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RSSDI Indian Diabetes EDUCATOR JOURNAL



1 st time in India To keep the members of diabetes care team abreast with DSME and DSMS concepts

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 & 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.

Hyperglycemia in diabetes is shown to cause dysfunction of the immune system, which fails to control the spread of pathogens. Infections are also common during the monsoon due to the rise in moisture and favorable conditions. This month's IDEJ issue aims to propagate information about how diabetes impacts immunity and how best to prevent infections in people with diabetes. We hope this journal will help healthcare professionals to focus on educating people with diabetes about hygienic practices along with healthy lifestyles to prevent any illness.

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

Disclaimer: This Journal provides news, opinions, information and tips for effective counselling of people with diabetes. This Journal intends to empower your clinic support staffs for basic counselling of people with diabetes. This journal has been made in good faith with the literature available on this subject. The views and opinions expressed in this journal of selected sections are solely those of the original contributors. Every effort is made to ensure the accuracy of information but Hansa Medcell or USV Private Limited will not be held responsible for any inadvertent error(s). Professional are requested to use and apply their own professional judgement, experience and training and should not rely solely on the information contained in this publication before prescribing any diet, exercise and medication. Hansa Medcell or USV Private Limited assumes no responsibility or liability for personal or the injury, loss or damage that may result from suggestions or information in this book.

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Foot Care Tips in Monsoon

Cover Story: Diabetes, Immunity, and Susceptibility to Infections



MBBS, MD, FIACM Sr. Consultant Cardiologist, The Heart Klinik, New Delhi The global health crisis of type 2 diabetes mellitus (T2DM) is critical. As a chronic illness, T2DM tends to raise the risk of a number of other conditions brought on by macrovascular and microvascular damage, and it has an adverse effect on a number of organs, including the brain, kidney, heart, and eyes. Additionally, those with T2DM are more likely to get an infection. Numerous studies have revealed that

individuals with T2DM are at higher risk for skin and soft tissue infections, urinary tract infections, and lower respiratory tract infections such as pulmonary TB and pneumonia.

Normally, the human body employs remarkable defences to keep out millions of bacteria, viruses, fungi, poisons, and parasites. Pathogens find it challenging to get past this defence mechanism under normal conditions, but a number of illnesses make the immune system malfunction. As evidenced by the presence of pus, germs can easily penetrate an open wound to produce an infection. The production of reactive oxygen species, cytokines, and chemokines, as well as the presence of natural barriers like intact skin and mucosal surfaces, aid our defence mechanisms in their fight against pathogenic invasion.



Unfortunately, diabetes disrupts the immunological response of the host. T2DM may have an impact on cellular immunity in addition to the possibility of natural barrier degradation brought on by neuropathy. Hyperglycemia and a lack of insulin are to blame for this. According to the American Diabetes Association, infections are a serious problem for people with T2DM since their immune systems are unable to successfully defend against foreign invaders. The following are the primary mechanisms linked to the interplay between T2DM and infections.



Complement: One of the primary systems in charge of generating humoral immunity is the complement system. It is made up of serum and surface proteins, and their primary roles are to encourage the opsonization and phagocytosis of microorganisms by neutrophils and macrophages as well as to cause the lysis of these bacteria. Additionally, the second signal for activating B lymphocytes and triggering antibody production is provided by complement activation products. T2DM has a C4 component shortage. The malfunction of polymorphonuclear cells and the decreased cytokine response are likely to be related to this decrease in C4.





Inflammatory cytokines: When stimulated by lipopolysaccharides, mononuclear cells, and monocytes, people with T2DM release less interleukin (IL)-1 and IL-6. It appears that people with T2DM have an inherent abnormality that causes them to produce fewer interleukins than healthy individuals do. However, according to some studies, the increased glycation may prevent myeloid cells from producing IL-10 and T cells from producing tumor necrosis factor (TNF)- α and interferon-gamma (IFN- γ). Additionally, glycation would decrease the expression of class I major histocompatibility complex (MHC) on the surface of myeloid cells, weakening cell immunity.

Polymorphonuclear and mononuclear leukocytes: During hyperglycemia, there may be a reduction in chemotaxis, phagocytic activity, and polymorphonuclear leukocyte mobilization. In addition to blocking glucose-6-phosphate dehydrogenase (G6PD), the hyperglycemic environment also prevents polymorphonuclear leukocytes from transmigrating across the endothelium and increases their rate of apoptosis. The hyperglycemic environment raises intracellular glucose levels in tissues that do not require insulin for glucose transport. The intracellular glucose is then metabolized using NADPH as a cofactor. The vulnerability to oxidative stress increases as a result of the drop in NADPH levels, which inhibits the regeneration of molecules important to the cell's antioxidant defences.



Antibodies: Immunoglobulin is glycated in those with T2DM in proportion to the rise in HbA1c, which may impair the biological activity of the antibodies.



People with T2DM are more likely to contract infectious illnesses. Some illnesses, like gangrenous cholecystitis, rhinocerebral mucormycosis, and malignant external otitis, usually only affect people with T2DM. Infections in T2DM may cause metabolic problems such as hypoglycemia, ketoacidosis, and coma, in addition to being potentially more dangerous. In order to avoid infection and its effects, it is crucial for people with T2DM to keep their blood glucose levels within the target range and maintain basic hygiene norms.

