RSSDI Indian Diabetes

EDUCATOR JOURNAL

Theme of the Month

Diabetes Across the Ages

To keep Members of Diabetes Care team abreast about
DSME/DSMS - (Diabetes Self management Education/Support) Concepts

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To keep the members of diabetes care team abreast with DSME and DSMS concepts

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*DSME: Diabetes Self-Management Education, DSMS: Diabetes Self-Management Support

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FOREWORD

Research Society for the Study of Diabetes in India (RSSDI) founded by Prof. MMS Ahuja in the year 1972 is the biggest scientific association of healthcare professionals involved in promoting diabetes education and research in India. RSSDI is happy to collaborate with USV to support their endeavour to make India the 'Diabetes care capital of the world'. Through this collaboration, RSSDI would like to strengthen the cadre of diabetes educators by empowering them with recent updates in diabetes management helping bridge the gap between the physician and the patient. Today, the rule of 50% is prevailing in terms of awareness, detection, treatment and control in T2DM. Our aspiration is to achieve 90-90-90-90 i.e.90% of people with diabetes should be made aware, 90% should be detected, 90% of those detected should be treated, and 90% of those treated should reach their goals.

Indian Diabetes Educator Journal (IDEJ) is the first of its kind in India, and the longest running monthly diabetes educator journal since April 2015 and continues its endeavour to spread awareness, knowledge and enable healthcare teams to manage individuals with diabetes and empower them for self-care. RSSDI IDEJ will continue to keep the members of diabetes care team abreast with concepts of Diabetes Self-Management Education/Support (DSME/S) with a reach of 44000 doctors and diabetes educators digitally.

As diabetes affects individuals across all stages of life, each age group faces unique challenges in its management. This edition of IDEJ focuses on "Diabetes Across the Ages" exploring how diabetes care evolves from childhood to adulthood and the elderly. This issue discusses age-specific considerations, from pediatric diabetes management and adolescent transitions to adult lifestyle adjustments and geriatric care. This issue aims to equip diabetes educators with the knowledge to support individuals at every stage of life. Our goal is to provide practical guidance for delivering personalized, age-appropriate diabetes care that promotes lifelong health and well-being.

We sincerely thank our contributors for making this issue delightful reading for our readers. We dedicate this journal to all the healthcare professionals who are working relentlessly towards making "India–The Diabetes Care Capital of the World."

Sincere Regards,

Dr. Sanjay Agarwal
RSSDI Secretary

*DSME: Diabetes Self-Management Education, DSMS: Diabetes Self-Management Support

Expert Contributors
of the month

Dr. Rajesh Mistry

MD, MSU

Consulting Physician and Clinical Cardiologist, Heart Care, Navsari

Article: Navigating Diabetes from Youth to Golden Years

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Article: Managing Type 1 Diabetes in Children: Challenges Across Age Groups

Dr. R. K. C. Mishra

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Consultant Physician, Dr. R K C Mishra Clinic, Gorakhpur

Article: Advantages and Difficulties of Using Diabetes Technology in Older Adults

Dr. Ashwin D. Vadher

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Consultant Physician and Diabetologist, Shreeji Hospital & Diabetes Care Centre, Ahmedabad

Article: Alstrom Syndrome: A Rare Multi-system Genetic Disorder

Dr. Dhruvi Hasnani

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Expert Insights: An Interview with Dr. Dhruvi Hasnani on Diabetes Across the Ages

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Article: Simplifying Complete Blood Count Test (Red Blood Cells)

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Article: Impact of Hormones in Diabetes Across Different Life Stages

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Consultant Physician and Diabetologist,
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Article: Managing Hypoglycemia in Children and Adolescents

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Article: Diabetes Educator's Toolkit
Skill of the Month – Listening and Silence

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Article: Frequently Asked Questions on Diabetes Across the Ages

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Issue No. 122, May 2025

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Dr. Rajesh Mistry

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Consulting Physician and Clinical Cardiologist, Heart Care, Navsari

Diabetes is a complex metabolic disorder affecting individuals across all age groups, from infancy to old age. Although diabetes is frequently linked to adults, distinct types of the disease can present differently throughout life, such as type 1 diabetes in the early stages of life and neonatal diabetes. All of these require tailored approaches to diagnosis, management, and treatment.

Neonatal diabetes: Neonatal diabetes, diagnosed within the first six months of life, is a rare condition often caused by genetic mutations affecting insulin production. Unlike type 1 diabetes mellitus (T1DM), neonatal diabetes can sometimes be managed with oral medications instead of insulin. Genetic testing is essential for early diagnosis to choose the best course of treatment.

Type 1 diabetes in children and adolescents: Usually diagnosed in childhood or adolescence, T1DM is an autoimmune disease. Absolute insulin insufficiency results from the immune system unintentionally targeting the pancreatic beta cells that produce insulin. Insulin therapy using injections, pens, or insulin pumps, glucose monitoring, and lifestyle changes to balance blood glucose control, exercise, and nutrition are all part of management. Young people with T1DM have particular difficulties, including emotional anguish, adjusting to school, and making the switch to adult self-care.

Maturity onset diabetes of the young (MODY) and latent autoimmune diabetes in adults (LADA): MODY is a rare form of diabetes that runs strongly in families. It differs from T1DM and type 2 diabetes (T2DM) and is caused by a mutation in a single gene. If a parent has this gene mutation, their child has a 50% chance of inheriting it from them. The key features of MODY include being diagnosed with diabetes under the age of 25, having a parent with diabetes, having diabetes in two or more generations, and not necessarily needing insulin. They are usually treated with oral medications. LADA is an autoimmune condition that seems to straddle T1DM and T2DM, hence also called type 1.5 diabetes. They are often misdiagnosed as T2DM and may initially respond to oral medications but eventually require insulin therapy.

Type 2 diabetes: While traditionally considered a disease of older adults, T2DM is increasingly prevalent in younger populations because of sedentary lifestyles, high obesity rates, and poor eating habits. Unlike T1DM, T2DM is characterized by insulin resistance and a gradual decline in insulin production. Management strategies include lifestyle modifications, oral medications, weight management, and, at times, insulin. In middle-aged adults, additional factors such as work stress, metabolic syndrome, and co-existing conditions like hypertension further complicate diabetes care.

Diabetes in the elderly: Elderly individuals with diabetes face distinct challenges, such as an increased risk of hypoglycemia, cognitive decline, and frailty. Treatment goals often prioritize avoiding low blood glucose episodes, maintaining functional independence, and minimizing medication side effects. A personalized approach, considering kidney function, comorbidities, and simplified medication regimens, is essential for optimal management in this age group.

Diabetes is a lifelong condition that presents differently at various life stages, necessitating age-specific management strategies. From neonatal diabetes requiring genetic testing to T1D in youth, MODY, and LADA in young adults, T2DM is increasingly common at young ages nowadays, and in elderly diabetes management, each stage brings unique challenges. A tailored, patient-centered approach ensures better health outcomes and an improved quality of life for individuals navigating diabetes at different ages.

Resources:

1. Milanesi A, Weinreb JE. Diabetes in the Elderly. [Updated 2020 Sep 25]. In: Feingold KR, Anawalt B, Blackman MR, *et al.*, editors. Endotext [Internet]. South Dartmouth (MA): MDText.com, Inc.; 2000-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK279147/
2. Sapra A, Bhandari P. Diabetes. [Updated 2023 Jun 21]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK551501/
3. Types of diabetes, Available at: https://www.diabetes.org.uk/about-diabetes/types-of-diabetes. Accessed on 18th March 2025.

Managing Type 1 Diabetes in Children: Challenges Across Age Groups

Dr. J. Rawat

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Consultant Physician and Diabetes Specialist, Rawat Medicare Centre, Delhi

Type 1 diabetes mellitus (T1DM) is an autoimmune condition that affects approximately 1.52 million individuals under the age of 20 worldwide. Managing T1DM in children presents unique challenges that vary depending on their developmental stage, requiring tailored strategies to ensure optimal glycemic control and overall well-being.

