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CAPE News

Newsletter of
The Indian Society for Pediatric and Adolescent Endocrinology (ISPAE)

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EDITOR'S MESSAGE

Dear Readers,

The CAPE News team is delighted to present the last issue of 2023 on Childhood Diabetes, which includes summaries of two recent Guidelines and three mini-reviews on different aspects of Diabetes- MODY, T2D and pumps in T1D.

The USP of this issue are the reports and learning pearls from the PET school and 8th Biennial Conference of ISPAE that successfully concluded at Bengaluru, under the leadership of Professor Raghupathy P and Dr Shaila Bhattacharya. We hope the conference collage will make you nostalgic and help relive the moments you enjoyed!

As we close this year, we congratulate each member of ISPAE for actively working and sharing their hardwork with us at CAPE News. We take pride in announcing a total of 12 awards/ achievements under different categories, and 51 activities conducted pan-India this year that were covered in this newsletter. We look forward to cross the 75th event mark in the coming year.

We wish a Prosperous and Healthy New Year to All!

Keep learning, leading and inspiring!

Best wishes,

Aashima Dabas

Team CAPE News

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MESSAGE FROM THE ISPAE PRESIDENT

Dear friends,

We take great pleasure in wishing you a fantastic new year filled with health, happiness and success!

It has been a fruitful year of working as a team towards the common goal of improving the health of children with endocrine issues.

All the EC members have worked hard to steer ISPAE towards new achievements with the support of members of ISPAE.

Since the last issue of CAPE News, we have had a highly successful biennial conference of ISPAE at Bengaluru in November. The program had been crafted with great skill by the team led by Dr Shaila Bhattacharryya. The scientific content, the faculty, the venue, ambience and hospitality was outstanding. The main meeting was preceded by a highly successful ISPAE-PET Fellows School. 37 Fellows from around the country had participated in this 3 day in house program where they had been mentored by 8 faculty from around the globe in addition to 8 mentors from India.

This quarter also saw the completion of the initial work on establishing a registry for children with diabetes in India. ISPAE was a part of the "Indian Academy of Pediatrics Revised Guidelines on Evaluation, Prevention and Management of Childhood Obesity" published in December 2023 by Dr Vaman Khadilkar and team.

ISPAE-ACES had an interesting meeting on "Technology in Diabetes" in December 2023. Prof Ben Wheeler from New Zealand had delivered an excellent lecture during this session.

We hope to have another excellent year at ISPAE with several interesting programs including the ISPAE-APPES joint meeting at New Delhi in 2025.

Happy New Year!

Kind regards, Dr Ahila Ayyavoo on behalf of ISPAE-EC Team 2023-24.

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WELCOME NEW ISPAE MEMBERS

Life members	
• Dr Manjari Pramod Karlekar, Mumbai • Dr Girish Subramaniam, Nagpur • Dr Lakshmi Prasad, Kochi	• Dr Arushi Rai, New Delhi • Dr Qury Maheshbhai, Ahmedabad • Dr Mary Jiji Antony, Kottayam • Dr Alpana Tripathi, Saharanpur
Associate Members	
• Dr Radha Venkatesan, Chennai • Dr Aditya Deshpande, Kolkatta • Dr Radhika Puroshottaman, Portland	• Dr Arpita Prusty, New Delhi • Dr Anupama Venkataswamy, Theni

WINNER- September 2023 Quiz

DR AMITA S VERMA, Fellow, Pediatric Endocrinology, Manipal Hospital, Bengaluru

Answers - FACT OR FICTION? The true or false trivia

1) TRUE	9) TRUE
2) TRUE	10)TRUE
3) FALSE	11)FALSE
4) FALSE	12)TRUE
5) TRUE	13)FALSE
6) TRUE	14)TRUE
7) TRUE	15)FALSE
8) FALSE	

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SUMMARY: ISPAD 2022 Guidelines on Glycemic Targets and Glucose Monitoring for Children with Diabetes

***Trishya Reddy**, Fellow, Pediatric Endocrinology, **Shaila Bhattacharyya**, Consultant Pediatric Endocrinologist, Manipal Hospitals, Bengaluru*

Glucose monitoring is a crucial pillar in the management of diabetes in children. The three primary aims in managing diabetes are achieving glycemic targets, preventing acute complications such as hypoglycemia/ hyperglycemia and chronic complications such as microvascular and macrovascular diseases, and preventing the negative impact of hypoglycemia and hyperglycemia on cognition.

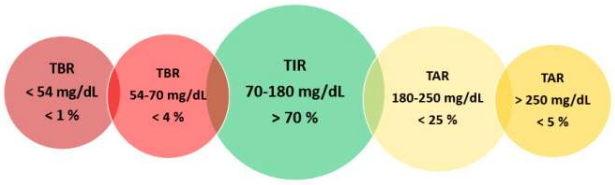
Measures of glycemia:

1. SMBG (Self Monitoring of Blood Glucose)
2. CGM (Continuous Glucose Monitoring)
3. HbA1C (Glycated Hemoglobin)
4. Fructosamine (1-amino-1-deoxy-D-fructose)
5. 1,5 AG (1,5 anhydroglucitol)

SMBG: is measurement of capillary blood glucose with a glucometer. In order to achieve HbA1c targets, SMBGtargets include a tight fasting range between 70-144 mg/dL and between 70-180 mg/dL at all other times.

CGM:*ISPAD endorses published standards for time spent in each glycemic band.*

Parameter	BG range	% of time spent in a day
Time In Range (TIR)	70 – 180 mg/dL	> 70 %
Time Below Range (TBR)	54 – 70 mg/dL	< 4 %
	< 54 mg/dL	< 1 %
Time Above Range (TAR)	180 – 250 mg/dL	< 25 %
	> 250 mg/dL	< 5 %



CGM offers an alternative proxy for HbA1c as the Glucose Management Index (GMI). However, there is some discordance between GMI and laboratory HbA1c.

HbA1c: HbA1c reflects the average blood glucose concentration in the preceding 8-12 weeks, with 50%, 40% and 10% contribution from the previous 30 days, 31-90 days and 91-120 days respectively. A target of < 7% is recommended with an aim to prevent chronic complications, with a target of <6.5% recommended during the remission or 'honeymoon' phase, and when using CGM and/ or an automated insulin delivery system. As HbA1c only reflects the average blood glucose levels, high glycemic variability with frequent episodes of hypoglycemia or hyperglycemia can result in a similar HbA1c as with good glycemic control.

***Fructosamine and 1,5 AG*:** Fructosamine is the generic term for plasma protein ketoamines or 1-amino-1-deoxy-D-fructose; more specifically it is the measurement of the total stable irreversible serum glycated proteins at any given time. It is reflective of short-term alterations in plasma glucose concentrations over 2-3 weeks, consistent with the half-life of albumin (20 days), which comprises 80% of total serum proteins.

1,5-AG concentration reflects plasma glucose concentrations over the preceding 2-14 days. Low 1,5-AG values are indicative of both high circulating plasma glucose concentrations, as well as hyperglycemic excursions.

Reference: de Bock M, Codner E, Craig ME, et al. ISPAD Clinical Practice Consensus Guidelines 2022: Glycemic targets and glucose monitoring for children, adolescents, and young people with diabetes. Pediatr Diabetes. 2022;23(8): 1270-1276.

ADA CLINICAL PRACTICE RECOMMENDATIONS: CHILDREN AND ADOLESCENTS: STANDARDS OF CARE IN DIABETES 2024

***Smitha S**, Clinical Fellow, Department of Pediatric and Adolescent Endocrinology, Indira Gandhi Institute of Child Health, Bengaluru*

RECOMMENDATIONS:

- Individualized medical nutrition therapy (MNT) is recommended for youth with T1D. Monitoring carbohydrate intake is a key component of optimizing glycemic management. Meal composition impacts postprandial glucose excursions.
- Physical activity is recommended for all youth with T1D for 60 min daily of moderate- to vigorous-intensity aerobic activity, with vigorous muscle-strengthening and bone-strengthening activities at least 3 days per week.
- Frequent glucose monitoring before, during, and after exercise is important to prevent, detect, and treat hypoglycemia and hyperglycemia associated with exercise.
- Screening youth with T1D for psychosocial concerns, family factors, and behavioral health concerns, and management with age-appropriate standardized and validated tools is essential.
- Healthcare professionals (HCP) should screen for food security, housing stability/ homelessness, health literacy, financial barriers, and social/community support and apply that information to treatment decisions.
- Adolescents should be offered time by themselves with their HCP, starting at age 12 years or when developmentally appropriate.
- Preconception counseling should be incorporated into routine diabetes care for all individuals of childbearing potential after starting puberty.
- Real-time or intermittently scanned continuous glucose monitors (CGM) and Automated insulin delivery (AID) systems should be offered for diabetes management at diagnosis to all those who are capable of using the device safely.
- Students must be supported at school in the use of diabetes technology, including CGM, insulin pumps or insulin pens, as prescribed by their diabetes care team.
- A1C goals must be individualized and reassessed over time. An A1C of <7% is appropriate for many children and adolescents.
- Less stringent A1C goals (such as <7.5%) may be appropriate for youth who have hypoglycemia unawareness, lack access to advanced insulin delivery technology, cannot check blood glucose regularly, or have non-glycemic factors that increase A1C.