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Foods to Boost Immunity



Dr. K. Sathyanarayanana Reddy

MBBS, Dip Diab (Zagreb), PGDHSC-Diab (AU), CCEBDM, CCGDM-Diabetology (PHFI), Fellowship in Diabetology (IMA) Consultant Diabetologist, Dr Satyam's Clinic, Warangal The optimum functioning of the immune system is essential for survival. This requires adequate nutrition for the functioning of all body cells including the cells in the immune system. An "activated" immune system increases the demand for energy and nutrients during periods of infection. Optimal nutrition allows immune cells to initiate effective responses against pathogens. Certain

nutrients have definite roles in the development and maintenance of an effective immune system and foods rich in these nutrients are advised to be consumed during periods of infection. Foods that boost immunity are described in the table below.

Food sources	How it contributes to immunity
Turmeric	It has curcumin which is an antimicrobial agent, that enhances various immune cells modifying the body's defence capacity.
Citrus fruits like amla, orange, lemon, sweet lime, kiwi, berries	Excellent source of vitamin C which enhances microbial killing and acts as an antioxidant.
Green leafy vegetables, broccoli	Rich in antioxidants and vitamin A which improve immune system functioning.
Yogurt	Components involved in immunity are protein, zinc, and probiotics. Zinc improves the functioning of immune cells, while probiotics improve local immune response and gut health.
Green tea	Packed with flavonoids such as epigallocatechin gallate (EGCG), enhances the immune function.
Ginger	Several bioactive compounds like gingerol, zingerone, and paradol exhibit anti-microbial and antioxidant properties contributing to immunity.
Garlic	A good concentration of sulfur-containing compounds - allicin, contributes to immune- boosting properties.
Cabbage, cauliflower, brussels sprouts	It contains isothiocyanates which protect against microbial infection.

Consuming these immune-boosting foods will facilitate an effective immune system response against infection. These foods are also low in carbohydrates and so can be safely consumed by people living with diabetes.

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Skincare for People with Diabetes



Dr. Anand M. K.

MBBS, MD (General Medicine) Consultant Physician and Asst. Professor, Jubilee Mission Medical College and Research Institute, Thrissur Skincare is crucial for people with diabetes. Uncontrolled blood glucose levels can increase the likelihood of developing skin disorders. Diminished sensitivity of the nerves and poor blood circulation can make it more difficult to detect skin issues. Anyone can develop skin issues, but people with diabetes are at higher risk. These include irritation, bacterial and fungal infections, eruptive

xanthomatosis, diabetic blisters, diabetic necrobiosis lipoidica, and diabetic dermopathy. Proper skincare is essential to maintain healthy skin and to prevent complications. People with diabetes can treat and avoid uncomfortable skin changes by taking proper care of their skin.



Tips for skincare for people with diabetes



Keeping glucose levels under control: Stable blood glucose levels help to reduce the risk of skin complications. People with high glucose levels tend to have dry skin and a lesser ability to fight harmful bacteria, which increases the risk of infection.

Practicing good hygiene: Skin should be cleansed regularly with a mild soap or cleanser. Hot baths and showers should be avoided. The skin should be gently pat dried after bathing and swimming, especially between skin folds (armpits, neck, toes, etc.), to prevent moisture build-up, which increases the risk of infection.



Regular moisturizing: Skin should be kept moisturized to avoid dryness and prevent cracks that often lead to infection. A ceramide-containing cream or ointment that is fragrance-free could be opted for. The cream or ointment should be used after bathing, swimming, or whenever the skin feels dry or irritated.





Checking for cuts, sores, or infections: Daily checks for any abnormalities, including cuts, sores, redness, scratches, blisters, or signs of infection are important. Medical attention should be sought for any wounds that are slow to heal.

Protecting the skin: Sunscreen with a high sun protection factor can be used to shield the skin from harmful UV rays. Loose-fitting, breathable clothing should be worn to prevent skin irritation and friction.





Adequate hydration: Drinking enough water can aid in maintaining healthy and moisturized supple skin.

Appropriate foot care: The foot should be kept clean and dry at all times and must be inspected daily for any cuts, blisters, or changes. Comfortable, wide-toed, flat shoes should be worn, and they should be examined for foreign objects before wearing them. The toenail needs to be trimmed properly. Regular visits to a podiatrist for foot exams and nail care are important.

By understanding the connection between diabetes and skincare, adopting good hygiene practices, and being proactive in skin protection, individuals with diabetes can minimize the risk of skin-related issues.

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Respiratory Tract Infections and Diabetes



Dr. Bharat Gupta

MBBS, MD (Medicine), FACP (USA), FIACM, FIAMS, FISH, FDI, FUPDA, Dip Clinical Endocrinology, and Diabetes Consultant Physician, Kalyan Health Care, Mathura, UP **Diabetes mellitus** (DM) is a condition with a high prevalence that is spreading alarmingly around the world. According to the International Diabetes Federation (IDF), type 2 diabetes mellitus (T2DM) is the most common type and accounts for 90% of all cases globally.

