case studies where we are using our workflow to generate insights into big challenges in the hospital, i) a proof-of-concept surgery scheduling algorithm for improving theatre utilisation and reducing on-the-day cancellations and ii) an outpatient demand prediction model to understand the impact of international and private patients on diagnostic services in the hospital.

**Abstracts**

### 111 FEMUR FRACTURES IN CHILDREN WITH CANCERS. WHAT COULD BE THE AETIOLOGY?

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10.1136/archdischild-2020-gosh.111

**Introduction** Femur fractures in children are uncommon. Incidence of fractures in leukaemia is about 13.5% and it is 6 fold higher than estimate. No prevalence data available on fractures among hospitalized children with cancer. Among the cancer patients femur fractures could be due to various reasons such as non-accidental injuries (NAI), osteoporosis and bone metastasis. We report two patients who had mid shaft femur fractures while receiving chemotherapy as in patients.

**Case history** Case 01, 17 months old girl diagnosed with Ewings sarcoma (EWSR1-FLI1 type-2) and paraplegia. Whilst receiving chemotherapy she was experienced acute swelling of her left thigh and diagnosed with a spiral femur fracture which was unrelated to disease. Case 02, 4 year old boy with adrenal cortical tumour. During his treatment he sustained a spiral fracture of his left femur. Both these children sustained their fracture while inpatient and extensive review excluded a possible safeguarding issues.

**Discussion** Case 01 was non ambulatory and case 02 was ambulatory but less able. In multidisciplinary child protection meeting mechanism of the fracture of case 01 was not clear. Child had a habit of trying to bite her toe. But, mum noted she might have caused this when trying to keep her on her side and child refused/rotated – as she did not feel pain therefore the force is difficult to assess – No ill intention was meant. Case 02, he tried to get down from the bed when he falls which leads to the fracture. The conclusion is that there was no evidence of child abuse. Lack of supervision of caregivers was raised as an issue in both cases.

**Conclusion** Spiral femur fracture in a non-ambulatory child must always raise a concern of NAI. However prevalence of fractures of children with cancers in hospital need more evaluation as those are preventable.

### 112 IMPROVING CLINICAL HANDOVER

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10.1136/archdischild-2020-gosh.112

**Background** Handover is an important clinical skill combining knowledge, prioritisation and communication. This has been highlighted within the emergency working patterns essential for patient care during the pandemic. Effective handover can reduce the incidence of adverse events and benefit patients, clinicians and the hospital. The aim of this project is to assess and improve the quality of departmental verbal and written handover.

**Methods** A quality improvement method was used to assess the quality of verbal and written handover using verified opinion-based questionnaires for participants. The verbal handover was also assessed by measuring objective parameters including duration, participants and presenter type, number of patients discussed, situational awareness and task management, time pressure and distractions and teamwork factors.

Following the initial audit, standardised handover formats and a traffic light system were implemented to assist with prioritising patients. Results were compared before and after intervention with descriptive statistics.

**Results** 20 members of our department completed our pre intervention questionnaire and results showed that most participants were dissatisfied with the verbal handover and 50% thought that this might result in adverse events. The disadvantages identified were lengthy duration, multiple interruptions and inappropriate team member leading handover. The objective assessment tool showed that areas of weakness were communication, accountability, task management and distractions. Following intervention with standardisation, objective measures remained stable but subjective responses improved. The satisfaction on general process, duration and person leading handover increased.

**Conclusions** ‘Handover’ is highlighted as an important clinical skill especially when working in unfamiliar team and shifts patterns. Implementing a standardised departmental handover has had a positive effect on the team and the process. We intend to continue to improve the handover process by implementing a standardised structure for written handover and continued integrated teaching highlighting communication, prioritisation and verbal handover.

### 113 RESTRUCTURING OF PAEDIATRIC UROLOGY OUT-PATIENT WORKFLOW DURING THE COVID-19 PANDEMIC

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10.1136/archdischild-2020-gosh.113

**Aim** To audit restructuring of out-patient clinics at GOSH during the COVID-19 pandemic with the aim of evaluating service delivery and business continuity, focussing specifically on the utility of telephonic clinics.

**Methods** We focussed on paediatric urology out-patient clinics at GOSH. The electronic patient records were accessed to acquire numbers of clinics and patients booked, total face-to-face and telephonic clinic attendances and DNA (did not attend) percentages. Three-monthly blocks were evaluated: April-June 2020, spanning the first peak of the pandemic, April-June 2019 in the preceding year to match activity, and then subsequently the period July-September 2020 to evaluate how the services settled in the post-pandemic phase. The audit was registered with the GOSH Clinical Audit Department. Significance of difference between study groups was examined by Student’s t-test.

**Results** Total of 95 clinics were booked with 874 patients during the pandemic block with 80.6% (N=705) done telephonically. The DNA rate during this time was 11.5%. Comparingly, in the same calendar period of 2019, 79 clinics had been booked with all (100%, N=848) patients seen face-
to-face. The DNA rate was 11.2%. In the three post-pandemic months this year, 101 clinics with 1171 patients were booked, 60.5% of these being telephonic, and total DNA was significantly reduced to 5.9% (p<0.05). Additionally, there was a 38% increase in the numbers of patients assessed in the clinic.

