G482(P) ABSTRACT WITHDRAWN

G483(P) NATIONAL SURVEY OF MANAGEMENT DURING ILLNESS (SICK–DAY) OF TYPE 1 DIABETES IN CHILDREN AND YOUNG PEOPLE

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Aims Adequate sick day management at home may reduce the risk of progression to diabetic ketoacidosis (DKA) and admission to hospital. The UK does not have a consensus guideline for sick day management advice to children and young people with Type 1 Diabetes. Children's diabetes services vary in their practice of education and advice in the use of urine or blood ketone monitoring during illness. The aim of this project was to look at the variation of management of diabetes during illness.

Methods A survey was conducted by the Association of Children's Diabetes Clinicians (ACDC) who sent out questionnaires to all units managing children and young people with Type 1 Diabetes including: local sick day management rules, out of hours diabetes support for families and information about the local diabetes service.

Results Table 1 90/127 (71%) of the units responded to the survey. There were 13 tertiary centres. Median number of children per service was 165 (range 73–450). The majority of units (96%) have a sick day management guideline in place.

Abstract G483(P) Table 1 Results of survey

Extra insulin given	71% Based on total daily dose, 23% Units/kg, 6% Other locally derived rule
Ketone monitoring	58% Blood ketones,4% Urine ketones only, 38% used both
Out of hours advice for diabetes patients	52% Paediatric Registrar, 14% Diabetes nurse specialist or diabetes consultant, 14% Diabetes nurse specialist / diabetes consultant on a joint rota, 11% from diabetes team in the evenings/weekends and Paediatric on–call overnight

Conclusion There was a wide variation in the practice of monitoring and advice given during illness. All guidelines advised increased doses of insulin during sick days but there was no consensus on how to calculate increased doses. There were also variations in the use of ketone testing and frequency on blood glucose monitoring. Some units still use urine ketone testing routinely. There is a need for evidence based National guidance to be in place.

G484(P) IS MEAN BLOOD SUGAR MONITORING WITH SMART METRE A BETTER INDICATOR OF CONTROL THAN HBA1C IN PAEDIATRIC DIABETES?

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Aim SMART metres have taken paediatric diabetes management closer to home. Aim of our project was to enhance the learning with patients and their families toward home management thereby decreasing the need for hospital admissions and continuing support with the Diabetes MDT. SMART metre download review is a good way of analysing blood sugars targets, variability and control over a period of time.

Methods Patients and their families were taken through a process of ongoing learning to review and analyse SMART metre downloads and make appropriate changes to their insulin needs to prevent high and low sugars. The MDT had an oversight of the process to actively facilitate the learning. Data was collected from January 2014 to June 2014. A retrospective analysis was done on prospectively collected database of blood sugar downloads from SMART metres and near patient A1C tests.

Results Mean A1C for 100 downloads was 9.8 mmol/L that was comparable to a mean blood sugar of 9.6 mmol/L with a mean standard deviation of 4.7. However this correlation changed when the data was stratified based on Standard deviation (SD).

1. With SD < 2, the average A1C was 7.6 mmol/L compared to average mean blood sugar of 5.53mmol/L.
2. SD between 2– 4, co-related mean A1C of 8.7 mmol/L to average mean blood sugar of 7.9 mmol/L.
3. Surprisingly when SD was >4, the mean A1C–10 mmol/L and the mean average blood sugars–9.97 mmol/L were exactly the same.
4. This gap was widening the opposite way when the SD was >6 with A1C of 11.6 mmol/L compared to average mean blood sugar of 12.4 mmol/L.

This modality of reviewing and analysing results lead to better patient empowerment and care of their diabetes. Better control leads to better quality of life and comfort and confidence the children and their families with diabetes. There has been a 50% reduction of DKA and hypoglycaemia admissions on the ward with the use of SMART metres

Conclusion Simple SMART metres analysis are effective predictors for diabetes monitoring with average mean blood sugars which are well different to the nearer patient HbA1c and it bears a correlation between standard deviation of 4–6 with increasing gaps on both sides of the spectrum.

G485(P) ACQUIRED HYPOTHYROIDISM IN INFANTILE PERITONEAL DIALYSIS: THE ROLE OF IATROGENIC IODINE EXPOSURE

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Povidine–iodine within disconnect caps of peritoneal dialysis (PD) sets have been reported to potentially contribute to hypothyroidism1–3. The Medicines and Healthcare Products Regulatory Agency (UK) alert (2006) for PD caps, suggests this is more likely to affect infants and children with smaller peritoneal fill volumes, where higher dialysate iodine concentrations can result. We report two infants with end–stage renal failure (ESRF) receiving continuous cycling peritoneal dialysis (CCPD) who developed hypothyroidism. Both infants had normal newborn blood spot screening (TSH <6 mu/L), indicating an acquired cause.

Case 1, a male infant with ESRF secondary to posterior urethral valves, commenced PD on day 6. He received manual PD for 6 weeks, followed by automated CCPD when minimum fill volumes were achieved. Case 2, a male infant with ESRF secondary to congenital obstructive uropathy commenced manual PD, from day 7 to 9 and subsequently aged 7 weeks. Manual PD was continued for 4 weeks followed by automated CCPD. Manual PD potentially allows for increased iodine exposure from both long–line connexion shields and PD caps.