T2DM and respiratory tract infections

Respiratory tract infections are one of the most severe infections associated with diabetes, and in the last few years, during the COVID-19 pandemic, data has shown that they are more severe in people living with diabetes. Diabetes also raises vulnerability to several other respiratory infections, such as lower respiratory tract infections (LRTI), pulmonary infections caused by *Mycobacterium tuberculosis, Staphylococcus aureus*, gram-negative bacteria and fungi, *Streptococcus pneumoniae* or influenza virus, and pulmonary tuberculosis.



Factors associated with T2DM and respiratory tract infections

Hyperglycemia and elevated protein glycosylation: Both have been reported to be linked with microangiopathic alterations in the lungs of patients with T2DM. Additionally, constant exposure to high glucose levels also results in the formation of advanced glycation end-products (AGEs), which are linked to the onset of diabetic vascular problems, which in turn trigger reactive oxygen species (ROS), and promote the growth of pulmonary fibrosis.



Compromised immunity: According to studies, T2DM makes patients more vulnerable to serious infections due to the microenvironmental dysmetabolism that impairs immune responses. A decline in T-cell-mediated immunity, as well as neutrophil function impairment, may be related to an increased infection rate in T2DM patients. *Streptococcus pneumoniae*, influenza virus, *legionella*, *Mycobacterium tuberculosis*, *Staphylococcus aureus*, mucor, and gram-negative bacterial infections are the most common causes of infection in diabetes patients.





T2DM and LRTI: The incidence of LRTIs appears to be higher in those living with diabetes. Patients with T2DM and LRTI usually show severe clinical symptoms, a longer illness course, more frequent complications, and higher mortality. Mortality due to LRTI in patients with diabetes is almost four times higher than in the general population. Increased reactivation of old TB lesions has also been observed in individuals with diabetes. LRTI and other diabetes-related complications are more likely to develop in patients with T2DM, age greater than 50 years, duration more than 4 years, and uncontrolled diabetes status.

Vaccination: A life-saving option for patients with diabetes

Vaccination is one of the best and safest ways to avoid infectious diseases. Its effectiveness against COVID-19, pneumonia, and influenza has been demonstrated to lower mortality and morbidity rates. Influenza and pneumococcal vaccines are advised for all patients with diabetes by the Centers for Disease Control's (CDC's) Advisory Committee on Immunization Practices.

Studies have revealed that people with T2DM were more likely to acquire significant respiratory infections when they had inadequate knowledge, a poor lifestyle, poor nutrition, and a lack of follow-up visits. Therefore, in order to improve their quality of life, there is a tremendous need for diabetes education and stress relief during frequent follow-up visits.

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Tips for Promoting Eye Health in People with Diabetes

Dr. Chandrashekhar Patil

MD (Medicine), Consultant Physician, Shri Swami Samarth Hospital, Ichalkaranji Healthcare professionals have an important role to play in ensuring good quality of life for people with diabetes (PWD). Specialists in eye care, such as optometrists and ophthalmologists are crucial in the early identification and prompt treatment of diabetes-related eye conditions. With yearly dilated eye exams and any necessary treatment, these problems can be avoided or delayed. Below are actions that can be taken to help PWD.

Know the risks of vision loss and eye diseases

60% of PWD do not take an annual eye exam despite having an increased risk of vision loss and eye disorders. It is projected that by 2050, 16 million PWD will have diabetic retinopathy (DR). The probability of DR can be decreased by 27% with intensive blood glucose management. Other eye complications include glaucoma and cataract, which can be a huge issue in the adult working population.



Encourage vision monitoring



PWD should be informed about the symptoms of eye problems at each visit, which will make it easier for them to notice changes in their vision. They should be informed about the following red flags which need medical attention:

- Floating, dark spots, or streaks that resemble cobwebs
- O Dryness in the eyes
- Sudden changes in vision, ability to focus, or unable to adjust to light changes
- O Double vision

Asking the PWD to repeat back what they heard will help in ensuring that they have understood well. Questions about their eye health, like did they get a comprehensive eye exam with dilated pupils at least once a year, or do they know how diabetes can affect their eyes or what to do if they suddenly have a change in their vision, etc., can also be asked at each visit. If they require additional information, they can be directed to a specialist.

Reminder for ABCs within normal levels for optimum health

PWD should be encouraged to make healthy lifestyle choices and keep their A- A1c, B- Blood pressure, and C- Cholesterol within target levels. Examine symptoms that might necessitate an expert referral. PWD should be encouraged for frequent follow-up visits, and their socioeconomic background must be taken into consideration to assess their overall health challenges and risks and to help make the right intervention decisions.



Resource:

CDC. How to Promote Eye Health for People With Diabetes Available at: https://www.cdc.gov/diabetes/professional-info/health-care-pro/diabeteseye-health.html

Diabetes and Urinary Tract Infections



Dr. S. S. Akbar

MBBS, MD, PGDD (UK), FACP (USA), FRCP (Ireland), FRCP (Glasgow), FRCP (Edin), FRCP (London) Consultant Physician and Diabetologist, Diabetes Care Clinic, Aligarh, UP Variable levels of insulin resistance, impaired insulin secretion, and elevated glucose synthesis are the hallmarks of type 2 diabetes mellitus (T2DM). According to available data, urinary tract infections (UTI) are the most prevalent bacterial infections among people with diabetes (PWD). According to an American Diabetes Association report, people with

T2DM are more likely to get a UTI and a repeat UTI than those who do not have diabetes. The etiology of UTI in PWD may be influenced by a number of immune system dysfunctions, as well as poor metabolic regulation caused by diabetes and incomplete bladder emptying caused by autonomic neuropathy. Age, metabolic control, and long-term consequences, particularly diabetic nephropathy, and cystopathy, were observed to increase the risk for UTI in PWD.

