JOURNAL OF DIABETES EDUCATION

To Dispel Darkness of Diabetes

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PURPOSE OF INSULIN INITIATION - TO TELL THE TACTICS

Rakesh Kumar*

Intoduction:

Most patients with T2DM lose more than 50% of their beta-cell function at the time of diagnosis which steadily continues to decline at approximately 3-5% per year. Overtime, even with multiple oral anti-diabetic drugs (OADs) patients fail to achieve or maintain glycemic control. However, accumulating evidence suggests that the decline in beta-cell function may be slowed or even reversed, particularly if addressed early in the course of the disease.

Evolution of treatment protocols with time:

Historically the idea was to delay the insulin initiation until patient fails to achieve glycemic targets despite using maximum tolerable dose of oral hypoglycaemic agents (OHA) and instead of considering as a treatment modality, patient usually perceived insulin initiation as punishment for poor glycemic control. New research confirms the benefits of early initiation of insulin therapy. The findings of a retrospective study were presented at American Association of Clinical Endocrinology (AACE) conference 2017 which stated "Despite evidence that early insulin initiation can reduce the risk for complications such as cardiovascular events in patients with type 2 diabetes, barriers to its implementation remain". Some findings indicate that insulin is often initiated in these patients only after several trials of oral anti diabetic drugs, and at a point when glycated hemoglobin (HbA1c) levels significantly exceed guideline recommendations[4]. Unfortunately the decision to start the Type 2 patient on insulin in our country, as elsewhere, is usually precipitated by:

- Worsening symptoms of hyperglycemia.
- A persistently elevated HbA1c level despite maximal or near maximal doses of oral hypoglycemic agents.
- Intercurrent illness or patient commenced on corticosteroid therapy.

Benefits of Early Insulin Initiation:

The UKPDS outcome data brought out the fact that early aggressive efforts should be made to reduce blood sugar level to as close to normal. Early intensive control helps to prevent or reduced formation of "metabolic memory or legacy effects". Metabolic memory or legacy effect promotes formation of advanced glycation end products(AGEP) and free radicals which increases stress & damage to vascular endothelium. Intensive insulin treatment is associated with significantly lower levels of AGEPs than conventional treatment, supporting the long-term benefits observed with an intensive management strategy[6]. Many newer trial reports showed that an intensive control regimen resulted in better glycemic outcomes, including significantly lower HbA1c, than standard therapy[7].

Barriers of Insulin Initiation:

Physician Related	Patient Related
1. Risk of Hypoglycemia	1. Patient belief: Insulin therapy non efficacious
2. Concern regarding Weight Gain & Compliance	2. Perception: Insulin is punishment. I can do well with life style modification & OHAs.

* **Dr Rakesh Kumar, MD In – charge, (Integrated Diabetes & Gestationan Diabetes Clinic) (IDGDC) (A DAY initiative in IQ City Hospital**

Strageties to minimise common barriers to insulin initiation:

Presumed failure of previous treatment	Clinicians should be more empathetic and must ensure that insulin initiation should not be perceived as punishment for non adherence. Communication is key to success.
Needle Phobia	Thinner, smaller needles are available and should minimise this concern. Patient should be shown these needles and taught self injection technique to ease the patient's anxiety.
Cumbersome procedure and complex regimens	User friendly Insulin Pens, Start with simple Basal, Basal Plus or Premix regimen to familiarise patients. May be changed to more complex regimens if need arises.
Hypoglycemia	Severe hypoglycemia is uncommon in T2DM patients and risk is almost similar with the Sulfonylurea. Intensive hypoglycemia education will further help to prevent hypoglycemic attacks & consequent non compliance.
Weight Gain	Use of Metformin with insulin, physically active life style & proper diet can blunt the weight gain property of insulin.
Change in Social Life	Use of latest device like Insulin Pen, Continuous Insulin Infusion Pumps, Insulin Regimens most suitable for patients job profile & affordability.