Infants and toddlers: Managing T1DM in infants and toddlers is particularly challenging due to their limited ability to communicate symptoms of hypoglycemia and their frequent, unpredictable eating habits. Parents and caregivers must be vigilant in monitoring glucose levels and administering insulin while managing feeding schedules. Additionally, the psychological burden on parents is significant, as they must constantly monitor their child's condition and adjust insulin dosages accordingly. Strategies for managing T1DM in this age group include structured diabetes education, utilizing continuous glucose monitoring (CGM) devices, and establishing consistent meal patterns to stabilize blood glucose levels.

Preschoolers: As children grow, their increasing independence complicates diabetes management. Preschoolers may struggle to express symptoms, making hypoglycemia hard to detect. In school, untrained staff can pose risks in emergencies. Solutions include training school personnel, clear communication of the child's care plan, and age-appropriate diabetes education.

School-aged children: During this stage, children may take on more responsibility for their diabetes management but still require parental supervision. These children can be involved in understanding counting carbohydrates and recognizing blood glucose fluctuations, but they rely on parental support for insulin management. Social challenges also arise, as children may feel different from their peers or struggle with dietary restrictions at school events. Emotional well-being is crucial, as children with T1DM are at an increased risk of anxiety and depression. Encouraging peer support, educating classmates and teachers, and fostering a positive approach to self-care can help mitigate these challenges.

Adolescents: Teenagers with T1DM face heightened challenges due to hormonal changes, increased risk-taking behaviors, and a desire for independence. Many adolescents may neglect their diabetes management, skip insulin doses, or engage in risky activities such as alcohol consumption, which can dangerously lower blood glucose levels. Additionally, the risk of eating disorders is higher in this age group. It is essential to provide emotional support, encourage self-management skills, and educate adolescents on the consequences of poor diabetes control. Healthcare providers should facilitate open discussions about lifestyle choices and reinforce the importance of treatment adherence.

Transition to adulthood: The transition can be difficult for adolescents, as they must assume full responsibility for their health—many struggle with managing appointments, monitoring blood glucose levels, and adjusting insulin regimens. A structured transition plan with support from healthcare providers, family members, and peer groups can help young adults navigate this phase successfully.

Managing T1DM in children and adolescents requires a multifaceted approach that evolves with their developmental stages. From infancy through adolescence, caregivers, educators, and healthcare providers play crucial roles in ensuring that children with T1DM receive the necessary support to maintain glycemic control and lead fulfilling lives. Tailored interventions, education, and emotional support can significantly enhance diabetes management and long-term health outcomes.

Resources:

1. Type 1 diabetes estimates in children and adults, 2022 Diabetes Atlas report, International Diabetes Federation (IDF), Available at: https://diabetesatlas.org/atlas/t1d-index-2022/
2. Lan YY, Kovinthapillai R, Kędzia A, Niechciał E. Age-based challenges to type 1 diabetes management in the pediatric population. *Front Pediatr.* 2024;12:1434276. Published 2024 Sep 2. doi:10.3389/fped.2024.1434276

Advantages and Difficulties of Using Diabetes Technology in Older Adults

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The use of technology for diabetes management has increased over the past decade. These advancements in insulin administration and glucose monitoring systems have made the approach to blood glucose management effective and convenient. However, just like any other aspect of technology, it poses significant challenges for older adults with diabetes that need to be addressed.

Advantages of diabetes technology in older adults

1. **Improved glycemic control:** Studies have shown that the use of insulin pumps, smart pens, automated insulin delivery systems, and continuous glucose monitor (CGM) have reduced the risk of hypoglycemia, minimized glucose excursions, and improved glycated hemoglobin (HbA1c) levels in older adults with diabetes by ensuring timely interventions due to easy access to trends in blood glucose levels and increased awareness.
2. **Enhanced quality of life:** The use of technology has been associated with improved quality of life, which can be attributed to reduced fear of hypoglycemia, increased awareness of blood glucose levels, and improved sleep. Using CGM and insulin pumps can also cut down the need for recurrent finger pricks and multiple daily injections, respectively. This also promotes independence.
3. **Reduced risk of complications:** Improved glycemic control also helps reduce the risk of developing diabetes-related complications.
4. **Better monitoring and support:** Cloud-based platforms and mobile applications make it easier for the elderly to download and share their blood glucose readings remotely with their caregivers and healthcare team. This creates better patient engagement and fosters personalized treatment.

Challenges of diabetes technology in older adults

1. **Cognitive and physical impairment:** Age-related decline in vision, hearing, manual dexterity, and cognitive decline hamper their ability to effectively use and interpret diabetes technology.
2. **Technological literacy and adaptation barrier:** Older adults are usually not familiar and comfortable with technology and are often reliant on family members or caregivers for the same, which can negatively impact their sense of autonomy. Hence, they require additional education and support to adapt to technology.

3. **Financial constraint:** The cost of diabetes can be very high. Devices like CGM, insulin pumps, etc., are not covered under insurance everywhere and cannot be afforded by many.
4. **Psychosocial factors:** Anxiety or fear of technology paired with a lack of trust in the accuracy of the devices can further stop older adults from completely embracing the technology. Constant alerts and alarms can also lead to mental fatigue, and data overload can cause anxiety.

While technology can ease the burden of diabetes management in older adults by improving glycemic control and enhancing quality of life, it is also necessary for healthcare providers to address the challenges and barriers faced by them. Identifying appropriate technology and patient preferences, assessment of barriers, and reassessment of the capacity of use periodically is essential. Tailored education to both the patient and the caregiver, simplified instructions, and financial assistance programs should be provided to help older adults successfully integrate diabetes technology into their daily lives.

Resources:

1. Toschi E, Munshi MN. Benefits and Challenges of Diabetes Technology Use in Older Adults. *Endocrinol Metab Clin North Am.* 2020;49(1):57–67. doi:10.1016/j.ecl.2019.10.001
2. Maltese G, McAuley SA, Trawley S, Sinclair AJ. Aging well with diabetes: The role of technology. *Diabetologia.* 2024;67(10):2085–2102. doi:10.1007/s00125-024-06240-2

Alstrom Syndrome: A Rare Multi-system Genetic Disorder

Dr. Ashwin D. Vadher

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Consultant Physician and Diabetologist,
Shreeji Hospital & Diabetes Care Centre,
Ahmedabad

What is Alstrom syndrome (ALMS)?

Alstrom syndrome is an uncommon autosomal recessive condition that affects ciliary function in several organs and is brought on by mutations in the ALMS1 gene.

The following progressive, multisystem issues result from this mutation:

- Hearing and vision loss (beginning in early childhood)
- Insulin resistance, childhood obesity
- Type 2 diabetes mellitus (T2DM)
- Hypertriglyceridemia and metabolic dysfunction, heart disease, or cardiomyopathy
- Progression of lung, kidney, and liver disease

ALMS, an extremely rare condition with an estimated frequency of 1 in 1,000,000 live births, is sometimes discovered late because of its intricacy.

How does Alstrom syndrome cause diabetes?

Insulin resistance is one of the most prevalent metabolic conditions in ALMS. Hyperinsulinemia, or elevated insulin levels, can manifest as early as 18 months of age. Blood glucose levels become consistently elevated as a result and raise the risk of type 2 diabetes. Although some people have diabetes as early as age five, the median age of onset is sixteen. ALMS-related diabetes is not necessarily associated with obesity, in contrast to type 2 diabetes. There is an elevated risk of dyslipidemia—abnormal low-density lipoprotein (LDL), low high-density lipoprotein (HDL), and high triglyceride levels increasing the risk of heart disease.