Classification of UTIs

- Lower-UTI or cystitis: Bacterial infection of the bladder and the urethra.
- **Upper-UTI or Pyelonephritis:** Bacterial infections that affect the ureters, which link the kidneys to the bladder.

Risk factors of UTIs

Diabetes has an impact on the immune system, which raises the chance of a UTI. Other risk elements include:

- Kidney stones, which impede the flow of urine and create conditions conducive to infection
- Anatomical faults of the urinary tract
- Infection risk is increased by a slowed urine flow caused by an enlarged prostate gland
- Menopause
- O Nervous system issues that make it difficult to empty the bladder
- O Pregnancy
- Females using a diaphragm for birth control
- Prolonged use of a urinary catheter increases the risk of UTI
- Having urinary tract system surgery



Pathogenesis of UTIs in diabetes

The length and severity of diabetes are both positively correlated with higher vulnerability in PWD. Due to excess glucose being filtered in the kidneys, leading to noticeably higher urine glucose concentrations, PWD frequently gets UTIs. High glucose levels in the urine provide a nutrient-rich environment for bacteria, which can multiply and lead to illness. Diabetes may raise the risk of UTIs by various processes in addition to elevated urine glucose, such as impeded immune cell transport, ineffective white blood cells, and inhibition of bladder contractions that cause urine to remain stagnant in the bladder. The risk of UTI is higher in women with diabetes and in PWD with adiposity.



Treatment of UTI

For PWD, a more prolonged course of oral antibiotic therapy lasting seven to fourteen days is necessary for recovery, although some severe kidney infections may necessitate inpatient treatment, including a round of intravenous antibiotics.



Prevention and control

- Controlling blood pressure and keeping glucose levels within the target range is crucial for preventing UTIs.
- Adequate hydration.
- O Beverages like alcohol that irritate the bladder should be avoided.
- The genital area needs to be maintained clean and dry.
- The bladder must be emptied at regular intervals, and one should not hold on to the urge to urinate.

Compared to people without diabetes, PWD have more severe UTIs, which are brought on by microorganisms that are more resistant and are associated with worse outcomes. Treatment should be customized based on the infection's severity and the results of the culture.

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Foot Care Tips in Monsoon



Dr. Mahalakshmi K. Sridhar

MD Consulting Physician & Proprietor, SKMH Hospital, Erode After the sweltering heat of summer, the monsoon is welcome. For many, it is the perfect time to reconnect with nature. However, the monsoon season also brings with it several contagious illnesses, such as the common cold and cough, viral fevers, bacterial and fungal infections, and others. If necessary precautions are not taken, low immunity,

uncontrolled glucose levels, and monsoons can create trouble in the lives of people with diabetes.

Foot-related infections and complications are also very common in the monsoon, due to the muddy water, and dampness in the air, as well as falls are highly prevalent in this season. Diabetes causes blood arteries to constrict and harden, which reduces blood flow and makes it harder to heal wounds and fight infections. Another reason for foot issues in people with diabetes is nerve loss or neuropathy, which results in tingling, burning, or stinging sensations in the foot. Cuts or injuries are not felt due to loss of sensation and weakness in the foot.



People with diabetes should be very careful while going out in the rain and must keep the below points in their mind regarding foot care.

- Personal cleanliness must be practiced. Apply moisturizer to prevent cracks in the feet after washing them with warm water rather than hot water. To avoid fungal infections, do not apply moisturizer between the toes.
- Check the feet every day for cuts, blisters, sores, corns, and calluses. Avoid removing corns and calluses at home; instead, visit a podiatrist.
- Avoid going barefoot in muddy puddles and in the rain.
- To prevent injury, appropriate footwear must be worn inside the house as well as outside in the rain. Outdoor footwear needs to be well-fitting, comfortable, and open so that water may drain out.
- Before putting on shoes, make sure the interior is smooth and look inside for any sharp objects that might lead to scratches or wounds.
- Socks should be clean, and preferably diabetes-friendly socks should be used. Such socks are made of fiber that repels moisture and lacks an elastic top.
- Rubbery rainy footwear produces friction, which can lead to wounds and itching feet; it is advised to use a little coconut oil to avoid friction.
- After returning home from the rain, it is advised to wash your feet, then wipe and pat them dry with a clean cloth.
- While going to bed, wear socks to prevent cold feet.

- Regular nail trimming is required, and a nail file should always be used to smooth off any rough edges.
- Toenails need to be maintained clean since they might become infected in the rain; if clipping toenails is difficult at home, visit a podiatrist.

Along with all the above tips, it is very important to keep blood glucose levels under control.

People with diabetes can prevent foot complications, especially during monsoons, with a little extra care at home and regular foot checkups with the healthcare provider.