Role of Diabetes Self Management Education (DSME) & Self Monitoring of Blood Glucose (SMBG) in Insulin Initiation:

Diabetes is a lifelong disease and needs to be self managed as a personal responsibility of the patient. DSME is an ongoing process and empowers patients for personal care. DSME ensures increased diabetes related knowledge, better dietary and exercise habits, improved monitoring skills, greater coping capacity and better glycemic control. SMBG on the other hand makes the patient an active participant in diabetes management team. Day to day monitoring gives instant impact of the treatment and motivates the patients to do better and thus increases compliance.

Role of Diabetes Educators (DEs) in Insulin Initiation & Continuation:

Diabetes educators are the best forms of hope & support for the diabetes professionals as well as for patients. DEs can address some most important obstacles of insulin initiation and correct poor glycemic control.

Barriers	**DE's Role**
Doctor's Time	Can be a bridging person between doctor & patient saving time of busy doctors.
DSME	Implementing basics of DSME i.e assessment of the patients knowledge & training, to make DSME ongoing process

Psychological Barriers	To act as counsellor and removing needle phobia, anxiety, fear of side effects which might be potentiating psychological barriers against insulin.
Failure to maintain SMBG	Giving follow up calls and ensuring active participation of patients.
Lack of round the clock support system	DEs can be an ideal person who can give round the clock support to patients in case of emergency. Robust support system will encourage patients' for insulin initiation.
Lack of Motivation for healthy life style	DEs can ensure healthy life style by addressing barriers against healthy life style by giving socially & occupationally compatible solutions on every contact

It is essential to review the following points prior to making the decision to commence insulin.

1. It is best practice that a registered dietitian should undertake the dietary review.
2. Discuss with the GP or a consultant diabetologist and agree on the appropriate glycemic target and insulin for the individual patient.
3. Clarify continuing use or discontinuation of oral hypoglycemic agents.
4. Involve the patient in the choice of how often he/she will administer insulin.
5. Ensure patient understands the broad principle of insulin treatment and is proficient at blood glucose monitoring or else initially supervise practical skills or continue to visit long term.
6. Ideally instruct the patient on the use of an insulin delivery device a day or two prior to commencing insulin. It is important that they overcome their fears at an early stage as this may hamper further education
7. Choose the appropriate regimen and calculate a 'safe' dose of insulin. Ensure a relevant prescription fit right for a given individual.
8. If antidiabetic agents are to be discontinued instruct patients to take final dose the evening before starting insulin or 12 hours depending on the nature of the drug.

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GERIATRIC DIABETES

Kiran Bahrus*

Diabetes Mellitus prevalence, in general, is growing worldwide, and is becoming an epidemic and endemic problem with the social and economic burden. Although the burden of diabetes is often described in terms of its impact on working-age adults, diabetes in older adults is linked to higher mortality, reduced functional status, and increased risk of institutionalization. DM prevalence and its co-morbidities and mortality are higher in elderly than in young people.

In 2011 census, 5.3% of the Indian population was > 65 years of age. This number has steadily grown over the past few years and is steeply growing. Healthcare burden of elderly diabetics is immense and proper diagnosis and treatment alone can prevent further complications.

The definition of elderly is a subject of controversies. In general, a person is considered as old if his/her civil age is ≥ 60 or 65 years old. However, from the scientific angle a person is supposed to be old if his/her age is more or equal to 75. Nevertheless, it is more important to consider the physiological or vascular age. This varies according to genetic background, environmental factors and presence or lack of morbidities such as DM, high blood pressure, arthritis or other rheumatologic diseases, obesity, cognitive dysfunction, renal insufficiency, and heart failure. For this, the international diabetes federation (IDF) divides old patients into three functional groups:

- The first category includes patients who are functionally independent and rely on their own self. In this group, DM may be the only medical problem or be associated with some diseases which are not life-threatening.
- The second category is composed of patients who are not autonomous which means they are functionally dependent on someone else. This group is subdivided into two subcategories: Frail patients and patients with cognitive impairment.Frail or fragile patients are characterized by a combination of fatigue, weight loss, and severe restriction in their mobility and/or strength, which increases the risk of falls and institutionalization. The second subcategory includes patients with dementia, which means they have cognitive impairment and are unable to self-care. This category is at increased risk for both hypoglycemia and hyperglycemia poor control.
- The third group includes patients at the end of life care. These persons have a significant medical illness or malignancy. Consequently, they have a short life expectancy.

