students with T2DM had co-morbidities including raised alanine amino-transferase (57%), hypercholesterolaemia (59%), and hypertension (13%). Five students (4.2%) had microalbuminuria at presentation. Of those with ketonuria, two students had serum glucose of over 20mmol/L and required fluid resuscitation ± insulin infusion in high dependency unit. **Conclusion:** Our pick up rate for T2DM from students with obesity aged 10–18 years using urine glucose is 0.05% (120/216,528). According to the Hong Kong Childhood Diabetes Registry, the crude incidence of T2DM for this age group was 6.16 /100,000/year over the study period, which equates to 506 new cases of T2DM. Thus 24% of the new T2DM cases were diagnosed by this program and many had associated co-morbidities at diagnosis. Our study shows that urine glucose testing is an inexpensive and simple test that allows for early diagnosis and treatment of T2DM in the primary care setting in this at risk population.

Diabetes Mellitus and Glucose Metabolism

METABOLIC DISEASE IN CHILDREN

Safety Evaluation of the Omnipod® 5 Automated Insulin Delivery System Over Three Months of Use in Children With Type 1 Diabetes (T1D)

Bruce A. Buckingham, MD[1], Gregory P. Forlenza, MD, MS[2], Amy B. Criego, MD, MS[3], David W. Hansen, MD, MPH[4], Bruce W. Bode, MD[5], Sue A. Brown, MD[6], Sarah A. MacLeish, DO[7], Jordan E. Pinsker, MD[8], Daniel J. DeSalvo, MD[9], Jennifer L. Sherr, MD, PhD[10], Sanjeev N. Mehta, MD, MPH[11], Lori M. Laffel, MD, MPH[11], Anuj Bhargava, MD, MBA, CDE, FACP, FACE[12], Trang T. Ly, MBBS FRACP PhD[13].

[1]Stanford University, Palo Alto, CA, USA, [2]University of Colorado Denver, Aurora, CO, USA, [3]International Diabetes Center, Minneapolis, MN, USA, [4]SUNY Upstate Medical Univeristy, Manlius, NY, USA, [5]Atlanta Diabetes Associates, Atlanta, GA, USA, [6]University of Virginia, Charlottesville, VA, USA, [7]Rainbow Babies and Children's Hospital, Cleveland, OH, USA, [8]Sansum Diabetes Research Institute, Santa Barbara, CA, USA, [9]TCH Clinical Care Center, Houston, TX, USA, [10]Yale University, New Haven, CT, USA, [11]Joslin Diabetes Center, Boston, MA, USA, [12]Iowa Diabetes Research, Des Moines, IA, USA, [13]Insulet Corporation, Acton, MA, USA.

Advances in diabetes technology have transformed the treatment paradigm for T1D, yet the burden of the disease remains significant. The pediatric population poses unique challenges to glucose management with unpredictable exercise and food consumption. The Omnipod 5 System is a novel hybrid closed-loop (HCL) system with fully on-body operation. A tubeless insulin pump (pod) containing a personalized Model Predictive Control algorithm communicates directly with a Dexcom G6 continuous glucose monitor (CGM, or sensor) to automate insulin delivery. Therapy customization is enabled through glucose targets from 110–150 mg/dL, adjustable by time of day, which is a critical component to individualize glucose management in children. We report on the first, pivotal outpatient safety evaluation of the Omnipod 5 System in a large cohort of children with T1D.

Participants aged 6–13.9y with T1D≥6 months and A1C<10% used the HCL system for 3 months at home after a 14-day run-in phase of their standard therapy (ST, included both pump therapy and multiple daily injections). The primary safety and effectiveness endpoints, respectively, were occurrence of severe hypoglycemia (SH) and diabetic ketoacidosis (DKA), and change in A1C and sensor glucose percent time in target range (TIR) (70–180 mg/dL) during HCL compared with ST.

Participants (N=112) were aged (mean±SD) 10.3±2.2y with T1D duration 4.7±2.6y and baseline A1C 7.7±0.9% (range 5.8–10.3%). TIR increased significantly from ST to HCL, from 52.5±15.6% to 68.0±8.1% (p<0.0001), corresponding to an additional 3.7 hours/day in target range. A1C at end of study was reduced by 0.7% to 7.0±0.6% (p<0.0001). Percentages of time in hyperglycemia were reduced: >180 mg/dL from 45.3±16.7% to 30.2±8.7% and ≥250 mg/dL from 19.1±13.1% to 9.6±5.4% (both p<0.0001). Percentages of time in hypoglycemia remained low from ST to HCL: <54 mg/dL from 0.4±0.8% to 0.3±0.3% and <70 mg/dL from 2.2±2.7% to 1.8±1.4% (both p>0.05). Mean glucose decreased from 183±32 to 160±15 mg/dL (p<0.0001). During the HCL phase there was 1 episode of SH (delayed eating after pre-meal bolus) and 1 episode of DKA (suspected infusion site failure) reported. Virtually all participants completing the pivotal study (99%) continued system use during an extension phase.

In this multi-center pivotal study in a large cohort of children with T1D, the Omnipod 5 System was safe and effective when used for 3 months at home. There were significant improvements in both TIR and A1C, while time below range (<70 mg/dL) remained low. The beneficial glycemic outcomes are critical for children, given that neurologic outcomes can be negatively impacted by hyperglycemia. The current results and commitment to the extension phase emphasize the safe and effective use of the HCL system, as well as the preference for the Omnipod 5 System over participants' previous therapy.

Diabetes Mellitus and Glucose Metabolism

METABOLIC DISEASE IN CHILDREN

The Impact of Multi-Disciplinary Input on Glycaemic Control Over Time in Children on Intensive Insulin Therapy Using Real World Prospectively Collected Data

Jason Foran, Dr, MD, PhD[1], Susan M. O'Connell, Dr, MD, PhD[2], Declan Cody, Prof, MD PhD[3], Eric Somers, Mr, PhD[3].

[1]Children's Health Ireland,Crumlin, Dublin, Ireland, [2]Children's Health Ireland, Crumlin, Dublin,, Ireland, [3]Children's Health Ireland, Crumlin, Dublin, Ireland.

Aims: To investigate the factors impacting on glycaemic control over time including treatment type, educational input and patient demographics within an Irish tertiary paediatric diabetes centre. **Methods:** Using a prospectively maintained database of clinical encounters, data was analysed in age matched pairs from 2007 to 2019. Pairs were matched by insulin treatment type (pump v multiple daily injection (MDI)). Matching was performed on the basis