Management of diabetes in Alstrom syndrome

A comprehensive approach and early management are crucial to delaying the course of ALMS and enhancing quality of life because there is currently no cure.

- Lifestyle modification: A low-glycemic, high-fiber diet that includes whole grains, lentils, legumes, whole fruits and non-starchy vegetables, lean meats, nuts, and regular physical activity. Regular exercise has been modified for people with sensory impairments, such as swimming, walking, and resistance training.
- Pharmacotherapy, including metformin, DPP-4 inhibitors, and, if required, insulin.

Regular testing of lipids, blood pressure, heart function, liver, kidneys, vision, hearing, and hormones aid early detection and management of complications. For efficient management, a thorough, interdisciplinary care team including endocrinologists, ear, nose, and throat (ENT) specialists, ophthalmologists, cardiologists, nephrologists, genetic counselors, and nutritionists is necessary.

Resources:

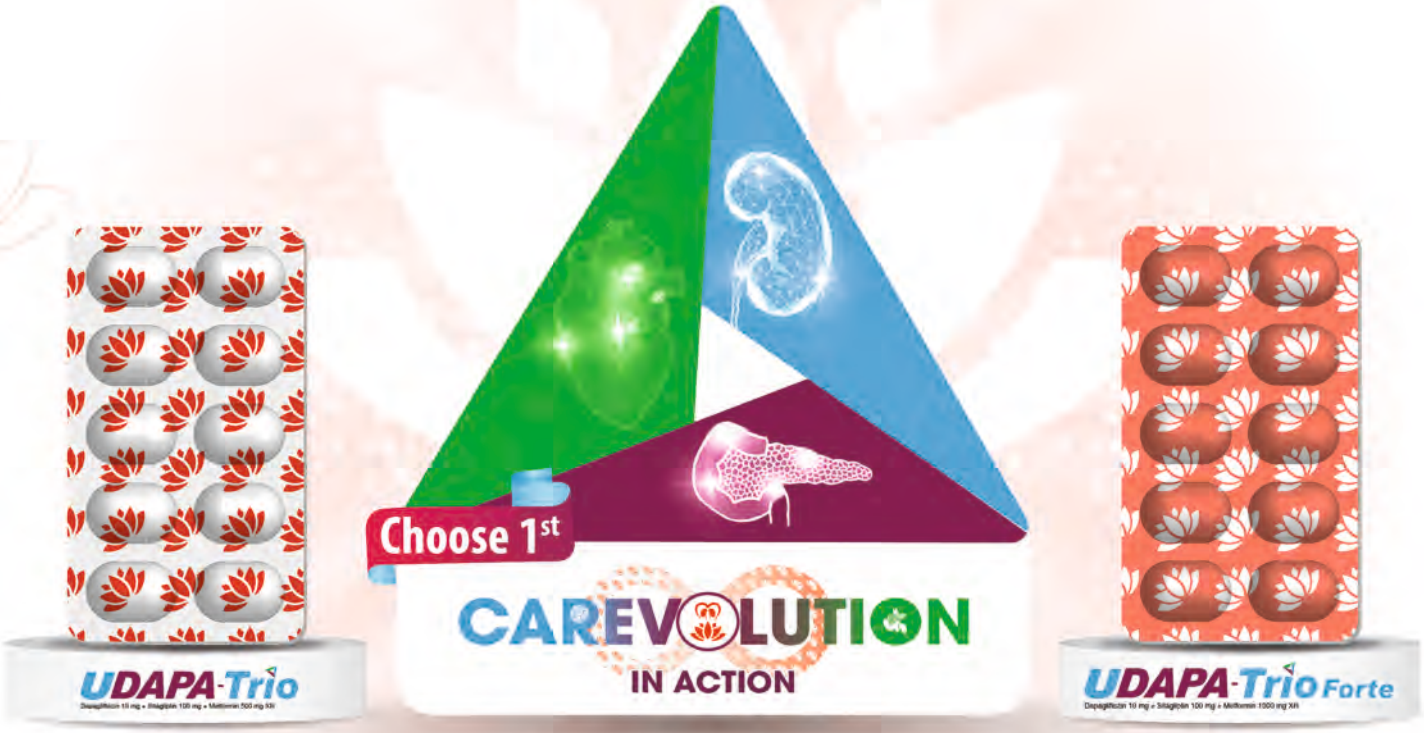
1. Marshall JD, Maffei P, Collin GB, Naggert JK. Alström syndrome: Genetics and clinical overview. *Curr Genomics.* 2011;12(3):225–235. doi:10.2174/138920211795677912
2. Tahani, N., Maffei, P., Dollfus, H. *et al.* Consensus clinical management guidelines for Alström syndrome. *Orphanet J Rare Dis* 15, 253 (2020). https://doi.org/10.1186/s13023-020-01468-8

In uncontrolled T2DM with A1c >8.5%, **Choose 1st**

Rx

UDAPA-Trio

Dapagliflozin 10 mg + Sitagliptin 100 mg + Metformin 500 mg XR



Abridged Prescribing Information

UDAPA-TRIO Forte, UDAPA-TRIO, Dapagliflozin, Sitagliptin & Metformin Hydrochloride Extended Release Tablets

Composition: Dapagliflozin 10 mg, Sitagliptin 100 mg & Metformin Hydrochloride Extended Release 1000 mg tablets Dapagliflozin propanediol monohydrate eq. To Dapagliflozin 10 mg Sitagliptin Phosphate Monohydrate IP Eq. Sitagliptin 100 mg Metformin Hydrochloride IP (as Extended Release) 1000 mg Dapagliflozin10 mg, Sitagliptin 100 mg & Metformin Hydrochloride Extended Release 1000 mg tablets Dapagliflozin propanediol monohydrate eq. To Dapagliflozin 10 mg Sitagliptin Phosphate Monohydrate IP Eq. Sitagliptin 100 mg Metformin Hydrochloride IP (as Extended Release) 500 mg **Indication:** It is indicated as an adjunct to diet and exercise to improve Glycemic Control adults with type 2 diabetes mellitus **Recommended Dosage:** As directed by the physician. **Method of Administration:** Oral **Adverse Reactions:** Most common adverse reactions reported are: Dapagliflozin - Female genital mycotic infections, Nasopharyngitis, Urinary tract infections. Sitagliptin - Upper respiratory tract infection, nasopharyngitis and headache. Metformin - Diarrhea, nausea/vomiting, flatulence, asthenia, indigestion, abdominal discomfort, and headache. **Warnings and Precautions:** Dapagliflozin: Volume depletion; Ketoacidosis in patients with Diabetes Mellitus; Urosepsis and Pyelonephritis; Hypoglycemia; Genital mycotic infections Sitagliptin: General: Sitagliptin should not be used in patients with type 1 diabetes or for the treatment of Diabetic Ketoacidosis. Acute pancreatitis: Hypoglycemia is used in combinations when combined with other anti-hyperglycemic medicinal product; Renal impairment: Hypersensitivity reactions including anaphylaxis, angioedema, and exfoliative skin conditions - Steven johnson syndrome; Bullous pemphigoid Metformin Hydrochloride: Lactic acidosis; In case of dehydration (severe diarrhea or vomiting, fever or reduced fluid intake), metformin should be temporarily discontinued and contact with a healthcare professional is recommended. **Contraindications:** Hypersensitivity to the active substance of Dapagliflozin, Sitagliptin & Metformin or to any of the excipients listed. Any type of acute metabolic acidosis (such as lactic acidosis, diabetic ketoacidosis). Diabetic pre-coma; Severe renal failure (eGFR < 30ml/min); Acute conditions with the potential to alter renal function such as: Dehydration, Severe infection, Shock; Acute or chronic disease which may cause tissue hypoxia such as: Cardiac or respiratory failure. Recent myocardial infarction, Shock, Renal Impairment, Acute intoxication, Alcoholism. **Use in special population:** Pregnant women: Due to lack of human data, drugs should not be used during pregnancy. Lactating women: It should not be used during breastfeeding. Pediatric patients: The safety and efficacy of drugs has not yet been established. No data is available. Geriatric Patients: In patients >65 years, it should be used with caution as age increases. For Additional Information/full prescribing information, please write to us: USV Private Limited, Arvind Vithal Gandhi Chowk, B.S.D Marg, Govandi, Mumbai - 400088 Last updated on 02/04/2024.