Resources:

- 1. Diabetes And your Feet, Centre for Disease Control And Prevention, Available at: https://www.cdc.gov/diabetes/library/features/healthy-feet.html
- 2. Diabetes Footcare Tips, American Diabetes Association, Available at: https://diabetes.org/healthy-living/seniors/foot-care-tips





Abridged Prescribing Information

Indications: It is indicated as an adjunct to diet and esercise to improve glycomic control in adults with type 2 diabetes multitas.

Broage and Administration: The recommended store is one tablet daily. Each tablet contains a fixed store of dapaglifluxin, Sitagliptin and Wetforms Hydrochioxide.

Adversa Reactions: Next common adverse machines reported are: EagugEBush-Temple printal myotic infections, sacepharprojits, and ennary text infections. Staglightin-Upper registrary text infection, nacepharprojits and headache. Methornia-Damines, names/someting, futurence, esthema, independent, and headache.

Warnings and Precautions: Dapagelifacte: Volume depletion; Retaucideals in Patients with Diabetes Velistas; Unoregais and Ppelovephilits; Hapodyceenia; Genital Mycroic infections

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Communifications: https://www.inter.org/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/active.com/acti

We in a special population: Program Warren: Daris to lack of human data, drug should not be used dating programs; Lackating Women: It should not be used dating breastfreeding. Parimeter Patients: The safety and efficacy of drug his not yet been established. No data are available. Generative Patients: In Patients: In

Additional information is available on request.

Last updated: January 03, 2023

"In case of any advence events, kindly contact; projuce.in For the use of registered rendical practitioner, hospital or laboratory."

USV Corvette

Personalized Support for Hyperglycemia During Pregnancy: A Doctor's Experience on the MyCare Patient Support Program



Dr. Sybal D'Britto

MBBS, CDIABT Pearl Diabetes Care & Family Health Clinic, Nallasopara (W) A 27-year-old pregnant woman with type 2 diabetes mellitus (T2DM) and erratic blood glucose levels was managed by Dr. Sybal D'Britto.

Here's what Dr. Sybal has to say:

The patient was diagnosed 2 years ago with T2DM and was managed with oral antidiabetic drugs. She conceived and came in for a consultation as her blood glucose levels were very erratic, post which I switched her to insulin. Her HbA1c at this point was 8.2%. Her lifestyle and eating habits were very irregular and she did not find time for regular exercise.

Here is where I suggested the 20-week MyCare support program for her and sought the assistance of Ms. Bhavana the MyCare Diabetes Educator (MDE). The MDE educated her on the importance of maintaining strict glucose control during pregnancy for a healthy baby. She counseled her on the role of a healthy lifestyle, diet, and regular exercise and its impact on blood glucose levels. She also educated her on injecting techniques, site rotation, and proper storage and use of insulin pens.

The patient was educated on a balanced diet and carbohydrate counting and a detailed customized diet chart was provided based on the recommended nutritional requirements during pregnancy. The MDE also ensured that exercise was incorporated into her daily routine. The patient shared her self-monitoring blood glucose (SMBG) chart regularly with me and the MDE.

After 3 months, her HbA1c dropped to 5.5% and she was confident enough to manage her blood glucose levels and delivered a healthy baby boy at term.



Ms. Bhavana Choudhary

NDEP and T1DE Certified Diabetes Educator

Here's what the MDE Bhavana has to say:

Proper diabetes education, diet counseling, lifestyle modification, and daily physical exercise helped the patient enjoy a safe and healthy pregnancy with good glucose control. She continues to have good glycemic control even post-pregnancy.





MyCARE Service available at Ahmedebad, Bangalore, Bhopal, Bhuvaneshwar, Burdwan, Chandigarh, Chennai, Cochin, Coimbatore, Delhi, Guwahati, Hubil, Hyderabad, Jaipur, Jodhpur, Kolkata, Lucknow, Ludhiana, Madurai, Meerut, Mumbai, Mysore, Nagpur, Patna, Pune, Siliguri, Surat, Thiruvananthapuram, Varanasi, Vijayawada, Visakhapatnam *PWD: People with Diabetes

In Uncontrolled Obese T2DM,



Glycomet -GP2 FORTE





Gimepinide use is associated with induced cardiovascular mortality in patients with type 2 diabetes and chronic heart failure, a prospective cohort study | European Journal of Preventive Cardiology | Exfort Academic (oup.com)
 Z. Ther Adv Endocrinol Metab 2020. Vol 11:1-12 DOI: 10. 1177/2042018820928000.
 # Data on file
 * As compared to non-glimepinide group
 EET: Epoxyelcosatrienoic acid; sEH: soluble Epoxide Hydrolase: AHAs: antihyperglycemic agents; T2DM: Type 2 Diabetes Mellitus

Prescribing Information

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Last updated: Marsh 13, 2023

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Corvette Team

Food Safety and Prevention of Foodborne Illness



Dr. M. A. Karmur

M.B.B.S., F.D.R.C, P.G.D.H.Sc. (Diabetology) Consultant Diabetologist, Saurashtra Diabetes Centre, Rajkot Food safety is a growing concern. There is a rising need to provide greater assurance about the safety and quality of food. Eating contaminated food can cause foodborne illness, which can be infectious in nature. People with diabetes (PWD) are more prone to infections. A foodborne illness raises the

possibility of deteriorating into a more serious condition, necessitating hospitalization, or even death. To avoid contracting a foodborne illness, it is important to be careful when handling, preparing, and eating food.