- CGM metrics, include time in range (70–180 mg/dL), time below range (<70 mg/dL) and time above range (>180 mg/dL) are recommended to be used in conjunction with A1C whenever possible.
- Assess for additional autoimmune conditions, including TSH, soon after the diagnosis of T1D and if symptoms develop.
- Treatment of elevated blood pressure is lifestyle modification. ACE inhibitors or angiotensin receptor blockers may be considered.
- After the age of 10 years, addition of a statin may be considered in youth with T1D who, despite MNT and lifestyle changes, continue to have LDL cholesterol >160 mg/dL or LDL cholesterol >130 mg/dL and one or more cardiovascular disease risk factors.
- Programs that use retinal photography (with remote reading or use of a validated assessment tool) can be appropriate screening strategies for diabetic retinopathy.
- Consider an annual comprehensive foot exam at the start of puberty or at age 10 years. The examination should include inspection, assessment of foot pulses, pinprick, and 10-g monofilament sensation tests, testing of vibration sensation using a 128-Hz tuning fork, and ankle reflex tests.
- Fasting plasma glucose, 2-h plasma glucose during a 75-g oral glucose tolerance test, and A1C can be used to test for prediabetes or diabetes in children and adolescents.
- Children and adolescents with overweight or obesity in whom the diagnosis of T2D is being considered should have a panel of pancreatic autoantibodies tested to exclude the possibility of autoimmune T1D.
- In individuals with incidentally diagnosed or metabolically stable diabetes (A1C <8.5%and asymptomatic), metformin is the initial pharmacologic treatment.
- Youth with marked hyperglycemia (blood glucose>250 mg/dl, A1C> 8.5%, or symptomatic) should be treated initially with long-acting insulin, while metformin is initiated and titrated.
- If glycemic goals are no longer met with metformin (with/without long-acting insulin), glucagon-like peptide 1 (GLP-1) receptor agonist therapy and/or empagliflozin should be considered in children 10 years of age or older.
- Evaluation of youth with T2D for non-alcoholic fatty liver disease (by measuring AST and ALT) should be done at diagnosis and annually thereafter.
- Screening for symptoms of sleep apnea should be done at each visit, and referral to a pediatric sleep specialist for evaluation and a polysomnogram, if indicated, is recommended. Obstructive sleep apnea should be treated when documented.
- Evaluate for polycystic ovary syndrome in female adolescents with T2D when indicated.
- Pediatric diabetes care teams should implement transition preparation programs for youth beginning in early adolescence and at least 1 year before the anticipated transfer from pediatric to adult health care.

Reference: American Diabetes Association Professional Practice Committee. 14. Children and Adolescents: Standards of Care in Diabetes-2024. Diabetes Care. 2024;47(Suppl 1):S258-S281. doi:10.2337/dc24-S014

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MATURITY ONSET DIABETES OF THE YOUNG: INDIAN EXPERIENCE

Medha Mittal[1], Viswanathan Mohan[2], Venkatesan Radha[3]

[1]Associate Professor, Chacha Nehru Bal Chikitsalaya, [2]Chairman, Dr Mohan's Diabetes Specialties Centre and President, Madras Diabetes Research Foundation, [3]Molecular Genetics, Madras Diabetes Research Foundation



Maturity onset diabetes of the young (MODY) is the most common type of monogenic diabetes. It presents with variable phenotypes in adolescents and young adults below 25 years age, most of them classified as Type 1or 2 DM (T1D or T2D). The diagnosis of MODY predicts the clinical course of the disease; the likely associated clinical manifestations, as well as guides the treatment and management.

The earliest report of MODY from India was based on clinical criteria alone, and dates back to 1985 [1]. We have come a long way from there, with confirmatory genetic testing now available for MODY. There are 14 subtypes, each with a distinct mutation and clinical features. The hallmark is an autosomal dominant pattern of inheritance with two or three generations having T2D like presentation, without obesity or signs of insulin resistance, described as the Tattersall and Fajans criteria.

Tattersall & Fajans Clinical Criteria of MODY

- Diabetes onset below 25 years age
- Non dependence on insulin
- Autosomal dominant inheritance
- Three generations of diabetes (ideal)
- Normal weight
- Absence of ketosis
- Subnormal C peptide response

The criteria were later modified with additional diagnostic criteria from the European Molecular Genetics Quality Network- MODY group. Clinical features such as renal glycosuria, cystic kidney disease or other renal anomalies can also point towards MODY. However, the diagnosis of MODY cannot be confirmed without genetic testing.

The Indian experience suggests that the prevalence of MODY and of the subtypes is different from the West. Based on the modified criteria, 530 individuals underwent genetic testing - 58 (10.9%) were detected to have MODY on the basis of gnom AD(Genome Aggregation database) and ACMG (American College of Medical Genetics and Genomics) criteria [1].This detection rate is much less than that reported form UK (23%) or France (17.9%). Another study from Kerala also reported a lower proportion (6.6%) of genetic confirmation among 60 clinically classifiable patients of MODY [2]. A younger age of onset of T2D amongst Indians could have contributed to the lower detection rate of MODY. Amongst 105 Indian young adults with diabetes (all types), MODY was detected in 2%[3].

Amongst the subtypes, *HNF-1A* MODY was the most frequent type (53.2%). Others were *HNF4A*-MODY (23.4%), *ABCC8* MODY (23.4%), *GCK* MODY (10.7%) and*HNF1B* MODY (8.9%). *HNF1A* MODY is the leading subtype both in UK and India, with more than 400 known mutations of the gene. Progressive loss of insulin secretion, leading to severe reduction, is seen in this condition, with a highly variable presentation. Truncation mutation and missense mutation of the dimerization/binding domain of *HNF1A* result in a 10 year earlier onset of diabetes than that seen

with missense mutations of the transactivating domain[4]. *GCK* MODY, the other type common in the West, is less common in India. This could be because the mild hyperglycemia in this condition may elude detection or referral for genetic testing. A clear female preponderance was noted among MODY patients, similar to the gender predilection reported with *HNF1A*-MODY. The clinical phenotype of the mutation was similar to that published literature. Microvascular complications, especially retinopathy, were more common in MODY as compared to T1D or T2D.

The main advantage of detection lies in the response to inexpensive oral sulfonylureas.*HNF1A* and *HNF4A* MODY do not respond well to sulfonylureas and*ABCC8* MODY showed a good response that is not so well described in the literature earlier.

The detection of MODY relies heavily on its clinical suspicion and the Shields Exeter model has been useful in this regard. An Indian predictor model was eagerly awaited and developed on the results of 530 patients (as above) based on four criteria - Body mass index, glycated Hemoglobin, HDL cholesterol and C peptide(fasting and stimulated) to distinguish MODY from T1D and T2D[5]. C-peptide was the most useful criteria to distinguish MODY from T1D. C-peptide (fasting and stimulated) and BMI were also useful to differentiate MODY from T2D.

Criteria	Level	Prediction
C peptide	Fasting >1.2 ng/ml Stimulated >2 .4 ng/ml	MODY more likely than T1D
BMI	<21.2 kg/m^2	T1D more likely than MODY
	>22.7kg/m^2	T2D more likely than MODY
HDL Cholesterol		Not reliable indicator
HbA1c	<7.2%	MODY likely
	>10%	MODY unlikely

In summary, molecular genetic testing for MODY has come a long way in our country. While initial genetic studies were performed using Sanger Sequencing method, consistent efforts have led to launch of a comprehensive Indian monogenic diabetes panel which can test for neonatal diabetes and all 14 subtypes of MODY. One should suspect MODY and offer genetic testing in adolescents and young adults with atypical features, e.g. antibody negative and C-peptide preserved 'type 1' diabetes.

References

1. *Aarthy R, Aston-Mourney K, Amutha A, et al. Prevalence, clinical features and complications of common forms of Maturity Onset Diabetes of the Young (MODY) seen at a tertiary diabetes centre in south India. Prim Care Diabetes. 2023 Aug;17(4):401-407.*
2. *Sampathkumar G, Valiyaparambil PP, Kumar H, et al. Low genetic confirmation rate in South Indian subjects with a clinical diagnosis of maturity-onset diabetes of the young (MODY) who underwent targeted next-generation sequencing for 13 genes. J Endocrinol Invest. 2022 Mar;45(3):607-615.*
3. *Sahoo SK, Zaidi G, Vipin VP, et al. Heterogeneity in the aetiology of diabetes mellitus in young adults: A prospective study from north India. Indian J Med Res. 2019 Apr;149(4):479-488.*
4. *Radha V, Mohan V. Genetic basis of monogenic diabetes. Curr Sc 2017; 113(7):1277-1286.*
5. *Aarthy R, Aston-Mourney K, Amutha A, et al. Identification of appropriate biochemical parameters and cut points to detect Maturity Onset Diabetes of Young (MODY) in Asian Indians in a clinic setting. Sci Rep. 2023 Jul 14;13(1):11408.*

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EMERGING TRENDS OF TYPE 2 DIABETES IN CHILDREN

Sangita Yadav, *Professor, &* ***Ayesha Afzal,*** *Resident, Dept of Pediatrics, HIMSR & HAHC Hospital, New Delhi*

Type 2 diabetes (T2D) has become a global health concern in the pediatric population, due to the global surge in childhood obesity.A systematic review by Wu et al estimated 41,600 new cases worldwide in 2021, with the highest numbers in China(734 per 100,000), India(397 per 100,000), and USA (285 per 100,000). Theother top countries included Brazil (n = 154), Nigeria (n = 143), Indonesia (n = 133), Mexico (n = 119), Egypt (n = 116), Pakistan (n = 88), and the Russian Federation (n = 65).The prevalence data among youth aged 10-19 years for T2D in USAshows 0.67 cases per 1,000 with an incidence of 13.8 per 100,000 per year.Racial and ethnic minority populations have higher incidence rates per 10,000/year i.e. 37.8 Blacks, 32.8 American Indians, 20.9 Hispanics, 11.9 Asian/Pacific Islanders, and 4.5 non-Hispanic Whites. If the increasing trends in incidence continue, the number of youths with T2D in USAcould reach between 30,000 and 84,000 by 2050.

Reason for Concerns: T2D in you this an aggressive disease which progresses more rapidly, with annual beta-cell function deterioration of 20-35% vs. 7-11% in adults with T2Dofsimilar disease duration. Youth-onset T2D (15-30years) is also associated with higher rates of complications than T1D, with earlier onset and faster progression of nephropathy and neuropathy, worse cardiovascular risk and mortality profile (11% vs. 6.8%, p=0.03) and higher risk of death [HR 2.0, p=0.003], irrespective of glycemic control. In the SEARCH Case-Control Study, the participants born to mothers with gestational diabetes were seven times more likely to develop T2D than their counterparts. Up to 70% of T2D have a first-degree relative with T2D.

South-East Asians, including Indians, have high insulin resistance (IR). Indians have more truncal fat than Caucasians for a given total body fat percentage, that further exacerbates IR. According to age-based growth charts, 85% of children with T2D are either overweight or obese. Worldwide rates of childhood and teenage obesity are rising as a result of changes in diet and exercise habits.T2D typically begins when a physiologic state of IR develops during puberty, and now accounts for 8-45% of all new cases of pediatric diabetes.

Early recognition, screening, and treatment of pediatric T2D is important for the prevention of long-term complications. Treatment is challenging, considering the projected fourfold increase, aggressive clinical course, higher risk of complications and mortality. Management is influenced by complex psychosocial and environmental factors that require psychosocial support from healthcare providers. A coordinated effort involving clinical care, public health and community-level interventions addressing specific needs and ensuring long-term access to healthcare and other forms of public support is needed for these children.