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In T2DM uncontrolled on monotherapies

Intensify Now

With

UDAPA-S

Dapagliflozin 10 mg + Sitagliptin 100 mg Tablets

Ref.: L Ravikumar et al.Cardiology and Cardiovascular Medicine. 2023; 7: 141-144. |

Abridged Prescribing Information

Composition: Each Film Coated Tablet Contains: Dapagliflozin Propanediol Monohydrate eq. to Dapagliflozin (10 mg) + Sitagliptin Phosphate Monohydrate IP eq. to Sitagliptin (100 mg). **Indications:** For the treatment of type 2 diabetes mellitus inadequately controlled on Metformin monotherapy. Recommended Dosage: As directed by the physician. **Method of Administration:** Oral. **Adverse Reactions:** Female genital mycotic infections, nasopharyngitis, and urinary tract infections are most common adverse reactions associated with dapagliflozin. While, upper respiratory tract infection, nasopharyngitis, and headache are most common adverse reactions associated with sitagliptin. **Warnings and Precautions: Risk of Volume Depletion in Elderly -** Before initiating Dapagliflozin and Sitagliptin, assess volume status and renal function in the elderly, patients with renal impairment or low systolic blood pressure, and in patients on diuretics. Monitor for signs and symptoms during therapy. **Ketoacidosis in Patients with Diabetes Mellitus -** Assess patients who present with signs and symptoms of metabolic acidosis for ketoacidosis regardless of blood glucose level. If suspected, discontinue UDAPA*-S, evaluate and treat promptly. Before initiating UDAPA*-S, consider risk factors for ketoacidosis. Patients on UDAPA*-S may require monitoring and temporary discontinuation of therapy in clinical situations known to predispose to ketoacidosis. **Urosepsis and Pyelonephritis -** Evaluate for signs and symptoms of urinary tract infections and treat promptly, if indicated. Hypoglycemia - Consider a lower dose of insulin or the insulin secretagogue to reduce the risk of hypoglycemia when used in combination with Dapagliflozin and Sitagliptin. **Necrotizing Fasciitis of the Perineum -** Serious, life-threatening cases have occurred in patients with diabetes, both females and males. Assess patients presenting with pain or tenderness, erythema, or swelling in the genital or perianal area, along with fever or malaise. If suspected, institute prompt treatment. **Genital Mycotic Infections -** Monitor and treat if indicated. **Contraindications:** Patients with a history of hypersensitivity reaction to the active substance or to any of the excipients. In patients with varying degrees of renal impairment, adjusting the dosage is advised based on the severity of the condition. Prohibited medications include strong CYP2C8 inhibitors/ inducers, drugs increasing/decreasing hypoglycemic action, drugs known to cause QT prolongation, or other oral hypoglycemic agents other than study medications.

For Additional Information/full prescribing information, please write to us:
USV Private Limited, Arvind Vithal Gandhi Chowk, B.S.D Marg, Govandi, Mumbai - 400088
Updated on 20th March 2024

PV - In case of any adverse events, kindly contact:pv@usv.in

USV Private Limited.
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A PwD-centric Approach in Regional Context: A Doctor's Experience on the MyCare Support Program for PwD

Dr. Sneha Nikte

MBBS, DNB (F. Med), D. Diab., MBA (HCS)

Consultant Diabetologist and Thyroid Specialist, Dr. Nikte Clinic, Mumbai

Here's what Dr. Sneha Nikte has to say:

A 66-year-old South Indian man living with type 2 diabetes mellitus (T2DM) was consulted for elevated blood glucose levels and was started on a basal-bolus insulin regimen. However, his blood glucose levels remained high, ranging between 200–250 mg/dL, and his random blood glucose level was 187 mg/dL. Upon assessment, it was found that he was not following a healthy diet and was consuming high-carbohydrate, high-glycemic index foods such as rice, idli, dosa, etc. Additionally, he followed an irregular eating pattern and often consumed carbohydrate-rich evening snacks, mostly sourced from outside.

Recognizing the need for structured education, the people with diabetes (PwD) was referred to MyCare Diabetes Educator (MDE) Ms. Purvi Gala. MDE Purvi educated him on proper insulin injection technique and hypoglycemia management, including the 15-15 rule. MDE Purvi took a detailed dietary recall, considered his likes and dislikes, and planned a customized meal plan for him. Knowing his ethnicity, she included regional foods like rice, idli, and dosa while educating him on ways to lower the glycemic index of his meals, including incorporating protein and fiber to prevent post-meal glucose excursions and allowing a small amount of coconut. She also suggested some healthy evening snack options while allowing occasional consumption of his favorite foods.

This was followed by regular follow-ups to monitor glucose levels and his adherence to the advised regimen. Within a month, his blood glucose levels had reduced to a fasting level of 90–100 mg/dL, and postprandial levels were around 120 mg/dL. His mealtime insulin (bolus insulin) was reduced from 72 U to 36 U with improved glucose levels. With PwD-centric intervention, his blood glucose levels improved and he was pleased with this health progress.

Ms. Purvi Gala

NDEP and T1DE Certified Diabetes Educator

Here's what MDE Purvi has to say:

This case underscores the critical role of a PwD-centric approach in diabetes management. By incorporating regional foods and making realistic adjustments to his dietary pattern without completely changing his eating habits, successfully empowered his adherence to nutrition therapy. This facilitated glucose control and improved diabetes outcomes.