Four steps to food safety

Clean	Wash hands in warm, soapy water for at least 20 seconds before and after handling food, as well as after using the restroom, changing diapers, or handling pets. Utensils and surfaces are to be washed often. Fruits and vegetables, particularly those with skins and rinds that are not eaten, should be rinsed and rubbed under running water.
Separate	Don't cross-contaminate – when grocery shopping, keep raw meat, poultry, and seafood away from other foods. Store raw meat, poultry, and seafood in sealed containers. Use separate cutting boards for meats, vegetables, and bread.
Cook	Food is safely cooked when the internal temperature gets high enough to kill germs. Undercooked meats have a higher chance of causing food poisoning; thus they need to be cooked at the right temperature. For example, whole cuts of meat and fish should be cooked to 145°F; ground meat should be cooked to 160°F; for chicken and reheating leftover food, the temperature should be 165°F.
	Roadside food that is raw like juices, cut fruits, and salads, should be avoided, especially if ingredients are uncovered.
Chill	Refrigerate or freeze meat, poultry, eggs, and seafood within 2 hours of cooking or purchase. Other perishable food items like dairy, cut fruit, some vegetables, and cooked leftovers should be refrigerated or frozen within 2 hours. Never thaw food by simply taking it out of the freezer. Thaw food in the fridge, in cold water, or in the microwave.

It is estimated that almost 1 in 10 people in the world fall ill due to contaminated food. Since PWD may have an impaired immune system, consumption of contaminated/spoiled food increases their burden further. Food safety needs to be a public health priority.

Resources:

1. Food safety for people with diabetes. Available at - https://ucfoodsafety.ucdavis.edu/sites/g/files/dgvnsk7366/files/inline-files/26449.pdf

2. Four steps to Food Safety. Centers for Disease Control and Prevention. March 24, 2023. Accessed June 23, 2023. https://www.cdc.gov/foodsafety/ keep-food-safe.html

Prevention of Fungal Infections in People with Diabetes



Dr. Prathusha Nerella

MBBS, MD, FID, NLP, CCGDM, CCEBDM, (DIPIBLM)

Senior Consultant General Physician & Diabetes and Lifestyle Diseases Expert, NLP Expert, Medplus Diagnostics, Hyderabad Individuals with diabetes are more prone to infections, especially fungal infections due to high blood glucose levels that help the fungi to thrive. Hyperglycemia is associated with immune dysfunction increasing the risk and severity of infections in individuals with diabetes. Fungal

infections usually occur at the surface of the skin, in skin folds, as well as in areas kept warm and moist by clothing and shoes. They can also appear in the mouth. Fungal infections trigger the body's immune system, causing inflammation and tissue damage, and sometimes may trigger an allergic reaction. Hence, patient education is necessary to prevent occurrence and appropriate management of these infections. Appropriate management for preventing fungal infections in vulnerable individuals with diabetes is described below.





Glycemic control: This forms a core part of preventing any infections. Optimal glucose control will keep the immune system well-functioning and reduces the chances of infections. Medical nutrition therapy, regular physical activity, adequate sleep and stress management help in achieving desired glucose control. Thus, a holistic approach is required. Individuals with diabetes must seek guidance from a qualified dietitian to understand medical nutrition therapy in diabetes, ways to implement it in routine and long-term sustenance.

Regular monitoring of blood glucose levels: Self-monitoring of glucose levels is a critical measurement of ongoing diabetes management. Blood glucose monitoring helps one identify patterns in the fluctuation of blood glucose levels which may occur in response to diet, exercise, medications, and importantly any pathological processes such as infections that may be associated with blood glucose fluctuations. It helps in targeting interventions to achieve optimal glucose control and desired time in range.



Maintain hygiene: It is important to stress upon basic hygienic practices. Sweat and dampness create a favorable environment for fungal growth. Hence clean and dry clothes must be worn every day especially undergarments and socks. Clothes and shoes must not be too tight and should be of breathable material like cotton. Elastic of the socks should not be too tight. It is a must to bathe once daily but one must also bathe after activities that cause excessive sweating like gymming or post-workout. The body should be pat dried properly post a shower and special attention must be given to drying the feet in between the toes. Moisturizer should not be applied between the toes. Nails should be kept trimmed and clean. One must avoid



sharing personal items like nail cutters, towels, toothbrushes, and hairbrushes. People with diabetes should always avoid walking barefoot. Oral hygiene is important to prevent oral thrush. The mouth should be thoroughly rinsed after using inhalers to prevent oral thrush. Teeth should be brushed twice a day with toothpaste which contains fluoride. Regular flossing must be practiced along with rinsing of mouth post meals.

Together, lifestyle modifications and hygiene can prevent infections from having serious consequences in individuals with diabetes.

