical decompensation. No risk factors were identified with respect to dose, type of steroid or age group.

We recommend correlation with BP, ECG, probably IOP measurement in the monitoring of patients on steroid treatment for cancer chemotherapy. Appropriate PEWS charting and escalation of management should still be followed.

This is also the first study to document clinically relevant steroid induced glaucoma in paediatric malignancy treatment. This has led to a further collaborative study to investigate the interaction/mechanism of steroid induced glaucoma and bradycardia in paediatric malignancy.

G415(P) CYTOMEGALOVIRUS INFECTION PRESENTING AS RECURRENT FEVER IN A CHILD RECEIVING STANDARD CHEMOTHERAPY FOR ACUTE LYMPHOBLASTIC LEUKAEMIA

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Introduction Infection presenting with fever is a common cause for hospital admission of immunocompromised children. Initial management is aimed at the treatment and identification of bacterial and fungal infection. Cytomegalovirus (CMV) is well recognised as causing increased morbidity and mortality in immunocompromised children who have undergone stem cell transplants but less so in children receiving standard chemotherapy in acute lymphoblastic leukaemia.

Case description Our patient is a 7 year old girl receiving standard chemotherapy for acute lymphoblastic leukaemia. Post induction she was admitted with significant fever but no other clinical signs or symptoms. She was not neutropenic, CRP was unremarkable and cultures negative. A chest X-ray showed right middle lobe changes and CT chest showed consolidation and atelectasis but no ground glass appearance or nodules. Candida PCR and beta-D-glucan test were negative. She received a course of empiric antibiotics, including macrolides, and antifungal treatment. Her fever settled. Following cessation of treatment she was readmitted with fever and a dry cough and intravenous antibiotic and antifungal therapy was recommenced. Repeat investigative workup was unremarkable. She settled. A further brief admission with fever settled without intervention following which she was readmitted for the fourth time with fever and cough. She became unwell, developing an oxygen requirement with respiratory signs on chest auscultation. Blood viral PCRs were sent. CMV PCR was significantly elevated at 142,000 copies/ml. BAL fluid was CMV positive and negative for fungi. Intravenous foscarnet was added to the treatment regime. She improved with this and empirical antifungal treatment.

Results and conclusion This patient presented with recurrent fevers resulting in prolonged admissions impacting on quality of life and interruption of treatment. No other positive pathogens for the fever were identified apart from CMV. A literature review confirms that CMV is an opportunistic infection that can cause serious, sometimes life-threatening, illness even during conventional anticancer infection due to profound immunosuppression. This is less recognised in clinical practice. We would highlight the importance of considering CMV infection in cases of recurrent and prolonged fever in these children.

G416(P) HYPOGLYCAEMIA SECONDARY TO 6-MERCAPTOPURINE IN LEUKAEMIA TREATMENT

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Aims To highlight a significant side effect of a chemotherapy drug that is currently poorly recognised in the UK. Hypoglycaemia is a rare but potentially serious side effect of 6-mercaptopurine that forms an integral part of current maintenance chemotherapy for children with acute lymphoblastic leukaemia (ALL). There are now multiple well documented cases in the literature from the USA, Italy and Finland. However in the UK it does not feature in the drug information. This means it is not being discussed with families as a potential side effect to look out for in their children.

Methods We reviewed the case notes and results of 3 children who over the past 5 years were receiving maintenance therapy for ALL and developed symptomatic hypoglycaemia. A literature review was performed looking at hypoglycaemia in children on chemotherapy for ALL and possible risk factors and management strategies that have been identified.

Results We describe 3 cases of symptomatic hypoglycaemia occurring within aUKoncology shared care department after varying periods of fasting. The children were aged 4 years 8 months, 5 years 2 months and 8 years 4 months. Other causes of hypoglycaemia were excluded. On further investigation other unprovoked episodes were identified in these children and strategies put in place to try and prevent and manage them. The children all required treatment in the form of oral or IV glucose at their initial presentation. The hypoglycaemic episodes ceased once the chemotherapy was completed.

Conclusion Symptomatic hypoglycaemia remains a rare but real risk in children receiving maintenance chemotherapy for ALL. Relatively short periods of starvation have been known to cause hypoglycaemia. These children are regularly fasted for procedures such as lumbar punctures and bone marrow aspirates it is essential that the medical and nursing teams are aware of the