MyCARE

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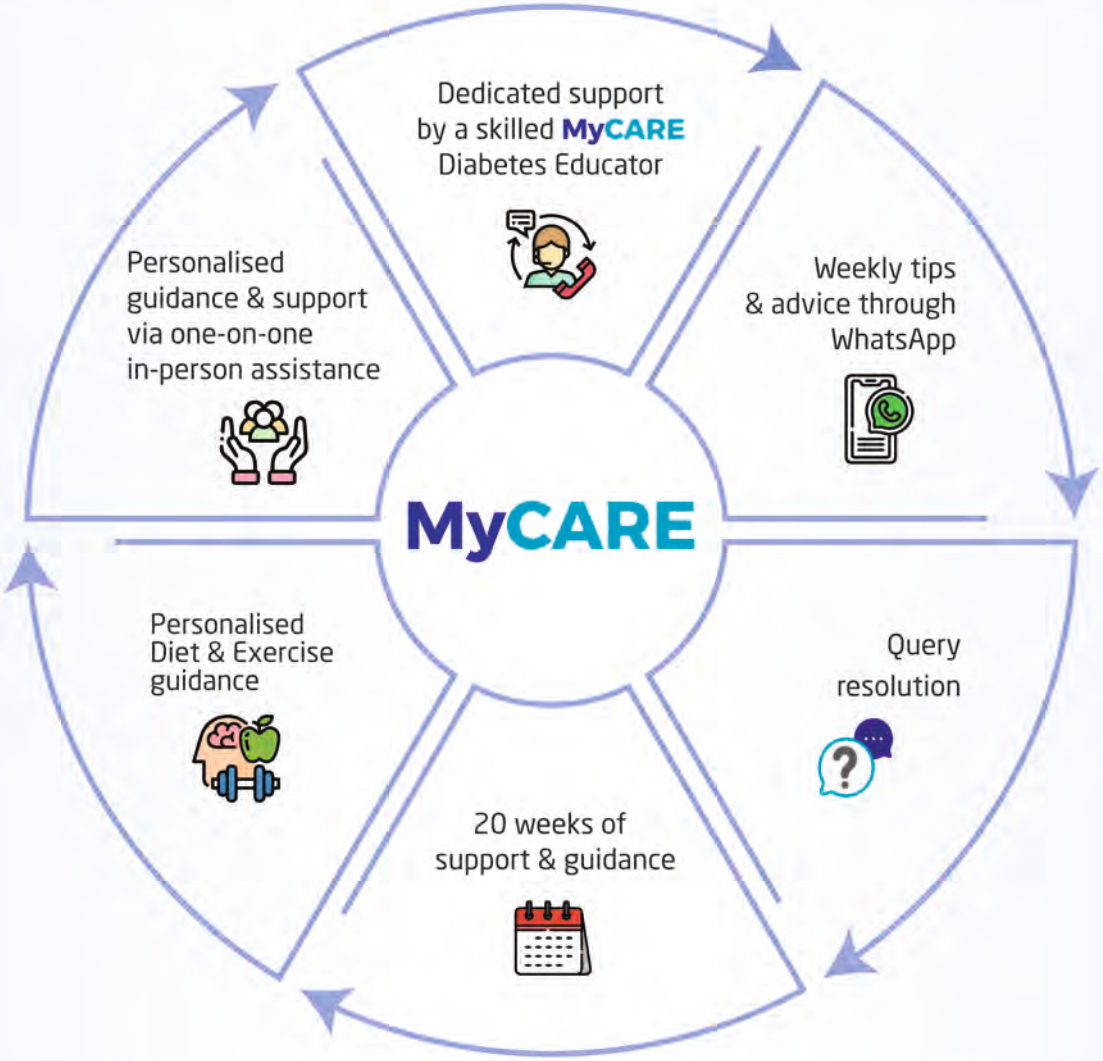
20 weeks personalised and hand-holding support for people with diabetes initiated with Insulin.
Aims to empower PWD* with information and knowledge they need to
ensure a better quality of life while managing their diabetes.



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*PWD: People with Diabetes

Contact for more information
Nikita Thawarkar | 7304930643 | nikita.thawarkar@usv.in

Expert Insights: An Interview with Dr. Dhruvi Hasnani

Dr. Dhruvi Hasnani
MD, FRCP, FACP
Consultant Diabetologist,
HOD Clinical Research and Co-founder,
Rudraksha Institute of Medical Sciences,
Ahmedabad

Dr. Dhruvi Hasnani is a leading Consultant Diabetologist and Head of Clinical Research at Rudraksha Institute of Medical Sciences (RIMS), Ahmedabad, where she also serves as Co-founder. With a strong academic background, Dr. Hasnani brings deep expertise and visionary leadership to the field of diabetology. Her work blends cutting-edge research with compassionate patient care, focusing on holistic and evidence-based management of diabetes and metabolic disorders. She has presented at numerous national and international conferences. She serves as an editorial board member for major journals in diabetology and endocrinology and contributes extensively to clinical research and education. Passionate about advancing diabetes care, she mentors clinicians, leads clinical trials, and is committed to transforming evidence into practice for better patient outcomes.

Diabetes Across the Ages

1. How does diabetes management differ across various age groups, from children to older adults?

Ans. Diabetes is a heterogeneous condition with variable pathophysiology, treatment goals, and challenges across different age groups. In children and adolescents, type 1 diabetes (T1D) is most common, though type 2 diabetes (T2D) is rising. Management addresses growth-related insulin resistance, psychosocial support, and technology like continuous glucose monitoring (CGM) and automated insulin delivery (AID) systems.

In adults, diabetes care depends on type and comorbidities, with T2D management focusing on lifestyle changes, medications, and cardiovascular risk reduction. CGM use is increasing, though adherence and cost remain challenges. In older adults, the focus is on preventing hypoglycemia, preserving cognition, and reducing frailty. The American Diabetes Association (ADA) recommends a glycated hemoglobin (HbA1c) target of 7.5%–8.0% in frail patients, with simplified regimens to minimize risks.

2. What are the unique challenges in diagnosing and managing diabetes in children and adolescents compared to adults?

Ans. Pediatric diabetes poses distinct challenges due to age-dependent metabolic, hormonal, and psychological factors.

Diagnosis challenges: Diagnosing diabetes in adolescents is challenging, as obesity-related insulin resistance increases T2D cases, making differentiation from T1D crucial. C-peptide levels and autoantibody tests aid classification. Monogenic diabetes (e.g., maturity-onset diabetes of the young [MODY]) should be considered in non-obese children with mild hyperglycemia and a strong family history.

Management challenges: Management challenges in adolescents include pubertal insulin resistance, requiring frequent insulin adjustments. Behavioral barriers affect adherence, increasing glycemic variability and diabetic ketoacidosis (DKA) risk, while family-centered support and telemedicine help up to 20% of adolescent girls with T1D may engage in insulin restriction (diabulimia), highlighting the need for integrated psychological care.

3. What are the most common diabetes-related complications in younger versus older patients, and how can they be prevented or managed?

Ans. Diabetes complications are age-dependent, with microvascular complications predominating in younger patients and macrovascular complications being more common in older adults.

Younger patients (T1D, youth onset type 2 diabetes [YOT2D]): Diabetic ketoacidosis (DKA) is a major risk in children with T1D, especially at diagnosis, but early detection and ketone monitoring help prevent hospitalizations. YOT2D leads to earlier and faster-progressing microvascular complications, requiring annual screening from age 11 or five years post-diagnosis.

Older patients: Cardiovascular disease (CVD) is the leading cause of death in T2D, with sodium-glucose co-transporter (SGLT-2) inhibitors and glucagon-like peptide-1 (GLP-1) receptor agonists providing cardioprotection. Severe hypoglycemia doubles dementia risk in older adults, making CGM use, therapy de-intensification, and relaxed glycemic targets essential for prevention.

4. In your experience, has the age of diagnosis of type 2 diabetes mellitus decreased over the years in your practice?

Ans. Yes, there is substantial epidemiological evidence that T2D is being diagnosed at progressively younger ages.

- **Rising prevalence of YOT2D:** Data from the SEARCH for Diabetes in Youth study shows a 5% annual increase in T2D incidence in adolescents, correlating with rising childhood obesity rates.
- **Aggressive disease progression:** YOT2D has earlier beta-cell dysfunction, increased insulin resistance, and a higher risk of complications compared to adult-onset T2D. The Treatment Options for Type 2 Diabetes in Adolescents and Youth (TODAY) study revealed that nearly 50% of youth with T2D required insulin therapy within 5 years of diagnosis.

5. How can public health initiatives be tailored to address diabetes awareness and prevention at different stages of life?

Ans. A life-course approach to diabetes prevention is essential, with targeted interventions across age groups.

Children and adolescents: School-based interventions include nutrition policies like sugar-sweetened beverage taxes and structured physical activity programs. Early screening for prediabetes is recommended in obese children with a family history of T2D.

Adults: Community-based screening includes workplace wellness and diabetes prevention programs. Cardiometabolic risk reduction focuses on policies supporting healthy food subsidies and physical activity incentives.

Elderly: Geriatric diabetes care models: Focus on cognitive screening, polypharmacy reduction, and fall prevention.

Final thoughts: Diabetes management across the lifespan requires precision medicine, technology integration, and multidisciplinary approaches. The future of diabetes care will likely be shaped by AI-driven decision support, gene therapy, and advancements in beta-cell replacement strategies.