References:

1. *Wu H, Patterson C C, Zhang X, et al. Worldwide estimates of incidence of type 2 diabetes in children and adolescents in 2021. Diabetes Res Clin Pract. 2022;185:109785.*
2. *Perng W, Conway R, Mayer-Davis E, Dabelea D. Youth-onset type 2 diabetes: The epidemiology of an awakening epidemic.* Diabetes Care *2023; 46(3): 490–499*
3. *TamborlaneW. Shehadeh N. Unmet needs in the treatment of childhood Type 2 diabetes: A narrative review. AdvTher. 2023; 40:4711–4720*

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DO-IT-YOURSELF ARTIFICIAL PANCREAS SYSTEM (DIY APS)

***Ruchi Shah**, Consultant Pediatric Endocrinologist, Endokids, Ahmedabad, Gujarat*

While the cure for type 1 diabetes (T1D) still seems to be illusive, remarkable technological advances have been made in the recent past. The efforts towards 'closing the loop' have been successful; the latest insulin pumps are enabled with Bluetooth connection to the continuous glucose monitoring (CGM) sensor and use artificial intelligence to interpret the data and deliver insulin accordingly. These devices are quite highly priced and therefore accessible to only a small proportion of the T1D community. Highly motivated and tech-savvy members of the community have started developing their own do-it-yourself artificial pancreas systems (DIY APS), integrating CGM, pump and smart phone technology to run openly shared algorithms to achieve good glycemic control and quality of life. Although not approved by any medical organization, hundreds of people continue to use them with high satisfaction[1]. These systems use tailor-made changes specific to the person with T1D to achieve automated insulin delivery based on CGM data, which are not commercialized or regulated.

Components of DIY APS[2]:

1. Real time CGM (rtCGM): Either rtCGMs or flash monitors converted to rt by transmitter devices can be used. These combinations of the device with a software application upload the data on the cloud, from where it can be accessed by a computer/smartphone.
2. Insulin pump: The pump has to be "loopable". Pumps using radiofrequency or Bluetooth protocols are used.
3. Computer or smartphone application: There are various applications available for Apple and Android. Every 5 minutes, it makes a forecast using BG values from the last 30 minutes and the current value, to make adjustments in insulin dose, including bolus recommendations and temporary basal rates.
4. Translator device: A small tic-tac box sized device acts as a translator between the smart phone (Apple or Android) and the pump. A commonly used device is RileyLink.

A large number of published studies have reported impressive outcomes such as better glycemic control, significant improvements in time in range (almost all studies reporting >80%), reduction in self-management efforts and improvement in overall quality of life. Self-reported studies in the pediatric age group are suggestive of equally good outcomes in children and adolescents. More people in India (a few of whom helped me to understand these devices better) are increasingly using DIY-APS. Although installing the setup requires in-depth understanding of the technology, the tremendous community support helps at every step[3].

DIY-APSs are purely a patient-led initiative, where technologies are established by motivated T1Ds and caregivers, circumventing the trials and regulatory procedures necessary for approval and commercialization of medical devices. Ultimately the individuals who decide to opt for these systems use them at their own risk. A coordinated inter-agency approach between regulatory

bodies, clinicians and manufacturers associated with the use of DIY-APS would be desirable to enable greater regulation and safety and wider acceptance of these devices.

References:

1. *Ahmed SH, Ewins DL, Bridges J, et al. Do-It-Yourself (DIY) Artificial Pancreas Systems for Type 1 Diabetes: Perspectives of Two Adult Users, Parent of a User and Healthcare Professionals. Adv Therp. 2020;37: 3929-3941.*
2. *Kesavadev J, Srinivasan S, Saboo B, et al. The Do-It-Yourself Artificial Pancreas: A Comprehensive Review. Diabetes Ther. 2020; 11: 1217–1235.*
3. *Kesavadev J, Saboo B, Kar P, et al.DIY artificial pancreas: A narrative of the first patient and the physicians' experiences from India. Diab Met Syndr: Clin Res Rev. 2021; 15: 615-620.*

SMART PENS

Richa Arora, *Consultant Pediatric Endocrinologist, Child Clinic & Endocrine Center, New Delhi*

The evolution of technology to manage diabetes has led to better technique, monitoring and adherence. Insulin pens have several advantages over vials and syringes - they allow for more accurate dosing, improved adherence, less injection site pain and greater patient satisfaction.

Second-generation insulin pens have been engineered with USB or Bluetooth features to enable closer monitoring. Initial advancements were in the form of sensors attached to insulin pens or other devices to work with insulin cartridges for insulin dosing. Subsequently insulin manufacturing companies started creating their own systems and products that either integrated with the earlier technology or were fully integrated smart insulin pen devices in themselves. At present, they are available only for bolus insulin and not for basal insulin, and none in India.

Inpen: The product, FDA approved in 2016, includes a reusable pen compatible with U-100 (3 mL) Lispro (Humalog, Eli Lilly) and Aspart (Novolog, Novo Nordisk) insulin cartridges. After the insulin cartridge is appropriately installed, the device sends real-time data via Bluetooth to an InPen application (app) available for iPhones. The app displays information on exposure of the pen to temperature extremes. Users can record their most recent blood glucose levels and anticipated meals to be prompted for a bolus insulin dose by the inbuilt calculator. InPen can distinguish between insulin used to prime the device and insulin for administration. Once the insulin is injected, the amount injected is also recorded on the app. Each pen has a non-rechargeable battery that lasts 1 year.

Novopen 5: is compatible with U-100 (3 mL) aspart insulin cartridges and can administer single doses of 1-60units. The pen clicks once the full dose has been administered. Its electronic display shows the last dose of insulin administered, and the hours elapsed since the last injection, the pen battery life and information if pen memory malfunctions.

NovoPen Echo**:** is an FDA approved device which offers the same features as the NovoPen 5, meant for children, as it allows for half-unit dosing, and can administer 0.5-30 units per dose.

Kicopen: has been developed by Cambridge Consultants, UK, and received the prestigious international Red Dot Award for product design. It connects wirelessly to a smartphone app which tracks the times and amounts of insulin injected and allows users to input blood glucose levels,

exercise regimens, and carbohydrate consumption. The device derives its power not from a battery, but from the kinetic energy of the cap being pulled off of the pen.

The development of smart pens for insulin delivery is promising for better diabetes management, by offering the potential for improved adherence, administration, and quality of care. These devices, and attachments may aid in minimizing long-term costs and complications, and improve diabetes care overall.

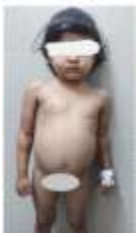
References:

1. *Sangave NA, Aungst TD, Patel DK. Smart Connected Insulin Pens, Caps, and Attachments: A Review of the Future of Diabetes Technology Diabetes Spectr. 2019 Nov;32(4):378-384.*
2. *Klonoff DC, Kerr D. Smart pens will improve insulin therapy. J Diabetes SciTechnol 2018;12:551–553*
3. *Ignaut DA, Venekamp WJ. HumaPen Memoir: a novel insulin-injecting pen with a dose-memory feature. Exp Rev Med Devices 2014;4:793–802*

MAURIAC SYNDROME: A CASE REPORT

Sukrutha Surandran, Lakshmi Deepika R, Vani HN, Raghupathy P, *Dept of Pediatric Endocrinology, IGICH, Bengaluru*

Mauriac syndrome, a rare complication of Type 1 Diabetes (T1D), was first described by Pierre Mauriac in 1930.[1] The majority of cases have been described in children and adolescents with brittle glycemic control.[2] The clinical presentation is non-specific, and should be considered in any child with T1D with poor glycemic control, in the presence of abdominal distention, hepatomegaly and abnormal liver function tests. The clinical, laboratory and histological abnormalities are reversible with appropriate glycemic control.



We describe a 5-year-old female child, with T1D diagnosed at the age of 3y, on a basal bolus insulin regimen. She presented with difficulty in breathing and abdominal distention for one week. On examination she was alert, with normal vitals, growth retardation (height 96cm -2.2SDS; weight 16 kg -0.15SDS), abdominal distension and nontender, firm hepatomegaly. Detailed history revealed improper technique and erratic dosage of insulin injections and irregular blood glucose monitoring, with no prior admission for DKA. At admission her blood glucose was 510 mg/dL, HbA1c 18.2%, with elevated transaminases, and deranged lipid profile.

Blood glucose	510 mg/dL
AST	490 U/L(<32)
ALT	1007.7 U/L(<33)
ALP	535.9 U/L
GGT	192.2 U/L(<40)
Total cholesterol	256.3 mg/dl(<200)
Triglycerides	876 mg/dl(<150)
LDL	77.2 mg/dl(<100)
HDL	7.2 mg/dl(>65)
VLDL	175.3 mg/dl(0-60)
Prothrombin time	9.2 sec
APTT	23 sec
INR	0.7
Viral hepatitis markers	Negative
Urine ketones	1+

Abdominal ultrasonography showed gross hepatomegaly with altered echotexture. Infectious and metabolic causes of hepatomegaly were ruled out.

Based on these findings, we suspected Mauriac syndrome. Liver biopsy was planned but later deferred. She was managed with intravenous fluids and subcutaneous insulin. Parents were counselled and educated regarding T1D care, with emphasis on adequate insulin administration, blood glucose monitoring, and correction doses as per ISF and ICR. At the end of one week, she was discharged with basal bolus insulin at 1.3 U/kg/day. At

follow-up after two weeks, hepatomegaly had decreased to 7cm and transaminases improved. After three months, she showed better growth, with resolution of hepatomegaly and transaminases.

Hepatic glycogenosis develops in both adults and children in poorly controlled T1D; thehyperglycemia requires large amounts of insulin, that further promotes glucose uptake (GLUT2) and formation of glycogen. A high insulin dose requirement with recurrent DKA also increases the risk of Mauriac syndrome.[3] The mainstay of management is strict glycemic control that helps in complete recovery without any residual morbidities, as was the case with our patient who improved with proper management of diabetes.

References:

1. *Abhinandan S, Rahul V. Underdiagnosed complication of Type1 diabetes. Mauriac syndrome. International J Science and Healthcare Research. 2021;6(1).*
2. *Julian MT, Alonso N, Ojanguren I, Pizarro E, Puig-Domingo M. Hepatic glycogenosis: an underdiagnosed complication of diabetes mellitus? World J Diabetes. 2015;6:321-325.*
3. *Sheigar JM, Castro J, Yin YM, Guss D, Mohanty SR. Glycogenic hepatopathy: a narrative review. World J Hepatol. 2018;10:172-185.*

PEDSENDOSCAN

Aaradhna Singh, *Associate Professor, Dept of Pediatrics, University College of Medical Sciences, New Delhi*

Russell WE, Bundy BN, Anderson MS, et al. Abatacept for delay of Type 1 diabetes progression in stage 1 relatives at risk: A randomized, double-masked, controlled trial. Diabetes Care. 2023;46(5):1005-1013.