Older adults with diabetes are at substantial risk for both acute and chronic microvascular and cardiovascular complications of the disease. Older adults with diabetes have the highest rates of major lower-extremity amputation myocardial infarction (MI), visual impairment, and end-stage renal disease as compared to any age-group. Those aged ≥75 years have higher rates than those aged 65–74years for most complications. Deaths from hyperglycemic crises also are significantly higher in older adults (although rates have declined markedly in the past 2 decades). Those aged ≥75 years also have double the rate. of emergency department visits for hypoglycemia than the general population with diabetes.

Screening for diabetes and prediabetes

Older adults are at high risk for both diabetes and prediabetes, with surveillance data suggesting that half of older adults have the latter. The ADA recommends that overweight adults with risk factors and all adults aged ≥45 years be screened in the clinical setting every 1–3 years

* **Kiran Bahrus, M.Sc (Clinical Trials) Asst. Secretary, Diabetes Awarness and YOU (DAY).**

using either an FPG test, A1C, or oral glucose tolerance test. The recommendations are based on substantial indirect evidence for the benefits of early treatment of type 2 diabetes, the fact that type 2 diabetes is typically present for years before clinical diagnosis, and the evidence that signs of complications are prevalent in "newly diagnosed" patients.

Prevention or delay of type 2 diabetes

Numerous clinical trials have shown that in high-risk subjects (particularly those with impaired glucose tolerance), type 2 diabetes can be prevented or delayed by lifestyle interventions or by various classes of medications. In the Diabetes Prevention Program, which is the largest trial to date, ~20% of participants were aged ≥60 years at enrollment. These participants seemed to have more efficacy from the lifestyle intervention than younger participants. Follow-up of the DPP cohort for 10 years after randomization showed ongoing greater impact of the original lifestyle intervention in older participants and additional benefits of the lifestyle intervention that might impact older adults, such as reduction in urinary incontinence, improvement in several quality-of-life domains and in cardiovascular risk factors.

Interventions to treat diabetes (See Goals in Table 1)

Glycemic control:

There is very little understanding of the effects of glucose lowering on microvascular complications, cardiovascular complications, and mortality. In the UK Prospective Diabetes Study (UKPDS), microvascular benefits persisted during the post-trial follow-up period, and statistically significant reductions in both mortality and MIs emerged, referred to as the "legacy effect" of early glycemic control. However three major randomized controlled trials the Action to Control Cardiovascular Risk in Diabetes [ACCORD] trial, the Action in Diabetes and Vascular Disease: Preterax and Diamicron MR Controlled Evaluatiion [ADVANCE] trial and the Veterans Affairs Diabetes Trial [VADT]) add to the uncertainty regarding the benefits and risks of more intensive treatment of hyperglycemia in older adults. An ADA position statement said that the combination of the UKPDS follow-up study and subset analyses of the later trials ". . . suggest the hypothesis that patients with shorter duration of type 2 diabetes and without established atherosclerosis might reap cardiovascular benefit from intensive glycemic control, [while] . . . potential risks of intensive glycemic control may outweigh its benefits in other patients, such as those with a very long duration of diabetes, known history of severe hypoglycemia, advanced atherosclerosis, and advanced age/frailty".