Simplifying Complete Blood Count Test (Red Blood Cells)

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A complete blood count (CBC) test is a standard diagnostic tool that provides essential information about blood components, including erythrocytes (red blood cells). Red blood cells (RBCs) play a critical role in oxygen transport, and their number, size, shape, and hemoglobin content can indicate various health conditions. The following are components of CBC:

Parameter	Description	Normal range (men)	Normal range (women)	Clinical significance
RBC count	Number of RBCs per microliter of blood	4.3–5.9 million/µL	3.5–5.5 million/µL	Low: Anemia, High: Polycythemia
Hemoglobin (Hb)	Oxygen-carrying protein in RBCs (g/dL)	13.5–17.5 g/dL	12.0–16.0 g/dL	Low: Anemia, High: Dehydration, polycythemia
Hematocrit (HCT)	% of blood volume occupied by RBCs	41%–53%	36%–46%	Low: Anemia, High: Polycythemia
Mean corpuscular volume (MCV)	The average size of RBCs (fL)	80–100 fL	80–100 fL	Low: Microcytic anemia, High: Macrocytic anemia
Mean corpuscular hemoglobin (MCH)	Average amount of hemoglobin per RBC (pg)	27–33 pg	27–33 pg	Low: Hypochromic anemia, High: Macrocytosis
Mean corpuscular hemoglobin concentration (MCHC)	Hemoglobin concentration in RBCs (g/dL)	32–36 g/dL	32–36 g/dL	Low: Hypochromic anemia, High: Spherocytosis
Red cell distribution width (RDW)	Variability in RBC size (%)	11.5%–14.5%	11.5%–14.5%	High: Anisocytosis (iron deficiency, B12 deficiency)

The target values for these parameters will vary between laboratories as each uses different methodologies and/or enzymes for assessment. Understanding these parameters helps detect early disease signs, guide further testing, and ensure timely interventions, improving patient outcomes.

Resources:

1. El Brihi J, Pathak S. Normal and abnormal complete blood count with differential. In: StatPearls [Internet]. StatPearls Publishing; 2025. Accessed March 15, 2025.
2. Ford J. Red blood cell morphology. *Int J Lab Hematol.* 2013;35(3):351–357. doi:10.1111/ijlh.12082. PMID: 23480230.

Impact of Hormones in Diabetes Across Different Life Stages

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Glucose metabolism is a dynamic process influenced by various hormones that regulate blood glucose levels throughout life. From childhood to old age, hormonal fluctuations play a crucial role in insulin sensitivity, glucose production, and overall metabolic balance. Understanding these changes is essential, particularly in diabetes management, where shifts in hormone levels can significantly impact blood glucose control.

1. **Growth hormone (GH) in young children:** Growth hormone influences glucose metabolism by promoting glycogenolysis, gluconeogenesis, and lipolysis, which can increase glucose production. It also induces insulin resistance, although in young children with GH deficiency, insulin sensitivity may be higher due to lower insulin-like growth factor-1 (IGF-1) levels.
2. **Pregnancy hormones:** Pregnancy introduces a complex interplay of hormones that can increase insulin resistance and glucose levels. This is partly due to increased levels of human placental lactogen (hPL), cortisol, and progesterone, which counteract insulin action.
3. **Post-menopause hormonal changes:** The decrease in estrogen during menopause can lead to increased insulin resistance, making diabetes management more challenging. Changes in body composition, such as increased visceral fat, also contribute to insulin resistance.
4. **Puberty:** During puberty, insulin resistance increases due to hormonal changes, including rising levels of IGF-1. This leads to compensatory hyperinsulinemia to maintain glucose homeostasis.
5. **Aging and hormonal decline:** As people age, the decline in hormones such as growth hormone and sex hormones (e.g., testosterone in men and estrogen in women) can affect glucose metabolism. Reduced physical activity and weight gain often associated with aging exacerbate insulin resistance.

Therefore, these hormonal fluctuations across different life stages significantly impact glucose metabolism and diabetes management. Understanding these changes and taking appropriate steps is crucial for personalized diabetes care strategies.

Resources:

1. Ciresi A, Giordano C. Glucose Metabolism in Children With Growth Hormone Deficiency. *Front Endocrinol (Lausanne)*. 2018;9:321. Published 2018 Jun 11. doi:10.3389/fendo.2018.00321
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3. Diabetes UK. Menopause and Diabetes. Diabetes UK. https://www.diabetes.org.uk/living-with-diabetes/life-with-diabetes/menopause.
4. Kim SH, Park MJ. Effects of growth hormone on glucose metabolism and insulin resistance in human. *Ann Pediatr Endocrinol Metab*. 2017;22(3):145–152. doi:10.6065/apem.2017.22.3.145

Managing Hypoglycemia in Children and Adolescents

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Hypoglycemia, or low blood glucose, is a common and serious complication in children and adolescents with type 1 diabetes (T1DM). Despite advances in glucose monitoring and insulin therapy, hypoglycemia remains a major concern due to its potential to cause cognitive impairment, seizures, and even death. Effective management requires early recognition, appropriate treatment, and preventive strategies to minimize risks while maintaining optimal glycemic control. The American Diabetes Association defines hypoglycemia as a plasma glucose level below 70 mg/dL (3.9 mmol/L). It is classified as:

1. Mild hypoglycemia (60–70 mg/dL): Characterized by symptoms such as sweating, tremors, hunger, dizziness, and irritability. The child is conscious and can self-treat.
2. Moderate hypoglycemia (40–59 mg/dL): Includes neuroglycopenic symptoms like confusion, difficulty concentrating, blurred vision, and slurred speech.
3. Severe hypoglycemia (<40 mg/dL): Involves unconsciousness, seizures, or coma, requiring immediate assistance.

Children, particularly young ones, may not always recognize symptoms, making continuous glucose monitoring (CGM) essential. Parents and caregivers should be trained to identify behavioral signs such as mood swings, lethargy, and difficulty waking up.

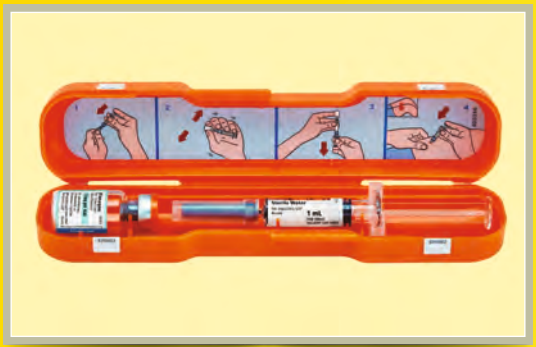
Risk factors for hypoglycemia

- Excess insulin: Incorrect dosing or mismatched insulin administration relative to food intake.
- Missed meals or delayed eating: Skipping meals or prolonged gaps between meals without carbohydrate intake.
- Physical activity: Exercise increases insulin sensitivity, leading to a reduction in blood glucose levels. Post-exercise hypoglycemia is common in many individuals.
- Alcohol consumption in adolescents: Alcohol impairs glucose production and increases hypoglycemia risk, especially when consumed without food.
- Nocturnal hypoglycemia: Occurs during sleep, making it harder to detect. Newer long-acting insulins and CGM alarms have reduced their frequency.

Treatment of hypoglycemia

1. **Mild to moderate hypoglycemia**

- Immediate treatment: Administer 0.3 g/kg of body weight of oral glucose (e.g., glucose powder, glucose tabs, sugar, fruit juice, honey, jellies, or hard candy). Avoid giving chocolates, ice creams, Indian sweets, and desserts. These foods are high in fat and will take time to raise blood glucose levels.
- Check blood glucose after 15 minutes and retreat if levels remain below 70 mg/dL.
- Follow with a snack containing complex carbohydrates and protein to prevent recurrence.



2. **Severe hypoglycemia**

- Home and school management: If the child is unconscious or unable to swallow, a glucagon injection should be administered. The recommended dose is 1 mg for children >25 kg and 0.5 mg for those <25 kg.
- Hospital management: If glucagon is unavailable or ineffective, intravenous glucose (10% dextrose, 2 mL/kg) should be administered immediately.