In this phase 2, randomized, placebo-controlled, double-masked trial, antibody-positive participants with normal glucose tolerance received either monthly abatacept infusions (N=101)/ or placebo (N=111) for 12 months. Of them, 81 (35 abatacept and 46 placebo) met the end point of abnormal glucose tolerance or type 1 diabetes (T1D) diagnosis. C-peptide responses to OGTT were higher in the abatacept arm (P< 0.03). Abatacept reduced frequency of inducible T-cell co-stimulatory T-follicular helper cells during treatment (P< 0.0001), increased naive CD4 T cells, and reduced frequency of CD4 regulatory T cells from baseline. **Although abatacept treatment for 1 year did not significantly delay progression to glucose intolerance in at-risk individuals, it impacted immune cell subsets and preserved insulin secretion, suggesting that costimulation blockade may modify progression of T1D**.

Aronsson CA, Tamura R, Vehik K, et al. Dietary intake and body mass index influence the risk of islet autoimmunity in genetically at-risk children: A mediation analysis using the TEDDY Cohort. Pediatr Diabetes. 2023;2023:3945064.

Genetically at-risk children (*n* = 5,084) in Finland, Germany, Sweden, and USA, who were autoantibody negative at 2y of age, were followed to the age of 8y, with anthropometric

measurements and 3-day food records collected biannually. Of them, 495 (9.7%) children developed insulin autoimmunity (IA). Mediation analysis for BMI z-score and energy intakefound an indirect effect of total energy intake and energy from protein, fat, carbohydrates and a direct effect of proteinon development of IA. **This study confirms that higher total energy intake is associated with higher BMI, which leads to higher risk of the development of IA. A diet with larger proportion of energy from protein directly effects development of GADA.**

Tarçın G, Akman H, Güneş Kaya D, et al. Diabetes-specific eating disorder and possible associated psychopathologies in adolescents with type 1 diabetes mellitus [published correction appears in Eat Weight Disord. 2023 Jun 1;28(1):48]. Eat Weight Disord. 2023;28(1):36.

Ninety-two adolescents (12-18y: 45 boys) with T1D who applied to the pediatric diabetes outpatient clinic between July 2021 and March 2022 were included. Diabetes Eating Problem Survey-Revised (DEPS-R) was applied to determine the risk of diabetes specific eating disorder (DSED). In order to detect accompanying psychopathologies, Eating Disorder Examination Questionnaire (EDE-Q), Child Anxiety and Depression Scale-Child version (RCADS) and Parenting Style Scale were applied. DSED risk was found in 23.9%, i.e. almost a quarter. **Routine screening of adolescents with T1D with the DEPS-R scale may provide early detection of DSED; referral of those at-risk to child psychiatry can enable early diagnosis and intervention for eating disorders and accompanying psychopathology.**

Cioana M, Deng J, Nadarajah A, et al. Global Prevalence of Diabetic Retinopathy in Pediatric Type 2 Diabetes: A Systematic Review and Meta-analysis. JAMA Netw Open. 2023;6(3):e231887.

In this systematic review and meta-analysis of 27 observational studies including 5924 unique patients with pediatric T2D, 6.99%had diabetic retinopathy (DR). Fundoscopy was less sensitive than 7-field stereoscopic fundus photography in detecting DR. The prevalence of DR increased over time and was 1.1% at < 2.5y after T2D diagnosis, 9% at 2.5-5y, and as high as 28.1% at >5y of T2D diagnosis. These findings suggest that **retinal microvasculature is an early target of T2D in children and adolescents, and the importance of annual screening with fundusphotography,right from diagnosis, for early detection of DR.**

Huerta-Uribe N, Hormazábal-Aguayo IA, Izquierdo M, García-Hermoso A. Youth with type 1 diabetes mellitus are more inactive and sedentary than apparently healthy peers: A systematic review and meta-analysis. Diabetes Res Clin Pract. 2023;200:110697.

This meta-analysis was conducted to see differences in physical activity, sedentary behavior, and physical fitness between children and adolescents with type 1 diabetes (T1D) and their healthy peers. Thirty-five studies were included, comprising a total of 4,751 youths (53% girls, 2,452 with T1D). **Youth with T1D were less physically active, had more sedentary behavior, and lower cardiorespiratory fitness than their peers without diabetes.**

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LEARNING PEARLS: 25TH ISPAE ACES MEETING – SKELETAL DYSPLASIA (14 Oct 2023)

Professor Amaka C Offiah, *Pediatric Radiologist, Sheffield, UK, &* ***Dr Mamta Muranjan,*** *Clinical Geneticist, PD Hinduja National Hospital, Mumbai. (Compiled by* ***Zalak Upadhyay****, Pediatric & Adolescent Endocrinologist, Endocare for Kids, Rajkot)*

Skeletal dysplasias are a heterogenous group of genetic disorders, in which radiological findings often help to differentiate disorders with overlapping clinical presentations and guide genetic testing. Skeletal dysplasia should be suspected in a child with disproportion ateshort stature, bone deformities, recurrent fractures and abnormal radiographic findings (enchondromas, vertebral segmentation defects, Wormian bones).

The **diagnostic approach** to a child with suspected skeletal dysplasia is clinical, followed by investigations. The **history** should include prenatal history, birth length, timing of short stature, joint laxity, development history, **family histor**y of short stature, recurrent fractures, retinal detachment, polydactyly, renal disease, leg bowing, still births/ spontaneous abortions. **Examination** must include auxology, including upper/ lower segment ratio, arm span, occipitofrontal circumference, facial dysmorphism, sclera, teeth, finger length and nails, chest deformities, scoliosis, joint movements, radioulnar synostosis, laxity, pronation-supination, and walking pattern.

Prenatal ultrasound examination for bowing/shortening of long bones, vertebral defects, growth deficiency, fractures, chest:abdominal circumference ratio should be performed. Antenatal imaging in suspected skeletal dysplasia also determines lethality. Many non-lethal genetic conditions may be discernible on ultrasound only by the third trimester. Prenatal CT may be useful for fetal imaging and research: it should be ordered rationally. Fetal MRI is particularly used if potential neurological complications are suspected.

Site	Projection
Skull	AP and lateral
Thoracolumbar	Lateral
Pelvis	AP (Anteroposterior)
Chest	AP
One upper limb	AP
One lower limb	AP
Left hand and wrist	DP (dorsopalmar)

Postnatally, plain radiographs of multiple bones are most widely used for diagnosis. Ultrasound for renal abnormalities, MRI for brain and spine, and DXA for BMD and vertebral fractures are other useful imaging tools that can be used on a case-to-case basis.

Genetics: skeletal dysplasia and ciliopathy panels are available. The suspected diagnosis and gene in question should be mentioned when requesting the test so that the gene of interest is mapped in the analysis. Whole exome sequencing is helpful if a new disorder or a novel gene are suspected.

Bone age: is done to determine gestational age, assessment of skeletal development, evaluation of growth potential, evaluation of response to GH therapy and prediction of adult height. The methods include the Bayley-Pinneau method (GP atlas), Gilsanz & Ratib, Tanner- White house and BoneXpert. Though BoneXpert is less time-consuming, it has several limitations, including IT related, image quality related, positioning, artefacts, and cost.

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8th Biennial Conference: ISPAE 2023

ISPAE PET SCHOOL: 14-17 Nov 2023

The Pediatric Endocrinology Training (PET) residential Fellows' School was a 3 day program (14-16 November) held at the Signature Club Resort, Brigade Orchards, Devanahalli, situated in a tranquil and picturesque area close to Bengaluru's outskirts, in which 37 fellows from across India participated. The curriculum was beautifully planned and executed to perfection by Dr Ahila Ayyavoo (Convener) and Dr Shaila Bhattacharyya (co-convener), with the support of ISPAE Organizing Committee members. All the scientific programs and group discussions were well appreciated by the Fellows, who were treated every evening after full long days of learning, to relaxing music, dancing and karaoke. At the crack of dawn on the last day, the Fellows and Faculty enjoyed an exciting journey to the Nandi Hills, known for breathtaking panoramic views, and the Yoga Nandeeshwara Temple at the hill top. The Fellows enjoyed the whole program and carried back good memories for a lifetime.

Fellow's perspective

***Reshma M**, DM Endocrinology trainee, Institute of Medical Sciences, Banaras Hindu University, Varanasi, & Assistant Professor, Government Medical College, Alappuzha, Kerala*

I had already heard a lot about the PET School from some friends who had the good fortune to attend it earlier, and registered without a second thought when it was announced. Preparations began with our joining a WhatsApp group in June 2023. We were allotted to groups with a moderator and assigned cases. As the days approached, my anxiety started to build up, but was replaced by excitement after my call to Dr Ahila a few days before the PET school. Travelling from Banaras,I reached the beautiful Signature Club Resort quite late. The next day was like the first day of college - literally a fan girl moment for me, meeting Prof Raghupathy, Dr Anurag Bajpai, Dr Vaman Khadilkar, Dr Vandana Jain, Dr Anna Simon, of whom I had heard during my postgraduation - and now I was meeting them together. The international faculty were very friendly and kind, with Prof Paul Hofman literally on his toes to help with the microphone during the sessions when we asked questions.

PET school was an absolute academic feast, with a lot of brainstorming during the sessions. We recharged ourselves in the evening over dinner and made new friends. We danced, laughed, sang, and acknowledged our talented friends. The visit to Nandi hills was one of the highlights. It was refreshing and an opportunity to click pictures with my idols. The memoir of PET School 2023 would be incomplete without mentioning the well organised show by Marundeshwara Enterprises. Ever thankful to Dr Ahila, Dr Shaila and Dr Vani for organising this academic feast.

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ISPAE PET School 2023 Bengaluru

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LEARNING PEARLS

OM Ramya, Fellow, Pediatric Endocrinology IGICH, Bengaluru,& Swathi Padmanaban, Pediatric Endocrinologist, Rainbow Children's Hospital, Chennai (Compiled and edited by Tejasvi Sheshadri)

DSD

- In a child with DSD and a maternal history of virilization, aromatase deficiency is the likely diagnosis.
- If DSD is associated with hypokalemia & hypertension, one must rule out 11β or 17α hydroxylase deficiency. The low renin hypertension is due to excess deoxycorticosterone.
- Girls with mosaic Turner Syndrome (45X/ 47 XXX) usually have a milder phenotype and are likely to attain menarche. The average height of Turner girls is lesser than those with isolated *SHOX* deficiency. For height augmentation, growth hormone therapy is the mainstay; addition of low doses of estrogen in the prepubertal age group improves final height by ~ 2 cm.