Resources:

- 1. Berbudi A, Rahmadika N, Tjahjadi Al, Ruslami R. Type 2 Diabetes and its Impact on the Immune System. *Curr Diabetes Rev.* 2020;16(5):442-9. doi:10.2174/1573399815666191024085838.
- 2. Santhosh YL, Ramanath KV, Naveen MR, Fungal infections in diabetes mellitus: an overview. *International Journal of Pharmaceutical Sciences Review* and Research. 2011;7(2).
- 3. Kumar V, Agarwal S, Saboo B, Makkar B. RSSDI Guidelines for the management of hypertension in patients with diabetes mellitus [published online ahead of print, 2022 Dec 15]. Int J Diabetes Dev Ctries. 2022;42(Suppl 1):1-30. doi:10.1007/s13410-022-01143-7
- 4. Mathew TK, Zubair M, Tadi P. Blood Glucose Monitoring. [Updated 2023 Apr 23]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK555976/
- 5. American Dental Association, Diabetes, and dental health, Available at: https://www.mouthhealthy.org/all-topics-a-z/diabetes/
- 6. Dermatologist-recommended skin care for people with diabetes, American Academy of Dermatology Association. Available at: https://www.aad.org/ public/diseases/a-z/diabetes-skin-care

Frequently Asked Questions on Diabetes and Hygiene



MD (Medicine), PGDDM Consultant Physician, Intensivist & Diabetologist, Shree Hospital & ICU, Rajkot 1. I am a 38-year-old female, living with type 2 diabetes for the past 7 years. My HbA1c levels have constantly been on the higher side as I travel a lot. Recently, I have noticed that my gums sometimes bleed when I brush my teeth. My dentist told me that diabetes could be one of the reasons for this. Does diabetes affect the gums? How can I prevent any oral complications?

Ans. Uncontrolled blood glucose levels increase your risk of developing gum disease (periodontitis), cavities, dry mouth, and other oral health issues. The mouth's saliva acts as a defence against dryness, food particle buildup, bacterial growth, and tooth decay. Diabetes tends to reduce salivary production and weakens immunity, which promotes bacterial infections. Gum disease (gingivitis or periodontitis) could develop if you don't take care of your teeth. Gum swelling, bleeding, and tooth loss are common side effects. The first thing to reduce or prevent oral complications is getting good glycemic control. Other than that, oral hygiene also plays an important role.



- Brush your teeth at least twice a day with fluoride toothpaste.
- Make sure to floss your teeth at least once a day.
- Visit your dentist and get your teeth and gums cleaned and checked at least twice a year.

2. I am 29-year-old. I was diagnosed with type 1 diabetes almost 20 years ago and have been on insulin injections ever since. I have a field job, and it becomes difficult to find a private area to inject the insulin prior to every meal, and is also time-consuming on days when I'm on a tight schedule. I wanted to know if I could inject the insulin through my clothes.



Ans. Injecting insulin through clothing is not a good idea for a number of reasons. In order to minimize pain, pens and syringes are lubricated. This lubrication can be minimized through clothing, making injections more uncomfortable. Clothing is not sterile, and substances therein may contaminate the needle, which, in the worst-case scenario, may result in infection. Furthermore, clothes might reduce the needle's efficiency by dulling the point. And lastly, the clothing obscures your vision of the injection site, leaving you unaware of the effectiveness of the injection.

3. I am a 45-year-old woman. I have had type 2 diabetes for the last 5 years. Last year, during the monsoon, I developed a severe eye infection, which took a while to heal. Is there any way to prevent eye infections?

Ans. During monsoons, the risk of viral and bacterial eye infections increases due to increased moisture in the air. These can be prevented first by maintaining good glycemic control and following some eye hygiene practices. Avoid touching your eyes often with unwashed hands. If you happen to be outdoors when it rains, try not to let the rainwater get into your eyes, and wash and dry your eyes well after you return home. You can wear light-colored



sunglasses to protect your eyes outdoors. Avoid splashes of muddy water, as that has a high bacterial load. Eye infections are usually contagious and can be easily transmitted via handkerchiefs, towels, lenses, glasses, and other articles of daily use. Hence, make sure you do not share such personal-use items with anyone else. Eye infections can cause redness of the eye and watery discharge. Consult an ophthalmologist if you notice any of these symptoms. With these basic hygienic practices, you should be able to avoid any kind of eye infection.

4. My 30-year-old son is overweight and has recently been diagnosed with type 2 diabetes. I have heard that diabetes weakens immunity. I know that citrus fruits are full of vitamin C, which helps boost immunity. Can I give him orange juice to drink daily?



Ans. You are right about diabetes affecting one's immunity and fruits being immune boosters. However, fruit juices are not the right option as they are also a form of concentrated simple sugar without any fiber. To make one glass of orange juice, you need to squeeze 4-5 oranges, so what you get is simple sugars from that many oranges and the fiber is missing, so the blood sugar level rises sharply post-consumption of fruit juice. You should always choose whole fruit over fruit juice. You can give him one medium-sized fruit along with a fistful of nuts at snack time. This will ensure good glucose control as well as intake of vitamins, minerals, and fiber, which will boost his immunity.