Hypoglycemia prevention strategies

1. Frequent blood glucose monitoring: Use CGM or self-monitoring of blood glucose (SMBG) to detect and prevent hypoglycemic episodes.
2. Adjusting insulin doses: Insulin regimens should be individualized and adjusted by consulting a doctor and/or dietitian about exercise and meals.
3. Education and training: Parents, school personnel, and caregivers should be trained in hypoglycemia recognition and management.
4. Exercise planning: Children should consume carbohydrates before and, if required, after physical activity to prevent hypoglycemia, requiring insulin adjustments accordingly.

5. Night-time monitoring: Setting alarms to check at midnight or using CGM alerts can help detect nocturnal hypoglycemia.
6. Dietary modifications: A well-balanced diet with fixed carbohydrate meals and snacks prevents sudden glucose drops.

Conclusion

Effective hypoglycemia management in children and adolescents requires early recognition, swift intervention, and preventive measures. Advances in glucose monitoring, insulin delivery, and glucagon formulations have improved care, but continuous education and vigilance remain essential for optimal glycemic control.

Resources:

1. Abraham MB, Karges B, Dovc K, *et al.* ISPAD Clinical Practice Consensus Guidelines 2022: Assessment and management of hypoglycemia in children and adolescents with diabetes. *Pediatr Diabetes.* 2022;23(8):1322–1340. doi:10.1111/pedi.13443
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4. Royal Children's Hospital Melbourne. Hypoglycaemia. *Royal Children's Hospital Clinical Guidelines.* Last updated November 2019. Accessed March 20, 2025. https://www.rch.org.au/clinicalguide/guideline_index/Hypoglycaemia/

Diabetes Educator's Toolkit
Skill of the Month: Listening and Silence

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Listening

Active listening involves understanding their concerns and is more than merely hearing words. It involves fully engaging with the patient. This approach allows diabetes educators to comprehend the unique challenges each faces, tailoring education and support. People with diabetes desire supportive health professionals with whom they can have open and empathic communication, enabling them to talk about their health. Research highlights the significance of patient-centered communication in diabetes care. A study exploring the perceptions of people with type 2 diabetes and their healthcare providers found that effective communication fosters better self-care, metabolic control, disease knowledge, and quality of life.

Silence

When utilized carefully, silence can be a very effective therapeutic technique in diabetes education. It allows patients to express emotions and provides them with the space to reflect and articulate concerns they might otherwise suppress. This deliberate pause can support deeper conversations about the psychosocial aspects of living with diabetes, which are often tangled with self-management behaviors.

To incorporate active listening and silence effectively, diabetes educators can follow these tips:

- Open-ended questions: Encourage unrestricted sharing of experiences.
- Embrace pauses: Allow silence for thoughtful responses.
- Reflect and clarify: Paraphrase to confirm understanding and show empathy.

Resources:

1. Mental health and diabetes: A workbook for healthcare professionals, Chapter 1. American Diabetes Association; 2020. https://professional.diabetes.org/sites/default/files/media/ada_mental_health_workbook_chapter_1.pdf.
2. Paiva D, Abreu L, Azevedo A, Silva S. Patient-centered communication in type 2 diabetes: The facilitating and constraining factors in clinical encounters. *Health Serv Res.* 2019;54(3):623–635. doi:10.1111/1475-6773.13126.
3. Hendrieckx C, Halliday JA, Beeney LJ, Speight J. Diabetes and emotional health: A practical guide for health professionals supporting adults with type 1 or type 2 diabetes. Arlington, VA: American Diabetes Association, 2021, 3rd edition (U.S.). https://diabetes.org/sites/default/files/media/ada_mental_health_workbook_r4.pdf

Frequently Asked Questions on Diabetes Across the Ages

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1. I always thought diabetes was something that happened after 40 or 50. How is it possible that my young child has been diagnosed with type 1 diabetes? What caused this, and what does it mean for their future?

Ans. There are different types of diabetes. Type 2 diabetes (T2D), now common in young adults, is linked to lifestyle factors like unhealthy eating habits and sedentary lifestyles. However, type 1 diabetes mellitus (T1DM) is an autoimmune disease not caused by diet or lifestyle.

- Genetics: Some children are born with genes that make them more likely to develop T1DM. However, having these genes does not guarantee they will get diabetes—it just increases the risk.
- Immune system mistake: In T1DM, the immune system wrongly identifies insulin-producing beta cells as harmful and destroys them. Scientists believe this attack is triggered by a combination of genetic and environmental factors, but the exact cause is still not fully understood.
- Environmental triggers: Some possible triggers include viral infections, changes in gut bacteria, or other unknown environmental factors. These might act as a "spark" that starts the immune attack in children who are already genetically at risk.

How is it different from type 2?

- T1DM is autoimmune, usually diagnosed in children, and requires insulin.
- T2D is lifestyle-related, more common in adults, and can be managed with diet, exercise, and medication.

Your child did nothing to cause this—T1DM is not preventable but can be well-managed with proper care.

2. As a father, I worry about how my child's T1DM will change as they grow up. What should I expect in terms of insulin needs, complications, and treatment as they move through different life stages?

Ans. It's completely natural to be concerned about how diabetes management will evolve over the years. While the core principles—monitoring blood glucose, taking insulin, and maintaining a healthy lifestyle—remain constant, your child's needs will change at different stages of life.

Life stage	Insulin needs	Challenges	Parental role
Childhood (0–12 years)	Highly variable due to unpredictable eating habits, activity levels, and physiological changes for growth. Requires frequent insulin adjustments.	High risk of hypoglycemia as young children may not recognize symptoms. Dependence on caregivers for management.	Active involvement in carb counting, insulin dosing, and blood glucose monitoring. Parents make most decisions for diabetes management.
Adolescence and teenage years (13–19 years)	Increased insulin resistance due to hormonal changes during puberty, requiring higher insulin doses.	Risk of non-adherence (forgetting doses, skipping meals). Emotional stress from social stigma and feeling different from peers. Possible risk-taking behavior.	Encourage independence while ensuring responsible choices in insulin use, diet, and exercise. Support emotional well-being and diabetes education.
Young adulthood (20–40 years)	More stable insulin requirements, but adjustments needed due to lifestyle changes (college, work, pregnancy, stress).	Managing diabetes while handling career, social life, and potential pregnancy (for women). Risk of neglecting diabetes care due to a busy schedule.	Less direct involvement but provide emotional support and guidance when needed. Encourage self-monitoring and medical check-ups.

It's great that you're thinking ahead—by preparing for these changes, you're setting your child up for lifelong success in managing their diabetes!

3. My mother is in her late 60s and has always been active and maintained a healthy lifestyle. She was recently diagnosed with type 2 diabetes, and I'm struggling to understand how this happened. What age-related factors contribute to diabetes in seniors, and how can I help her manage it effectively?

Ans. It's understandable to be concerned, especially when someone who has always taken care of their health develops diabetes later in life. At the same time, lifestyle choices play a big role in type 2 diabetes; aging itself introduces metabolic and physiological changes that can increase the risk—even in people who were previously healthy. So why does diabetes develop in older adults?

- Slower metabolism and insulin resistance: As we age, muscle mass naturally declines, and fat distribution shifts, often increasing visceral fat. These changes reduce the body's ability to effectively use insulin, leading to insulin resistance, a key driver of type 2 diabetes.
- Pancreatic function decline: With age, pancreatic beta cells become less efficient and may produce less insulin over time. This means that even if your mother eats the same diet she always has, her body may struggle to regulate blood glucose levels properly.

How can seniors manage and prevent complications?