Profound primary hypothyroidism was identified in both individuals, with free T4 levels <2.6pmol/L and TSH >100mu/L (day 54, case 1; day 85, case 2), necessitating levothyroxine treatment. Symptoms were masked by significant comorbidity. Both patients had negative thyroid peroxidase antibodies and were noted to have bulky thyroid glands on ultrasound, consistent with iodine toxicity. They remain on levothyroxine treatment, aged 4 and 5 months respectively.

These cases highlight the potential role of povidine–iodine in PD caps and long–line connexion shields in the development of primary hypothyroidism. Given the significant morbidity associated with hypothyroidism in this age group, increased awareness of the associated risk is essential, with regular screening of this at–risk group to ensure early detection and treatment.

G486(P) FIRST SUCCESSFUL PAEDIATRIC HLA INCOMPATIBLE RENAL TRANSPLANTATION IN THE UNITED KINGDOM

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Aims To report the successful outcome of HLA incompatible renal transplantation using plasmapheresis and intravenous immunoglobulin (on day –1) and quadruple immunosuppression with anti–thymocyte globulin (1.5 mg/kg day 1–4), corticosteroids, mycophenolate mofetil and tacrolimus (from day -7).

Methods Six month follow–up data of 14–year old young lady who underwent living related ABO compatible (O into B) and HLA incompatible renal transplantation from her father (mismatch 0,1,1) for end-stage kidney disease on peritoneal dialysis secondary to congenital abnormalities of the kidney and urinary tract with bilateral renal dysplasia, recurrent urinary tract infections, bilateral vesico–ureteric reflux after left ureteric reimplantation and right nephrectomy. She had a previous failed renal transplantation at 11 years of age with primary non–function due to intra-renal thrombosis (no acute rejection or TMA) requiring transplant nephrectomy the day after transplantation with 95–100% calculated reaction frequency due to HLA antibodies, specific for mismatches HLA B7 and DQ8 against father with B cell positive (T cell negative) crossmatch which was reduced to negative with test plasma exchange and reduction in MFI from 16,200 to 6,480 and from 11,602 to 4,625 on the day prior to transplantation. She had no offers from the deceased donor waiting list or via the paired exchange scheme (NLDKSS).

Results Successful renal transplant without further antibody removal or surgical complications with six month follow–up data with stable renal allograft function with eGFR of 60–96 mls/min/1.73m^2, 12-hour trough tacrolimus and mycophenolate levels of 7.3 mcg/l and 3.0 mg/l respectively, controlled hypertension on one anti-hypertensive agent with minimal albuminuria (17.4 mg/mmol). Her DSA reduced to 4,691on day 2 but increased further to 23,772 to 38,630 during weeks 1 to 3 and have stabilised out at 21,246 to 22,168 (B7 and DQ8 of 8,407 and 13,761 respectively). She has had three percutaneous renal transplant biopsies at weeks 2, 7 and 11 without acute rejection or IFTA but moderate concentric fibrous intimal thickening of large muscular arteries and C4d deposition in peritubular capillaries and glomeruli.

Conclusions This is the first paediatric HLA incompatible renal transplantation in UK and highlights that clinicians must consider this option in ESKD patients whose living donors have been excluded due to HLA incompatibility.

G487(P) IMPROVING RENAL ALLOGRAFT SURVIVAL BY INTRODUCING A MULTICOMPONENT TRANSITION PROGRAMME FOR PAEDIATRIC RENAL TRANSPLANT RECIPIENTS

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Background Adolescence is a vulnerable period for paediatric renal transplant recipients (RTR), with many losing their allografts within years of transferring to adult care. A transition programme was developed to better equip RTR for adulthood. It features a five-year education framework with a phased-handover to the adult team over two years via joint-clinics.

Aims To evaluate the impact of the transition programme on post-transfer renal allograft survival and to evaluate the patient education arm of the transition programme.

Methods A retrospective cohort study of RTR who transferred from a paediatric centre before the transition programme was introduced (non-transition cohort) and RTR who transferred via the transition programme (transition cohort). RTR who transferred to one of four adult centres between January 1999 and January 2014 were followed up to their first four years in adult care. Data on renal allograft survival and therapeutic drug monitoring of immunosuppressive medications were collected. Additionally, RTR currently on the programme approaching transfer completed a questionnaire to indicate self-care competencies they possessed and post-transfer RTR were asked if the transition programme helped them develop said competencies.

Results 106 (69 non-transition, 37 transition) RTR were followed-up. Non-transition RTR were 2.76 times more likely to lose their allografts during their first four years in adult care; when controlling for donor type (live/deceased), prior number of renal transplants and the time (days) post–transplant prior transferring (95% CI = 0.808 – 9.51; p = 0.1). The transition cohort also had on average 21% (65% vs. 44%) more of their trough levels within their therapeutic target levels (95% CI = 2.5–38.4%; p = 0.03).

41 RTR at the paediatric centre and 7 post-transfer RTR completed the questionnaire. Responses indicated patients possessed most competencies, except for managing administrative tasks relating to their care. Over 50% of post-transfer RTR reported the programme helped them develop all, but one, competencies they possessed.