DIABETES

- 80-90% of children with multiple islet auto antibodies progress to stage 3 diabetes within 15y.
- Diabetes distress is experienced by 30% of adolescents with T1D.Screening at 12y and at periodic intervals thereafter, using validated tools, is needed.
- The 2022 Guidelines suggest considering adding a second agent in T2D if HbA1c is > 7%
- *TODAY trial*: Therapeutic failure rates were lowest in the group receiving metformin + rosiglitazone (38.6%) cf. metformin alone (51.7%) or metformin + lifestyle (46.6%)
- eGFR monitoring should be done in T2D from time of diagnosis, and in T1D from onset of puberty or age 11y (whichever is earlier).
- Impaired bone health is an emerging complication of T1D. Assessments should be done in children with co morbidities.
- Medronic 790G (fully automated closed loop pump), the bi-hormonal pump (Ilet), and Tandem mobi are under trial.

COMPLICATIONS OF DIABETES

- Adolescents have higher risks of severe complications. There is an overlap of diabetic retinopathy and kidney disease, more than expected by chance. Prepubertal children are not fully protected from microvascular complications.
- Diabetes-related hypertrigly ceridemia is usually due to inhibition of lipoprotein lipase caused by insulin deficiency, hence, glycemic control with insulin reduces hypertriglyceridemia.
- Technology related complications include medical adhesive-related skin injury (MARSI). Dermatological manifestations including pruritus, erythema, and induration. Preventive measures include site rotation, correct device placement, proper removal technique, prophylactic skin care, and avoiding contact with the same material. Hydrocolloids or steroid sprays before applying the sensor may combat allergic reactions.

DYSLIPIDEMIA

- Universal screening is recommended between ages 9-11y, and between 17-21y. Selective screening can be considered in children >2y of age with risk factors.

- Non-HDL cholesterol level has been identified as a significant predictor of atherosclerosis in children and adolescents.
- The newer treatment options include *PCSK9* monoclonal antibodies (Evolocumab and Alirocumab), which primarily act by increasing hepatic LDL-R expression and lowering serum LDL levels. Lomitapide is FDA-approved for homozygous familial hypercholesterolemia. Fibrates and omega-3 fatty acids reduce triglyceride levels.

CLINICAL CONUNDRUMS

- Hypokalemia with hypertension points towards an endocrine cause of hypertension involving the RAAS system. Low renin hypertension associated with high deoxy-corticosterone is suggestive of CAH; whereas low deoxycorticosterone is suggestive of primary aldosteronism, glucocorticoid remediable hypertension, apparent mineralocorticoid excess, and Liddle syndrome.
- FDA has recently approved SGLT2 inhibitor Empagliflozin for pediatric obesity.
- Elastography is validated among adult subjects for assessing hepatic steatosis.
- Pituitary axis alteration in obesity, leads to increased cortisol levels, giving a Pseudo-Cushing picture.

CALCIUM DISORDERS

- All infants with hypothyroidism and hypocalcemia should be screened carefully for potential pseudohypoparathyroidism (PHP1A).GH deficiency occurs secondary to GHRH resistance in approximately 2/3rd of patients.
- Cinacalcet, a CaSR-positive allosteric modulator, has been successfully used to manage life-threatening hypercalcemia in neonatal severe hyperparathyroidism. Higher doses may be required to normalize PTH levels.

GROWTH

- The clinical features of hypopituitarism associated with conjugated hyperbilirubinemia usually point towards cortisol deficiency, whereas unconjugated hyperbilirubinemia goes in favor of hypothyroidism.
- As per Indian data, catch-up growth among SGA infants varies based on socio-economic status. Preterm SGA children can take a longer period of up to 4y of age for catch-up.
- The updated IAP growth monitoring App has new features including extended growth and BMI charts, Z-scores for MPH, and disease-specific charts for easy analysis of pathological conditions.
- Weekly growth hormone (Long-acting GH) is an attractive option, which does need long-term studies regarding IGF-1 level safety, antibody formation, and GH receptor insensitivity over time due to constant exposure over the years.

BONES

- During the first 3-6 months of treatment, calciferol should be given 2-5 times to those requiring long-term maintenance (Calcitriol:1-2 µg/day).
- Adequate calcium supplementation should be given during the bone healing phase to prevent worsening of hypocalcemia due to the “hungry bone” phenomenon.
- Treatment of choice for OI is bisphosphonates, preferably IV (pamidronate and zoledronate) and oral (alendronate). Other treatment options like Denusumab, Teriparatide and Setrusumab are in phase 2B trials. Fresolimumab is in phase 1 trials.

- Physiologically, iron deficiency increases FGF23 levels. Oral iron replacement normalizes FGF23 in iron-deficient patients with AD hypophosphatemic rickets.
- Fusion of the cervical spine along with hypophosphatemic rickets is characteristic phenotype of ARHR2.
- Burosumab significantly improves rickets and is now licensed for treatment in XLH.

THYROID

- Goldenhar syndrome is a malformation complex involving structures that arise from the first and second branchial arch. It may be associated with Graves disease.
- Children with papillary thyroid cancer present with larger tumors, with metastasis to lymph nodes and lung, and have high chances of recurrence.
- Dyshormonogenesis - *NIS* has low or absent RAIU on scintigraphy. *TPO, DUOXA2* and *DUOX2* have positive perchlorate discharge. *PDS* and *DEHAL1* mutations present with mild hypothyroidism, and are often missed on NBS.
- *IGSF1* deficiency is the most common genetic cause of isolated central hypothyroidism.
- All AEDs except levetiracetam affect thyroid function.

ENDOCRINE TUMOURS

- Pheochromocytoma (PCC) and paraganglioma (PGL) are rare chromaffin cell tumors presenting with sustained hypertension. Plasma/urinary metanephrine & normeta-nephrine values >4 times ULN are highly suggestive of a tumor. Plasma methoxytyramine is seen in dopamine-secreting tumors.
- Pilocytic astrocytoma is a grade 1 glioma most commonly associated with NF1.
- Childhood cancer survivors should be screened for hypothalamic pituitary dysfunction at 1y after the completion of radiotherapy or from diagnosis, every 6 months in peri- or pre- pubertal children, and annually in post-pubertal survivors until 15y after diagnosis or treatment exposure.
- Radiation up to 24 Gy leads to isolated GH deficiency, and beyond 60 Gy results in panhypopituitarism.

ADRENAL DISORDERS

- Salt wasting 21-hydroxylase deficiency (21OHD) is missed in a significant proportion of boys. A high degree of suspicion is needed in all neonates with features of septicemia in the absence of obvious infection, genital ambiguity, hyperpigmentation and unexplained FTT.
- The most common presentation of ACC is virilisation. Ki-67 >5% on biopsy in ACC is a powerful prognostic marker.
- Management of 21OHD is essentially to give the required dose of glucocorticoids to prevent androgen excess while preventing a crisis.
- In Lipoid CAH, adrenal insufficiency is more severe than in other types of CAH (two hit theory); patients are reared as females, and estrogen replacement at puberty is required.
- 17 HSD and 17, 20 lyase deficiency do not have glucocorticoid deficiency.
- POR presents with maternal virilisation and mild adrenal insufficiency; sex steroid replacement is needed during pubertal onset.
- Male typical differentiation of the brain depends on androgen action during fetal life.

PUBERTY

- In CPP with hypothalamic hamartoma, GnRH analogs are the mainstay of treatment; surgery is advocated only in large sized lesions.
- Pituitary stalk interruption syndrome usually presents with isolated GHD or MPHD with normal posterior pituitary function.
- The identification of monogenic causes of familial CPP, mainly represented by loss-of-function mutations in the maternally imprinted *MKRN3* gene, highlights novel congenital causes of CPP.
- Endocrine-disrupting chemicals (EDC) have a potential effect in pubertal development through central and peripheral mechanisms and their possible role in human pubertal timing needs to be investigated.
- GnRH therapy has a role in preserving adult height potential in children with precocious puberty aged 6y and under, but for older children without rapidly progressing puberty, there is no evidence of any benefit.

ISPAE 2023: Pre-conference Workshops

Compiled by Dr Chirantap Oza and Dr Shruti Mondkar,

BONE

A workshop on Bone and Dual Energy X-ray Absorptiometry (DXA) was conducted on 17 Nov 2023. Dr Anuradha Khadilkar introduced the faculty and gave a brief overview of the session. Dr Raja Padidela (Royal Manchester Children Hospital, UK) explained the physics behind BMD scanning, scanning technique, strengths, and limitations of DXA scans. He listed osteogenesis imperfecta, history of frequent fractures, juvenile osteoporosis, Duchenne muscular dystrophy, cerebral palsy, anorexia nervosa and long-term use of steroids in conditions involving oncology, rheumatology and gastro-enterology as common indications for performing DXA scans in his practice.The next session by Dr Khadilkar focused on the importance of correct positioning of the child when performing DXA, and the need for pediatric software to interpret the scans. Z-score calculation (not T-scores), adjusted for age, gender, height, lean body mass, pubertal status and ethnicity(Molgaard and Crabtree approach) is important to label osteoporosis (the term osteopenia is not used in children), along with fracture history. Dr Padidela demonstrated utility of DXA in VFA, defining osteoporosis, initiating bisphosphonate treatment and the role of puberty. In a case-based approach, Dr Chirantap Oza discussed the practical utility of DXA in diagnosing and monitoring children with bone disorders. Dr Suma Uday (Birmingham Children Hospital, UK)highlighted the significance of close monitoring while using bisphosphonates for non-osteoporotic indications, their use in conditions where steroids have caused osteo-toxic effects and the difficulty in assessing children with contractures due to neurological issues.

INSULIN PUMP

The insulin pump workshop was conducted by Drs Ganesh Jevalikar, Ahila Ayyavoo, Meena Mohan, Rakesh Kumar and Saurabh Uppal. It started with basics of insulin pump technology and provided hands-on training in setting and adjusting insulin pumps. The case scenarios provided interactive learning into insights of glucose management.