MONITORING OF GLYCEMIA - Monitoring is usually necessary to achieve glycemic goals. glycated hemoglobin A1C is typically monitored twice yearly in older patients who are meeting treatment goals and who have stable glycemic control, and quarterly in patients whose therapy has changed or who are not meeting glycemic goals. Various guidelines for glycemic treatment focus on A1c goals in the elderly population, but even in the presence of a high A1c level, the individual may be having serious hypoglycemic episodes. Review of blood glucose levels by CGMS is often important to

Table 1: Glycemic Goals:

- The patient with either none or very mild microvascular complications of diabetes, who is free of major concurrent illnesses and who has a life expectancy of at least 10–15 years, should have an A1C target of , 7%, if it can be achieved without risk.
- The patient with longer-duration diabetes (more than 10 years) or with comorbid conditions and who requires a combination medication regimen including insulin should have an A1C target of 8%.
- The patient with advanced microvascular complications and/or major comorbid illness and/or a life expectancy of less than 5 years is unlikely to benefit from aggressive glucose-lowering management and should have an A1C target of 8–9%. Lower targets (8%) can be established on an individual basis.

detect wide glycemic excursions. Especially with insulin therapy, home glucose monitoring is essential and should help direct therapy. A1c levels may also be misleading in the presence of anemia, renal disease, recent blood loss, and any other condition associated with shortened or lengthened red blood cell life span.

Lipid Lowering

Since older patients are at higher risk, absolute risk reductions with statin therapy would be greater in older patients. Cardiovascular prevention with statins, especially secondary benefit, emerges fairly quickly (within 1–2 years), suggesting that statins may be indicated in nearly all older adults with diabetes except those with very limited life expectancy.

Blood pressure control:

There is consistent evidence that lowering blood pressure from very high levels (e.g., systolic blood pressure [SBP] 170 mmHg) to moderate targets (e.g., SBP 150 mmHg) reduces cardiovascular risk in older adults with diabetes. Selected trials have shown benefit with targets progressively lower, down to SBP ,140 mmHg and diastolic blood pressure (DBP), 80 mmHg

Aspirin:

In populations without diabetes, the greatest absolute benefit of aspirin therapy (75–162 mg) is for individuals with a 10-year risk of coronary heart disease of 10% or greater. The increased cardiovascular risk posed by diabetes and aging and the known benefits of aspirin for secondary prevention suggest that, in the absence of contraindications, this therapy should be offered to virtually all older adults with diabetes and known CVD.

Smoking cessation:

Smoking in patients with diabetes mellitus is an independent risk factor for all-cause mortality, due largely to CVD. Therefore, smoking cessation should be vigorously promoted.

Exercise*:*

Exercise is beneficial to help maintain physical function, reduce cardiac risk, and improve insulin sensitivity in patients with diabetes. In older adults, exercise also improves body composition and arthritic pain, reduces falls and depression, increases strength and balance, enhances the quality of life, and improves survival. Studies of frail older people have shown that weight training should be included in addition to aerobic exercises.

Management goals in elderly with diabetes:

Guidelines	Recommendations	BP	LDL/ Cholesterol
American Diabetes association/ American Geriatric association	Healthy A1c <7.5% Fasting preprandial BG 90-130mg/dl Bedtime BG: 90-150 mg/dl Frail with complex intermediate health A1c <8.0%	<140/80 <140/80 <150/90	<100 In the presence of CVD <70

	Fasting or preprandial BG 90-150mg/dl Bedtime BG: 100-180 mg/dl Frail and poor health A1c<8.5% Fasting preprandial BG 100-180mg/dl Bedtime BG: 110-200 mg/dl Long term facility care residents		
European Society for cardiology/European Association for the study of Diabetes	A1c<8%	<140/85 In the presence of nephropathy; systolic BP <130	<100
International Diabetes Federation	Functionality independent A1c≤7.5% Functionality dependent A1c≤8.0% Frail or dementia A1c≤8.5%	<140/80 <150/90	<80
International Association of Gerontology and Geriatrics/ European Diabetes working party for older people/ International task Force of Experts in Diabetes	Healthy A1c≤7.5% Frail A1c≤8.0%	<140/80 Frail:<150/90	