Recipe: Healthy Vada

Serves: 2 (makes 6 vadas)

Ingredients	Amount
Potato (medium size) boiled, mashed	1½ no.
Bottle gourd finely grated	100 gm
Cumin seeds	1⁄4 tsp
Green chili finely chopped	1 no.
Ginger garlic paste	1⁄4 tsp
Turmeric powder	1⁄4 tsp
Lime juice	2 tsp
Coriander leaves finely chopped	1 tbsp
Mint coriander chutney	1 tbsp
Salt	To taste
Oil	2 tsp
For batter	
Besan/gram flour	2 tbsp
Salt	To taste
Asafoetida	a pinch
Turmeric	1 tsp
1 tablespoon (tbsp): 15mL; 1 teaspoon (tsp): 5mL	



Method

- 1. In a large pan, heat oil and add cumin seeds. Once it splutters, add finely chopped green chili, ginger garlic paste, turmeric powder, mashed potatoes, finely grated bottle gourd, lime juice, finely chopped coriander leaves, and salt, mix well and sauté on a low flame for about 5 minutes.
- 2. Remove the pan from the flame, let it cool.
- 3. Divide the mixture into 6 equal portions.
- 4. Roll each portion into round balls and keep them aside.
- 5. For making the batter, add salt, turmeric, and asafoetida to the besan flour and mix well, slowly add water to the besan flour, and whisk well, the batter consistency should be medium thick and flowing.
- 6. Take an appam maker, grease it with a little oil, and heat it on a low flame.
- 7. Dip the potato rounds in the batter and place them in the appam maker.
- 8. Cook till they are golden brown on both sides.
- 9. Serve hot with mint coriander chutney.

Dia-Games

Word search

Look for the words given in the grid. They could be horizontal, vertical, or diagonal.														
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N	OTES

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In Newly Diagnosed & Young T2DM,

Start Early with

Glycomet-GP0.5 Glycomet-GP0.5 FORTE Mettormin Hydrochloride 500 mg SR + Glimepiride 0.5 mg Methamin Hydrochloride 1000 mg SR + Gimepiride 0.5 mg



T2004 Tape 7 Denters Mellium, Maddie Hermagnike 425 1. SMT101 FT307 (Tutas as Tel: 2. Database HermAnda 2017, T017181 T102, Evolution, Journal 2018, 41 (72, 1103 177)

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USV Private Limited

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1. Asian Journal of Diabetology, Vol. 23, No. 2, April-June 2022; YALAMANCHI SADASIVA RAO etal, 2. Asian Journal of Diabetology, Vol. 23, No. 2, April-June 2022; SAUMITRA RAY etal, 3. Cureus 2020; 12(9): e10.7759/cureus.1070 4. CMARC Data 5. Healthplix Data 6. Lim L-L, Lau ESH, Cheung JTK, et al. Real-world usage of sulphonylureas in Asian patients with type 2 diabetes using the Joint Asia Diabetes Evaluation (JADE) register. Diabetes Obes Metab. 2022;1-14. Doi:10. 1111/dom.14865;

Prescribing Information

Information: Metformin hydrochloride (as prolonged release) and glimepiride tablets. Glycomet-GP 0.5/Glycomet-GP 0.5 Forte/ Glycomet-GP 1/ Glycomet-GP 1/850/ Glycomet-GP 2/850/ Glycomet-GP 3/ Glycomet-3/850/ Glycomet-GP 4/ Glycomet-GP 4/850/ Glycomet-GP 1 Forte/ Glycomet-GP 2 Forte/ Glycomet-GP 3 Forte/ Glycomet-GP 4 Forte Abridged Prescribing Information Composition: Glycomet-GP 0.5mg: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 500mg and glimepiride IP 0.5mg.+ Glycomet GP 0.5 Forte: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 1000mg and glimepiride IP 0.5mg.+ Glycomet GP 1: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 500 mg and glimepiride IP 1 mg. • Glycomet GP 1/850: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 850 mg and glimepiride IP 1 mg. • Glycomet GP 2: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 500 mg and glimepiride IP 2 mg. • Glycomet GP 2/850; Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 850 mg and glimepiride IP 2 mg.• Glycomet GP 3: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 500 mg and glimepiride IP 3 mg. • Glycomet GP 3/850: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 850 mg and glimepiride IP 3 mg. • Glycomet GP 4: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 500 mg and glimepiride IP 4 mg. • Glycomet GP 4/850: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 850 mg and glimepiride IP 4 mg. • Glycomet GP 1 Forte: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 1000mg and glimepiride IP 1mg. • Glycomet GP 2 Forte: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 1000mg and glimepiride IP 2mg. • Glycomet GP 3 Forte: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 1000mg and glimepiride IP 3mg. • Glycomet GP 4 Forte: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 1000mg and glimepiride IP 3mg. • Glycomet GP 4 Forte: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 1000mg and glimepiride IP 3mg. • Glycomet GP 4 Forte: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 1000mg and glimepiride IP 3mg. • Glycomet GP 4 Forte: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 1000mg and glimepiride IP 3mg. • Glycomet GP 4 Forte: Each uncoated tablet contains metformin hydrochloride IP (as prolonged release form) 1000mg and glimepiride IP 3mg. release form) 1000mg and glimepiride IP mg. 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.a. every 3-6 months.

Additional information is available on request.

Last updated: March 13, 2023 *In case of any adverse events, kindly contact: pv@usv.in

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

Corvette Team





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