GROWTH

The Growth workshop was conducted by Drs Vaman Khadilkar, Hemchand K Prasad & Shruti Mondkar. It consisted of 7 modules with hands-on training - introduction to anthropometry and

growth monitoring, use of Z-scores in office practice, bone age assessment, final height prediction, IGF-1 Z-score calculation, and use of specialized growth charts. A few learning points:

- The IAP growth chart app in its new version can be used to calculate Z-scores of all relevant anthropometric parameters.
- Height Z-score cut offs of <-2, <-2.25, <-2.5, and <-3 should be considered for investigations and treatment of short stature, idiopathic short stature, SGA with inadequate catch up, and pathological short stature, respectively.
- A height Z-score below 1.5 Z of target height is also classified as short stature.
- Fall in height velocity below the 25thpercentile (-0.67 Z) implies growth failure.
- Height velocity > 75thpercentile (+0.67 Z) indicates rapid growth (e.g. precocious puberty).
- The Tanner Whitehouse 3, Greulich Pyle, or Gilsanz Ratib atlas can be used to assess bone age in Indian children with growth disorders.
- Bone age 2y (1y for younger children) below the chronological age (CA) implies delay, while 2y (1y for younger children) ahead of the CA implies advanced bone age.
- The images on the GR atlas are idealized images, which are adequately spaced and presented in a visually appealing way to ease the process of bone age assessment.
- Age specific areas should be focused for bone age assessment: carpal bones & radius during infancy; small bones of hand during prepubertal and pubertal years and radius & ulna during post puberty.
- Final height (FH) prediction can be done for all three bone age assessment techniques (TW-3, GP, GR) using respective methods.
- There is no accurate FH prediction method validated in Indian children. FH predictions by TW-3 equations are influenced by scores assigned to radius and ulna; GR equations are not validated in large recent studies; Bayley Pinneautables lead to over-prediction of FHin those with advanced bone age.
- BoneXpert technique of automated bone age and FH predictions is emerging as a viable option to improve precision and accuracy.
- IGF-1 should be interpreted as Z-scores. IGF-1 Z-scores should be computed based on Bidlingmaier A et al references.
- IGF-1 Z score > 0 makes GHD less likely, children with GHD on GH should maintain IGF-1 Z scores > 0 and GH dose should be reduced for those who have IGF-1 Z scores > 3.
- Waist circumference Z-score above 0.55 (70th percentile) in the Asian Indian population warrants screening for metabolic risk.
- Concomitant conditions affecting growth in Turner syndrome (like hypothyroidism, celiac disease) can be detected early on using disease-specific growth charts. Response to growth hormone in Turner syndrome is monitored better on Turner specific charts. Indian TS charts are now available.
- Upper: lower segment ratios above or below 2 Z-score for age, sex and population are abnormal.

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Main ISPAE Conference (17-19 Nov 2023)

The 8th Biennial Pediatric and Adolescent Endocrinology conference - ISPAE 2023 - was successfully held at hotel Hilton, Manyata Tech Park, Bengaluru, between 17-19 November, with 353 registered delegates, the highest in any ISPAE conference so far; and 130 abstracts submitted (of which 6 were oral presentations, 62 e-posters and 47 physical posters). The theme was "Enhancing Pediatric Endocrine Care - Shaping the Future Together". The organizing committee consisted of Chief Patron Dr Raghupathy Palany, Chairperson Dr Shaila Bhattacharyya, Secretary Dr Vani HN, Joint Organising Secretary Dr Pavithra Nagaraj, and EC members of the Pediatric Endocrinology Association of Karnataka.

The conference was inaugurated by Dr P Veeramuthuvel, Project Director of Chandrayaan-3, and graced by ISPAE president Dr Ahila Ayyavoo, ISPAE secretary Dr Rakesh Kumar, and President-elect IAP 2024 Dr Basavaraja GV. The inaugural event was followed by an exciting cultural program with enthusiastic participation by all the organizing committee members. The Fashion Show beautifully depicted the culture of Karnataka and was appreciated by all. On the second evening, delegates were treated to a Yakshagana dance and various folk dances of Karnataka, performed by a cultural dance troupe.

The conference was highly appreciated for a good scientific program covering all aspects of pediatric endocrinology, by our dedicated national faculty and a galaxy of eminent international speakers, including Drs Paul Hofmann, Shylaja Srinivasan, Maria Craig, Kim Donaghue, Raja Padidela, Olaf Hiort, Kenichi Kashimada, and Stefano Cianfarani. The unique features of this meeting were the organization of three concurrent workshops, an Outstanding Young Investigator Award, and a Quiz for postgraduates. The conference was a successful convergence of scientific exchange, cultural celebration, and gastronomic delights, leaving an everlasting impression on all participants.

WINNERS
Outstanding Young Investigator Award *Dr Shruti Arvind Mondkar*, Clinical and Research Fellow. Topic: Development of an artificial intelligence based software for bone age estimation and validation and its applicability in Indian children.
Oral paper winner: *Dr Risha Saxena*. Topic: Predictors and determinants of hepatic fibrosis in obese Indian children and adolescents. **Poster winners**: 1. *Dr Pamali Mahasweta Nanda*. Topic: Applicability of external genitalia score in Indian neonates and children upto 2 years of age. 2.*Dr Chirantap Oza*.Topic: BoneXpert derived Bone Heath Index Reference curves made on healthy 2-17 years old Indian children and adolescents for the assessment of bone health. 3.*Dr Moumita Saha*. Topic: Clinicopathological features and diagnosis in childrenwith hypoglycemia presenting beyond the neonatal period, mandating diagnostic fasting study (DFS) - a single centre retrospective cohort study.
Post graduate Quiz on Pediatric Endocrinology First prize: Dr Rajesh RN & Dr Priyanka R, IGICH, Bengaluru. Second Prize: Dr Hiba Backer & Dr Akshaya Velpula, GMC, Kozhikode. Third Prize: Dr Sandeep PS & Dr Mounika B, KKTCH, Chennai.

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Continuing the IDEAL Journey


Anju Virmani, *Director, Pediatric Endocrinology, Max Smart Super Specialty Hospital, Delhi & Senior Consultant Endocrinologist, Rainbow Hospitals, Delhi &* ***Sheryl Salis,*** *Founder & Director, Nurture Health Solutions, Mumbai.*

It was wonderful to meet the entire IDEAL family in Bangalore, meeting in person so many people who were just names and faces earlier! The group family photo had to be taken on both days to include as many people as possible. The actual award given by ISPAD for "Innovation in Pediatric Diabetes Care 2023" which was received by Drs Sirisha, Sheryl and Rakesh Kumar during the ISPAD meeting in Rotterdam, was handed over to the entire Faculty, each of whom is working tirelessly to make the program better and richer in content. Over the months we have also been able share the difference the program is making in the lives of children and families across the country.

We have just completed IDEAL Batch 6, which consisted of physicians. We are proud to announce that after the grueling course from August to November, 26 trainees were eligible to appear in the equally stringent exit exam, and all passed – 12 with distinction! All this was possible because of the dedicated faculty we are so lucky to have. The convocation-cum-feedback was held on 20th Dec 2023, and they have been welcomed into the IDEALite WhatsApp group for ongoing interaction and continued learning.

The next batch will commence from mid-January 2024, after selection from the applications received. As in the past, batch 7 and 8 (later in 2024) will be of non-physicians: nurses, dieticians, educators already working in the T1D space.

The faculty are also continuing to reach out to the other important groups, in the form of the BEST program for parents (batch 6 from December 2023) and the monthly IDEAS sessions (1st Sunday of each month) for school teachers. December faculty were Dr Lokesh Sharma, Dr Naina Bhat and Ms Chhavi Kohli. In January, faculty are Dr Leenatha Reddy, Dr Shreeja M and Ms Aishwarya.

AWARDS/ PUBLICATIONS by ISPAE MEMBERS

APPES 2023, Vietnam

Dr Jahnavi M and Dr Swati Dokania attended the Asia Pacific Paediatric Endocrine Society (APPES) meeting in Vietnam from 2-6 December, 2023. It was a global platform of faculty and fellows from all over the Asia-Pacific nations, including Australia, Singapore, Malaysia, Thailand, Phillipines, China, Japan, Taiwan and Indonesia.

It was a proud moment when **Dr Jahnavi** received the second prize in case presentation, among 50 fellows from the Asia-Pacific countries. It was judged based on the case, ease of presentation, clarity of the slides, in-depth knowledge of the topic and the ability to tackle questions from the audience.

***Dr V Soundaram**, Pediatric Endocrinologist, Apollo Children's Hospital, Chennai.* E-poster on *Rare cause of Endocrine Hypertension - Apparent Mineralocorticoid Excess with a novel mutation* accepted in the late breaking abstract category, of the ESPE conference held at The Hague, Netherlands, from Sep 21-23 , 2023.

***Dr Anil Kumar Vedwal,** Chief Functionary, Yog Dhyan Foundation. YDF* was awarded the *"Excellence in Diabetes Healthcare Trophy"* as the *"Community Health Champion",* by Zee News Media during the event 'Decoding Diabetes Summit' on 8 Nov 2023. Shri Saurabh Bhardwaj, Delhi Health Minister, bestowed the honor. The ceremony was attended by the YDF team, including Mr LD Sharma, Ms Poonam Sharma, Mr Naman Sharma, Ms Amarjeet Kaur, Mr Anuj, Mr Praves, Ms Shivani, Ms Ashu and Ms Prateeksha. Their contribution to the cause of fighting against T1D was acknowledged and appreciated by all present. Dr Vedwal was also part of the panel discussion, with Ms Amarjeet Kaur (YDF) and Mr Sanjay Rajpal (Ypsomed).

ACTIVITIES BY ISPAE MEMBERS

Inauguration of the Center of Excellence For Type 1 Diabetes Mellitus

Dr Vani HN,IGICH, Bengaluru

The Center of Excellence for Type 1 Diabetes (T1D) at IGICH was inaugurated by Ms Camilla Sylvest, Mr Vikrant Shrotiya, and Dr Diwakar Mittal from Novo Nordisk on 28 August 2023. Director Dr Sanjay KS, Medical Superintendent Dr Prahlad Kumar, and Prof. Raghupathy P graced the occasion. The grants given by Novo Nordisk were utilized to improve the infrastructure of the Department, with consultation chambers, play area and patient education areas, and displays of picture-based educational material regarding insulin site rotation, balanced meal plans, hypoglycemia, and sick day management for better understanding by children and parents. Also as a part of the program, children with T1D with good glycemic control and academic excellence were offered scholarships.