ADA guidelines for treating diabetes in older adults

Older adults who are functional, are cognitively intact, and have significant life expectancy should receive diabetes care using goals developed for younger adults.
Glycemic goals for older adults not meeting the above criteria may be relaxed using individualized criteria, but hyperglycemia leading to symptoms or risk of acute hyperglycemic complications should be avoided in all patients.
Other cardiovascular risk factors should be treated in older adults with consideration of the timeframe of benefit and the individual patient. Treatment of hypertension is indicated in virtually all older adults, and lipid and aspirin therapy may benefit those with life expectancy at least equal to the timeframe of primary or secondary prevention trials.
Screening for diabetes complications should be individualized in older adults, but particular attention should be paid to complications that would lead to functional impairment.

Managing diabetes amongst the elderly may often have different objectives than treating the condition in younger patients. Some drugs may be less suitable for elderly patients, and treatment plans will

almost certainly have to be adjusted. Treating geriatric patients with diabetes requires the caregiver to take a multidisciplinary role. The goals should always be the reduction of diabetes-related complications. Many older people with diabetes are under treated. Treating diabetes amongst the elderly can present unique challenges. Other disabilities associated with aging can contribute to the complexity of strictly self-managing diabetes. Impaired physical functioning amongst some elderly patients can mean that adjusting to a diabetes care routine is more difficult. Cognitive impairment can also provide an obstacle. Elderly people are often more frail and susceptible to illness. This can mean diabetes-related complications are more common and harder to manage. Furthermore, exercise and adapting a diet can be more difficult for elderly people, and problems can arise in these areas. Further problems may include undiagnosed depression, social issues, limited daily means and coexisting health problems. Many elderly diabetic patients are pre-disposed to hypoglycemia.

What you need to assess:

- Medical history
- Medication use
- Ability to perform self-care behaviors
- Hypoglycemia **severity** & frequency
- Memory
- Problem solving skills
- Mood
- Nutritional intake
- Physical activity
- Social background & support system

** *Joslin and Geriatric Diabetes*

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GESTATIONAL DIABETES – ROLE OF EXERCISE IN PREVENTION & MANAGEMENT

Pooja Biswakarma* & Debasis Basu**

Introduction

Gestational diabetes mellitus (GDM) is defined as "diabetes diagnosed in the second or third trimester of pregnancy that is not clearly overt diabetes" and is associated with considerable risks to both the mother and developing fetus. For the mother, these risks include a greater likelihood of undergoing a caesarian section, pre-eclampsia and the development of type 2 diabetes mellitus (T2DM); for the baby, macrosomia, shoulder dystocia, and physiological and metabolic abnormalities such as neonatal hypoglycaemia, and obesity with insulin resistance in young adulthood.

The course of a normal pregnancy includes increased metabolic stress and disturbances in lipid and glucose homeostasis in the late second trimester to third trimester. There is marked insulin resistance in maternal muscle with the intent to increase glucose supply for the developing fetus. The development of GDM might reflect an impaired capacity to handle such metabolic challenges, such as underlying cell dysfunction. Therefore, women more equipped to handle metabolic stress might be more likely to maintain normal glucose levels. It has been repeatedly been shown that greater total physical activity before or during early pregnancy is significantly associated with lower risk of GDM, with the magnitude of the association being stronger for prepregnancy physical activity. Report highlights a previously diagnosed GDM women in her first pregnancy who exercised throughout her second pregnancy found that her glucose tolerance test was normal , essentially preventing the occurrence of the disease in the second pregnancy. In a meta-analysis, increased physical activity has been associated with a 55% reduction in the risk of GDM during the preconception period compared with a 25% reduction during early pregnancy. These are powerful reasons for pregnant women to inquire about exercise, and for doctors to prescribe it more often.