Conclusions The shift from having only face-to-face clinics to virtual clinics has led to increase in the number of clinics allowing more patients to be assessed, with improved DNA rates during and after the pandemic. Given the nature of the specialty, a large proportion of children will continue to need on-site assessment, but the service challenges imposed by the pandemic has created opportunities for smarter and higher volume working using technological means within a busy outpatient service.

114 PAEDIATRIC SPINAL CORD INTRAMEDULLARY GLIOMAS
SAFE MAXIMAL EXTENT OF RESECTION TO OPTIMIZE
NEUROLOGICAL AND ONCOLOGICAL OUTCOMES
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10.1136/archdischild-2020-gosh.114

Objective Low grade intramedullary spinal cord tumours (IMSCTs) are rare tumours of childhood with potential for significant late morbidity following surgery.

We present our institutional experience with surgical treatment of these complex lesions emphasizing consistent definition of extent of resection (EOR), techniques to maximise surgical safety and a novel stratification of residual disease to guide post-operative strategy.

Methods A retrospective review of low-grade IMSCTs treated at GOSH between 2000 and 2019 was conducted. All surgery carried out by a single surgeon with intent of safe maximal resection guided by intra-operative neurophysiological monitoring (IONM). Pre and post-operative MRI were reviewed by neuro-radiologists.

EOR was recorded as:
1. Gross Total Resection (GTR) – 100% resection
2. Near Total Resection (NTR) – at least 95% resection
3. Sub Total Resection (STR) – 90% tumour resection
4. Partial Resection (PR) – less than 90% tumour resection

Further outcome measures were time to recurrence, need for adjuvant therapy and mobility at last follow-up.

Results A total of 30 patients underwent surgery. IONM parameters (Motor evoked potentials, D-wave) were used to guide EOR. EORs achieved: GTR = 8, NTR = 4, STR = 9, PR = 9.

All patients were alive at last follow up with eighteen patients (60%) remaining radiologically and clinically stable. Twelve patients developed recurrence/progressive disease during surveillance (40%) requiring adjuvant treatment. Progression free survival was significantly better in cases with GTR + NTR in comparison to either STR or PR.

Following surgery, 26/30 patients were independently mobile, 1/30 required crutches and 3/30 required a wheelchair.

9/30 patients were treated with adjuvant therapy following surgery.

Conclusion Survival rates for low grade IMSCT are excellent. Radical micro-surgical resection, guided by IONM provides an effective means of balancing the objectives of maximal safe resection, functional outcome and tumour control. Small volume residual disease does not compromise long-term oncological outcome.

115 FAMILY EXPERIENCES OF FLYING AND TESTING:
‘FITNESS TO FLY’
1Katharine Pike, 2Paula Kelly, 3Stephanie Brotherston, 4Mollie Riley, 4Martin Samuels. 1Bristol Royal Hospital for Children; 2ORCHID - BRC NIHR Great Ormond Street Hospital for Children NHS Foundation Trust; 3Great Ormond Street Hospital for Children NHS Foundation Trust; 4Respiratory Medicine Great Ormond Street Hospital for Children NHS Foundation Trust

As part of a feasibility study investigating a new protocol for hypoxic challenge testing (HCT) in children with neuromuscular weakness or central hypoventilation who use ventilation at home, we conducted interviews evaluating parents’ and children’s experiences of flying and this pre-flight testing. The new protocol may better advise patients who use ventilators about their ‘fitness to fly’.

We have recruited 15 children, 7 with neuromuscular weakness, and 8 with central hypoventilation to date (mean age 8.5 years, range 1.7 to 16.7 years), all of whom have sat in an airtight chamber with an oxygen concentration 15% (normal 21%) to simulate the in-flight environment. Patients had monitoring of oxygen saturation, end tidal and transcutaneous carbon dioxide in air, 15% oxygen, and then with supplemental oxygen, ventilation and if needed, both.

Semi-structured interviews immediately after the HCT and by telephone 3-4 months later identified the following factors from the preliminary analysis of interview transcripts.

Parents identified the challenges they faced when planning and undertaking air-travel, including repeated negotiations with airlines, on provision of oxygen, accommodating essential equipment thereby requiring families to be proactive managers. Despite these challenges several families were frequent travelers, who valued opportunities to visit extended family and enjoy new experiences as a whole family. During interviews older children identified travel as an opportunity for normalisation of their lives. Some families remained cautious about air travel expressing concerns about their child’s underlying vulnerability.

Parents and children provided valuable feedback on the experience of the HCT protocol, including challenges of space for wheelchairs and equipment in the chamber, the importance of considering school attendance in the context of multiple hospital appointments.

Overall the testing process and results were seen positively by many, it built confidence for parents by providing more information about their child’s responses to flight to aid future decision making.