CME Pediatric Endocrinology, Pediatric Clinics of South Delhi

Dr Sangeeta Yadav, Professor, Hamdard Institute of Medical and Sciences &Research, New Delhi

A half day CME was held on Pediatric Endocrinology on 13 Sep 2023 at Safdarjung Hospital, New Delhi, in association with IAP South Delhi. Dr Yadav gave a lecture on Growth, followed by Case-based approach to disorders of growth, moderated by Dr Anju Seth, discussed by Dr R Khadgawat, Dr Vandana Jain, Dr Archana Arya, Dr IPS Kochar, and Dr Aashima Dabas. The session was attended by 50 participants and appreciated by all.

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Free growth hormone distribution under National Policy for Rare Diseases

Dr Vani HN, &Dr Raghupathy, IGICH, Bengaluru

Treatment for children with Growth Hormone deficiency, Prader Willi syndrome, Noonan syndrome and Turner syndrome was included under the National Policy for Rare Diseases, with IGICH the first center to start free GH supply in India, under this program. Since the inaugural function of GH distribution at IGICH on 8 September 2023, an event graced by Dr Sanjay KS (Director), Prof Raghupathy, Dr Meenakshi Bhat (Senior Geneticist) and Prof. Sanjeeva GN, over 40 children are receiving GH, among a total of more than 100 beneficiaries with various disorders.

GLYCEMIA- Empowering Class Teachers of Children with T1D

Dr Dhanya Soodhana, Pediatric & Adolescent Endocrinologist, Aster MIMS, Calicut; Dr Rajesh TV, Additional Professor & Dr Vijayakumar M, Professor and Head, Pediatrics, GMC, Calicut

A novel special empowerment initiative called “GLYCEMIA”, dedicated to enhancing the knowledge and skills of class teachers in handling T1D, was conducted in Kozhikode. The program was organized by the District Institute of Education and Training (DIET), Kozhikode, and took place at Government Girls VHSS School, Kozhikode, on 11 October, 2023. Class teachers of 78 children with T1D from government, aided and unaided schools in Kozhikode district were trained. The training was conducted under the guidance of Dr Vijaya kumar M, Dr Rajesh, Dr Suresh Kumar, and Dr Dhanya Soodhana, with the objective of equipping teachers with the knowledge and skills required for the management of T1D and self-care of children during school hours. The topics of discussion included basic pathophysiology of T1D, insulin administration, management of hypoglycemia and sick days.

Nuts and Bolts of Growth and Diabetes

Dr Ravindra Kumar, Hindu Rao Hospital, New Delhi

A pre-conference workshop as part of the Pediatric Conference of North India was held on 15 Sep 2023 at Hindu Rao hospital. The program included common growth disorders, approach to short stature, and ambulatory management of diabetes. The faculty included Drs Sangeeta Yadav, Ravindra Kumar, Richa Arora, Ayush Gupta and Medha Mittal. The program was attended by over 65 delegates, and liked by all.

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CME on Pediatric Diabetes

Dr Aashima Dabas, Maulana Azad Medical College, New Delhi

On 3 Nov 2023,a CME attended by 75 pediatricians and residents, was held on Pediatric Diabetes and Metabolic Disorders, covering DKA, ambulatory management of T1D, adjusting insulin, diabetes technology and obesity. The faculty were Drs Vandana Jain, Preeti Singh, Ravindra Kumar, and Deepika Harit. Talks were followed by an open house discussion.

Access to Diabetes Care
World Diabetes Day & Other Functions 2023

***Mr Harsh Kohli**, IDEALite Batch 1, Co-founder Diabetes India Youth in Action (DIYA)*

The IDEAL course in itself is very well designed, and enlightening to attend, but through this write up, I want to share the perks I received *after* joining IDEAL.

1. Access to the finest pediatric endocrinologists across the country. More often than not, families of newly diagnosed kids approach us (Diabetes Educators)for further guidance. IDEAL provided a platform of pediatric endocrinologists across the country who we got to know, could trust, and communicate with for referrals.

2. Access to a big pool of fellow Pediatric Diabetes Educators: IDEAL has connected us with each other as a large pool of Diabetes Educators, who can be approached as resource persons and to solve problems. An example: recently, a family traveling to Dubai forgot their insulin supplies at the airport. They called me in panic - I was able to connect them with Ms Lubna from UAE, and she assured them of all help. Although the family could arrange supplies from somewhere else, the timely reply and help from Lubna helped calm their nerves.

***Ms Nandini Nanda**, Dietician (IDEALite), **Dr Aashima Dabas**, Maulana Azad Medical College and Lok Nayak Hospital, New Delhi*

The Dept of Pediatrics MAMC organized an event on 16 Nov 2023 in collaboration with the Dept of Public Health Dentistry, Maulana Azad Institute of Dental Sciences, Delhi. Healthcare professionals conducted informative sessions on dental care and hygiene in diabetes, and provided valuable screening in the form of free dental health check-ups to ensure early detection of problems. The event provided an opportunity to raise awareness about the impact of diabetes on general and dental health of people and inspire positive lifestyle changes.

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Dr Tejasvi Sheshadri, Consultant Pediatric & Adolescent Endocrinologist, Sparsh Super Specialty Hospital, Shishuka Children's Hospital, Bengaluru & RL Jalappa Diabetes & Endocrine Center for Children, Kolar

An intensive 3-hour workshop on T1D organized at Sparsh Super Specialty Hospital on 20 Oct 2023 was attended by doctors, dieticians, nurses, 15 children with T1D and parents. Ambulatory management of diabetes, carbohydrate counting and dietary principles were discussed. Hands-on workshops were conducted on CGMS by the Abbott Libre team and on insulin pumps by the Medtronic team.

Another event was held on 16 Nov 2023 at RL Jalappa Diabetes Center for Children, Kolar. This was a cultural event attended by 25 children with T1D and their caregivers, eagerly supported by the MAKE A WISH Foundation, which gifted the children with cycles, mobile phones, tabs etc., bringing a smile to their faces. The celebration ended on a motivational note, emphasizing the need for good glycemic control and diabetes education.

***Yog Dhyan Foundation Activities: October to December 2023, Dr Anil Kumar Vedwal**, Chief Functionary & **Ms Bindia Chhabra**, Vice President, Yog Dhyan Foundation, New Delhi*

YDF activities in this quarter (Oct-Dec 2023) continued to be varied and hectic. A charity event supported by Rotary Club Southernon 27 Oct 2023 was joined by Rotary Southern President Mr Sidharth Sehgal, Past President Mr Vinay Mehndroop, and Secretary Ms Medhurime John, along with Dr Jyoti Kakkar, Dr Preeti Singh, Mr Sanjay Rajpal, Mr Tarique Faridy, Mr Amit and Mr Satish Srivastava. It was organized and managed by YDF volunteers and children with T1D. A video encapsulating the YDF journey, was followed by a dance performance to the YDF anthem by some of the children and their parents. It concluded with a supportive speech and commitment to YDF work by the Rotary Southern guests, who made a large donation and committed support to two children with T1D.

On 5th November, Diwali was celebrated with dancing, poems and skits, with stalls by T1D families selling gluten free snacks and Diwali gifts. On 13 November, to mark WDD, Dr Meena Chhabra donated another atta chakki to the family of a 5y old girl with T1D and celiac disease, from a low socioeconomic stratum. By being able to buy gluten free grains from the market, wash and grind them at home, the

family can easily afford reliable GFD for the child and also sell gluten free flours at low cost to others in need.

Our monthly online meetings “Look, One Virtual Event” (on Zoom) had heroes Ms Jyotsana Rangeen and Mr Varun Sharma. Our speakers and panelists included Dr Shivani Desai, Dr Sumeet Arora, Dr Sanjay Singh, Mr Harsh Kohli, Dr Lokesh Sharma, Mr Anil Kumar, Ms Preeti, Ms Ashu, and Mr Jitesh Wadhwa. The topics were 'Research advances in T1D' and 'T1D in school – parents' rights and responsibilities'.

We have our annual Test Camp coming up on 7th Jan 2024, and are commencing a collaboration with the prestigious Shroff Eye Center, through the good offices of the eminent ophthalmologist, Dr Sharad Rohtagi, to ensure regular preventive eye checks and eye care as needed.

Dr V Soundaram, Pediatric Endocrinologist, Apollo Children's Hospital, Chennai

WDD celebrations on 29 Oct 2023 were attended by nearly 50 participants. A post graduate quiz on pediatric diabetes was followed by lectures on when to suspect diabetes, ambulatory management of TID, case scenarios of uncommon forms of diabetes, and myths in diet, and ended with a hands-on workshop for insulin pens, CGMS and CSII devices.

Dr Vani HN, Associate Professor, Indira Gandhi Institute of Child Health, Bengaluru

A fun meet was held at IGICH in association with CDiC (Changing Diabetes in Children) on 2 Dec 2023. Inaugurated by Dr Sanjay KS (Director), Dr Raghupathy P and Dr Vani, the day began with children showcasing their creative skills by painting their dreams, dressing up as their role models, dancing and singing. Mr Naveen Kodandarama, a T1D educator who is himself PwT1D, spoke about his journey since 1980s, highlighting the role of innovations in T1D.DieticianMs Rachitha Avinash discussed balanced meal plans and demonstrated some fun healthy and exciting recipes. The kids took part in a quiz organized by the Fellows, followed by a scrumptious and healthy lunch. The day ended with distribution of prizes for the best glycemic control, academic achievements at schools, best performances of the day and an exciting magic show organized by “A Little Dream”, a non-profit organization.

***Dr Shuchy Chugh** and **Ms Sharanya S Shetty,** Dietitian and Diabetes educator*

On the occasion of WDD, Novo Nordisk Education Foundation (NNEF), and Karnataka Institute of Endocrinology & Research (KIER), Bengaluru, organized an event for families of children with T1D. Mr Brais Dacal from Spain (PwT1D since the age of 7y), a professional cyclist who has particIpated at national and international levels, was the Guest of Honor. The program began with taking him for a fun cycle tour of the campus, and welcoming him with a beautiful invocation song followed by a classical dance performance, mashup songs, and violin and clapbox recitals. Dr Ravi

K (Director, KIER), Dr Santhosh Olety, Mr Vikrant Shrotriya (Managing Trustee, NNEF) and Mr John Dawber (CVP & MD, NN Global Business Services) conducted an interactive educational session. Mr Brais narrated the story of his journey with T1D and his achievements, talking about the challenges and how he overcame them to pursue his passion for cycling. He concluded on a powerful note - "Believe in yourself - and only we can do that". The appreciation received by KIER in terms of services and awareness programs was humbling. The program ended with a scrumptious lunch and a motivated audience!