- Prioritize exercise: Low-impact activities like walking, swimming, or yoga are excellent for blood glucose control.
- Optimize nutrition: Focus on fiber-rich foods, lean proteins, and healthy fats to stabilize blood glucose levels.
- Regular monitoring and checkups: Frequent monitoring helps catch fluctuations early. Regular screenings for heart and kidney health are essential to prevent complications.
- Manage stress and sleep: Sleep disturbances are common in aging and can impact blood glucose control, so maintaining a consistent sleep routine is crucial.

Working closely with a doctor and a diabetes educator will ensure she gets the best care tailored to her needs.

Superfood: Ice Apple

Ice apples are juicy, hydrating, delicious fruits that are available in summer and belong to the Palmyra tree. They are also called 'Tadgola' or 'Nungu' locally and are much relished in summer. Ice Apples are summer coolants, tasting like a combination of litchi and tender coconut.

Health benefits

- They help maintain the body's electrolyte balance with sodium and potassium and aid in regulating body temperature during summer, preventing dehydration and fatigue.
- They are low in calories, easy to digest, and beneficial for skin and migraines.
- They are found to have antioxidant, anticancer, anti-inflammatory, and antidiabetic properties due to the presence of bioactive metabolites in them.

Nutritional value

100 g gives 24 calories, 5 g carbs, 0.5 g protein, and 0.12 g fat.

Ice apples are low in carbs and will not cause blood glucose spikes. They can be easily consumed as a mid-meal snack by people with diabetes as well as by people who are looking for weight loss.

Curbing sugar cravings

Ice apples are a good option to satisfy sugar cravings due to their natural sweetness and hydrating nature.

How to consume

Ice apples can be consumed just like that or added to parfaits with yogurt, chia pudding, or salads.

Resources:

1. Savalapurapu B, Sanyasi G. Development and formulation of value-added product from Palmyrah palm. *J Chem Health Risks.* 2023;13(4):833–838. Available from: https://jchr.org/index.php/JCHR/article/view/927
2. Vasudevan V, Prabaharan J, Krishnan N, K A, Gopinath SCB, Raman P. Metabolite profiling from different parts of tender fruit endosperm of *Borassus flabellifer L.* (ice apple). *Anal Methods.* 2023;15(30):3735–3751. Published 2023 Aug 3. doi:10.1039/d3ay00704a

Role Play

Scenario — XYZ, an 18-year-old boy, was recently diagnosed with type 2 diabetes mellitus (T2DM). His parents are concerned because they believe that T2DM is a condition that affects older adults and have come to visit the diabetes educator.

Parent: Hello, it's been overwhelming. My 18-year-old boy was recently diagnosed with T2DM. I didn't think this could happen to my son, especially at this young age. I thought T2DM was something older people get. How did this happen to my child?

Diabetes educator: I understand your concern. While it's true that T2DM was once more common in older adults, it's increasingly being diagnosed in younger individuals as well. This change is largely due to a combination of factors such as unhealthy eating habits, a sedentary lifestyle leading to childhood obesity, and genetic predisposition as well.

Parent: We try to have a healthy diet at home, but it's hard to control what they eat outside.

Diabetes educator: That's a common challenge. Many young people today are exposed to a lot of processed and high-sugar foods, especially when eating out or in college.

Parent: So, what can be done to manage it? Can he still live a normal life?

Diabetes educator: Absolutely, he can lead a healthy and fulfilling life with diabetes. The key is to make lifestyle changes. This includes maintaining a balanced diet rich in vegetables, fruits, dairy products, legumes/lean protein, and whole grains, as well as incorporating regular physical activity into his routine. He can opt for healthy options while eating out, such as grilled/sautéed/baked, and wherever possible, carry easy-to-consume healthy foods such as small fruit, buttermilk, curd/yogurt, nuts, roasted makhana, etc., instead of available high sugar and fat, processed foods. Occasional indulgence can be allowed while emphasizing regular physical activity to compensate for extra calories. It's also very important to monitor blood glucose levels and follow the doctor's recommendations.

Parent: Is there anything else we should be aware of?

Diabetes educator: Regular monitoring of blood glucose levels and keeping glucose levels in target range is important to prevent complications in the future. Since your boy is overweight, reducing weight will also help improve blood glucose control and quality of life. A healthy, well-balanced diet, regular exercise, and routine follow-up with the doctor will ensure better diabetes management and overall well-being.

Parent: Thank you for explaining everything. I feel a lot more hopeful now.

Diabetes educator: I'm glad to hear that. Take care.

NOTES

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Glycomet®-GP 2
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Abridged Prescribing Information

Active Ingredients: Metformin hydrochloride (as sustained release) and glimepiride tablets **Indication:** For the management of patients with type 2 diabetes mellitus when diet, exercise and single agent (glimepiride or metformin alone) do not result in adequate glycaemic control. **Dosage and Administration:** The recommended dose is one tablet daily during breakfast or the first main meal. Each tablet contains a fixed dose of glimepiride and Metformin Hydrochloride. The highest recommended dose per day should be 8 mg of glimepiride and 2000mg of metformin. Due to prolonged release formulation, the tablet must be swallowed whole and not crushed or chewed. **Adverse Reactions:** For Glimepiride: hypoglycaemia may occur, which may sometimes be prolonged. Occasionally, gastrointestinal (GI) symptoms such as nausea, vomiting, sensations of pressure or fullness in the epigastrium, abdominal pain and diarrhea may occur, Hepatitis, elevation of liver enzymes, cholestasis and jaundice may occur; allergic reactions or pseudo allergic reactions may occur occasionally. For Metformin: GI symptoms such as nausea, vomiting, diarrhea, abdominal pain, and loss of appetite are common during initiation of therapy and may resolve spontaneously in most cases. Metallic taste, mild erythema, decrease in Vit B12 absorption, very rarely lactic acidosis, Hemolytic anemia, Reduction of thyrotropin level in patients with hypothyroidism, Hypomagnesemia in the context of diarrhea, Encephalopathy, Photosensitivity, hepatobiliary disorders. **Warnings and Precautions::** For Glimepiride: Patient should be advised to report promptly exceptional stress situations (e.g., trauma, surgery, febrile infections), blood glucose regulation may deteriorate, and a temporary change to insulin may be necessary to maintain good metabolic control. Metformin Hydrochloride may lead to Lactic acidosis; in such cases metformin should be temporarily discontinued and contact with a healthcare professional is recommended. Sulfonylureas have an increased risk of hypoglycaemia. Long-term treatment with metformin may lead to peripheral neuropathy because of decrease in vitamin B12 serum levels. Monitoring of the vitamin B12 level is recommended. Overweight patients should continue their energy-restricted diet, usual laboratory tests for diabetes monitoring should be performed regularly. **Contraindications:** Hypersensitivity to the active substance of glimepiride & Metformin or to any of the excipients listed. Any type of acute metabolic acidosis (such as lactic acidosis, diabetic ketoacidosis, diabetic pre-coma). Severe renal failure (GFR<30ml/min). In pregnant women. In lactating women.Acute conditions with the potential to alter renal function (dehydration, severe infection, shock, intravascular administration of iodinated contrast agents); acute or chronic disease which may cause tissue hypoxia (cardiac or respiratory failure, recent myocardial infarction, shock); hepatic insufficiency; acute alcohol intoxication; alcoholism. **Use in a special population:** Pregnant Women: Due to a lack of human data, drugs should not be used during pregnancy. Lactating Women: It should not be used during breastfeeding. Pediatric Patients: The safety and efficacy of drugs has not yet been established. Renal impairment: A GFR should be assessed before initiation of treatment with metformin containing products and at least annually thereafter. In patients at increased risk of further progression of renal impairment and in the elderly, renal function should be assessed more frequently, e.g. every 3-6 months.

Additional information is available on request.

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*In case of any adverse events, kindly contact: pv@usv.in

For the use of registered medical practitioner, hospital or laboratory.*

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