Mr Prashanth Mani, General Secretary, T1D Foundation of India; Mr Lakshmi Narayana, Ms Deeptha, & Mr Jitheesh Mathew, Diabetes Educators & IDEALites

The T1D Welfare Society of Kerala hosted the "Madhura Nakshathra Sangamam 3" event on 24 October 2023, at the Pent Auditorium in Payyannur, for children with T1D and their parents from the Kannur and Kasargod districts of Kerala. About 100 persons (50 children and their parents) attended the event, which had educational sessions led by Prashanth Mani, Lakshmi Narayana, Deeptha, and Jitheesh Mathew on fundamentals of T1D, insulin administration, ISF, ICR, SMBG, CGMS, DKA & balanced diet, interspersed by enjoyable activities like a magic show and musical performances. Ms Deeptha taught the children the *Insulina dance*, a fun way to learn insulin injection site rotation. The Society gave mementos to parents who were managing more than one child with T1D. The day concluded with special thanks to the organizers, including Mr Abdul Jaleel (Secretary, T1DWS), Mr Jalil MC (Kasargod District Coordinator), Mr Suhail C and Ms Ramla C (Kannur District Coordinators) and Biolab Laboratory who provided free HbA1c tests.

Ms Beenu Singh, IDEALite (Batch 2)

With Diabetes Awareness Month kicking in, we, Diabuddies of Karnataka, organized a meetup at Lalbagh, Bengaluru on 15th October 2023 for adults/kids with T1D and their parents/caregivers. The feeling of not being alone is itself motivating and inspiring. We all discussed our journey of diagnosis and basics of T1D management. Parents spoke their hearts out with each other about the management on a day-to-day role of even small

changes that make a big difference in T1D control. Kids discussed/showed their hypotreats and devices like insulin pen, glucometer and CGM.

Diabetes awareness program in KIER

As a part of World Diabetes Awareness month, an educative program was conducted for children with T1D and their families in KIER. Supported by Novo Nordisk, it aimed to create awareness of T1D management, with emphasis on "Sick day management". It was an interactive session which concluded with addressing the queries.

BOOK RELEASE

Celiac Disease Since Childhood: Challenges & Solutions *by Dr Anjali Verma, Associate Professor, Pediatrics, Pt BD Sharma PGIMS, Rohtak and Ms Meenu Gandhi, Dietician, State Institute of Mental Health.*

The book was released by worthy Vice Chancellor of University of Health Sciences, Dr Anita Saxena, on 14 November 2023 (Children's Day and WDD). Prof Saxena emphasized the importance of such books for patient education in the management of celiac disease (CD). The book aims to address questions about CD, with techniques of smart cooking, detailed meal plans, as well as easy recipes for agluten free diet; with a special chapter on millets, which are gluten free and have low glycemic index.

Childhood Diabetes- Support from NGOs

Ms Sharanya S Shetty, *Dietitian and Diabetes Educator, &* ***Ms Cynthiyal T,*** *Diabetes Educator, Karnataka Institute of Endocrinology and Research*

T1D is not only a long-term care process but also carries a lot of financial baggage for caregivers. In resource limited countries like India, for T1D families who are in the category of low & middle income groups, financial assistance programs or sponsors become a major ray of hope, as they can help reduce some of the costs associated with diabetes management or provide any other benefits. To lighten the burden on some families, NGOs have stepped forward in extending their hand to support and encourage the children living with T1D in different ways. Our institute children have been fortunate to receive different kind of support from several NGOs over the years.

NNEF: On 3rd March 2023, KIER hosted an event with Novo Nordisk Education Foundation (NNEF) and Novo Nordisk Global Business Services (NNGBS), graced by HE Ms Lina Gandlose Hansen (Honorable State Secretary for Trade & Global Sustainability of Denmark), Ms Lene Hylling Axelsson (Senior Vice President) and Mr John Dawber (Corporate Vice President & MD, NNGBS) along with members of the Danish consulate. It was coordinated by Mr Diwakar Mittal and Dr Shuchy Chugh. Ten children with T1D were honored with Rs 15,000 each for educational support.

Uthishta: is a multifaceted organization started in 2013 with the noble purpose of serving the underprivileged and deserving sections of society. They have assisted in school infrastructure and student scholarship: 18 children with T1D from our institute have received Rs10,000 each towards

educational support. They also provide free ambulance services, which have been availed of by children of our institute during emergencies. The educational support can be availed of by deserving children who can contact them at info@uthishta.org(email id), or at www.uthishta.org (website).

Rotary Palmville, Rotary Lakeside, People to People Foundation (PPHF), Happiest Minds: have helped by providing free Insulin supplies, glucometers and strips since 1.5years.Nearly 125 children have been adopted by these organizations. Idhayangal Trust has also helped by generously supplying free cartridges. **Biocon** has given constant support in providing insulin for many years.

Make A Wish Foundation of India (MAWFI): is a non-profit organization which provides life-changing wishes for children between the ages of 3-18y with chronic disorders or critical illnesses. They grant the wishes of all eligible children, without discrimination against caste, race, creed, geographical location or socio-economic status. They do this because a wish is an integral part of a child's treatment journey, with research showing that children whose wishes have been granted can build the physical and emotional strength they need to fight a critical illness.

The Bangalore Division of MAWFI has been serving KIER since 2022, having granted 307 wish gifts to date - comprising laptops, tabs, mobile phones, cycles, battery cars, battery bikes, a variety of toys, and also fulfilled a unique wish to meet and play football with the Captain of the Indian National Team, Mr Sunil Chhetri. To know more about them, visit their website www.makeawishindia.org

PRACTICAL TIPS
(by Mr Harsh Kohli)

1. When starting a Freestyle sensor, apply it and allow 6-12h before activating it - this results in values being more accurate

.2. Glimp allows calibration of Freestyle sensors, but remember to enter the finger prick BG value after 15 min.

3. Nightscout allows data to be accessed data remotely, and also gives alarms, but it does mean a phone with internet connection has to be with the child all the time.

4. Crosscheck the sensor reading if it is under 70 or over 350, with a finger prick meter reading. Variation is seen with low and very high readings and when BG is changing rapidly.

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TRAINEES SECTION

Dr Tejasvi Sheshadri, *Consultant Pediatric & AdolescentEndocrinologist, Sparsh Super Specialty Hospital, Shishuka Children's Hospital, Bengaluru*

Wishing all readers a Merry Christmas and a Happy New Year!

THE QUIZMAS ANAGRAM!

Unwrap the letters to find the answers from the clues given related to Diabetes. Discover the phrase at the end using the assembled numbers.

CLUES

1. The most common acute complication of Type 1 Diabetes Mellitus.
2. The first antibodies discovered in Type 1 Diabetes Mellitus.
3. Side effect of Metformin.
4. Syndrome in male infants presenting with early onset diabetes, eczema and enteropathy.
5. Mode of inheritance of monogenic diabetes.
6. KCNJ11 mutations present with neurological involvement. What is the most severe form of this condition called
7. Gut-derived factors that potentiate insulin secretion following the oral ingestion of nutrients.
8. New ultra long acting insulin analog.
9. What does Urine ketodiastiks measure.
10. Syndrome presenting at birth with low birthweight, near-total lack of adipose tissue, acanthosis nigricans and extreme insulin resistance
11. MODY with stable mild hyperglycemia, mostly asymptomatic and not requiring treatment
12. Most common principle enzymatic reaction utilized by current glucose meters
13. Treatment of syndrome caused by mutations in SLC19A2 accompanied by diabetes mellitus, anemia, sensorineural deafness
14. SGLT2 inhibitor recently approved by FDA for treatment of T2Din adolescents

PUZZLE

1. IOALHYPCMYEG

2											

2. ACI

		5

3. TLIACC SIADSOC

											9		

4. EPIX

		3	

5. MUAOLSTOA OITNDAMN

												11				

6. DEDN

		6	

7. CINREINT

		7					

8. DECGDULE

	3						

9. IATCCOACEET CDAI

			1							5			

10. RSLAPEUCMIEHN

			8									

11. ASIKNEUGCLO

					12					

12. UECOSLG AXSOEID

				9								

13. NEIHTIMA

10						

14. FEIOAINMLZGPL

		4									

Complete the phrase

1	2	3		4	5	6	7	8	3	5	9		9	10	8	11	12	3

Answers to be emailed to Dr Tejasvi Sheshadri at tejasviseshadri@gmail.com

APPES
ASIA PACIFIC PAEDIATRIC ENDOCRINE SOCIETY

APPES 2024
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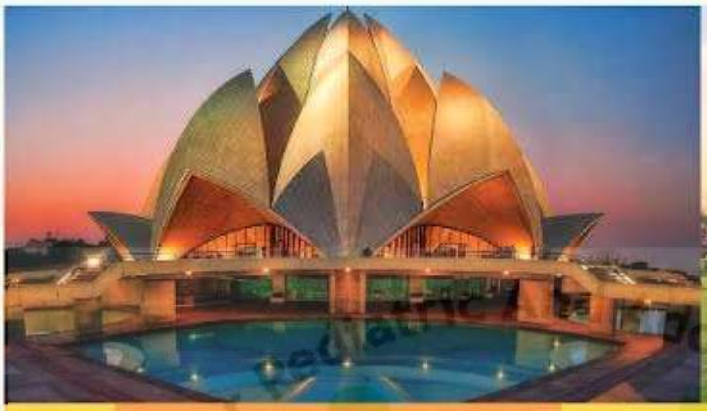


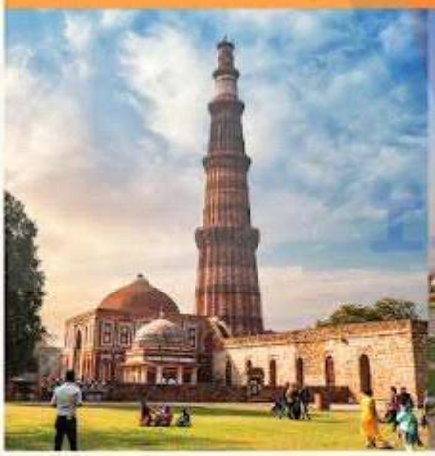
SAVE THE DATE

13th Biennial Scientific Meeting of
Asia Pacific Pediatric Endocrine Society 2024

APPES 2024

October 2-5, 2024 (Wednesday to Saturday)

**India International Convention & Expo Centre,
Dwarka, New Delhi**



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