**** Dr. Pooja Biswakarma, Consultant Physiotherapist and Life member of DAY, Dr. Debasis Basu, President Diabetes Awarness & YOU (DAY).**

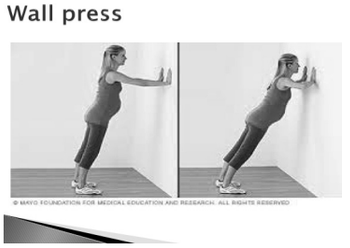
How exercise helps

Exercise has an "insulin-like effect" on the muscle, causing blood sugar levels to drop, independently of insulin in most cases. It has been studied in many adults with diabetes, but until recently, not much in pregnant women. After about 15 years of experiments, from the late 1970's until the early 1990's, the amount of scientific research in the area was increased, and the latest word in sports medicine is that many women are better off performing regular exercise as part of their pregnant routine, than being sedentary over their gestation. It mimics the evidence for people in general, in terms of basic health maintenance. Insulin sensitivity is increased via various mechanisms so the cells are better able to use any available insulin hormone that helps the body use glucose for energy. When the muscles contract during activity it stimulates the cells to take up glucose and use it for energy whether insulin is available or not. Physical activity can also exert long-term effects on improvement in insulin sensitivity through increased fat-free mass.

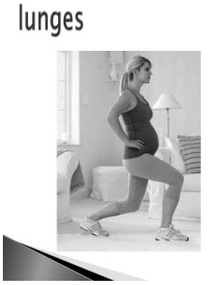
Exercising three times a week for 20 to 45 minutes is beneficial for women with GDM and those at risk for GDM. In small RCTs, in women with GDM, exercise (as defined by 30 minutes of non-weight-bearing activity at 50% of aerobic capacity) has been associated with less gestational weight gain in obese gravida, a lower rate of macrosomia, improvement in glycemic control when done in conjunction with diet compared to diet alone, and improvement in cardiovascular fitness. Although exercise later in pregnancy did not decrease the risk of developing GDM, it did reduce the newborn with macrosomia by 58 percent, and the risk of having acute elective caesarean delivery by 34 percent. Improvement in maternal triglycerides, insulin sensitivity, and postprandial glucose have been demonstrated with exercise in pregnancy. Diet or exercise, or both, during pregnancy can reduce the risk of excessive gestational weight gain and decreases maternal hypertension. The combined interventions have been shown to decrease neonatal respiratory morbidity. A study reported that resistance exercise training may help to avoid insulin therapy for overweight women with GDM. The intensity of activities undertaken may also impact glycemic management. For example, a low-intensity walking program has been shown to lower capillary blood glucose measurements in women with GDM; however, a higher intensity of exercise may provide additional benefits. If an exercise program is to be prescribed, early counseling regarding frequency and healthy practices is important to combat declining physical activity as pregnancy progresses. Evidence seems to show that overall exercise is beneficial in this population although the frequency and intensity of the regimen must be individualized, taking into consideration the patient's comorbidities.

Exercises are shown as illustrations to make a **Fit Mother** and thereby a **Fit Society**:

Workout 1st trimester



press ups lunges

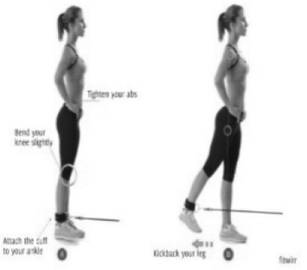


lunges

stair climbing

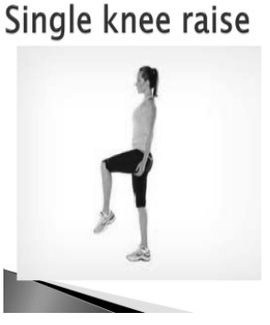
shoulder bridge

workout 2nd trimester



standing glutes raise

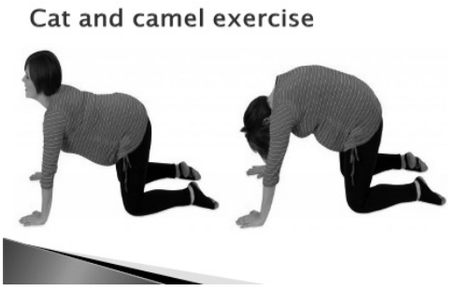
raise rear lateral raise



squats and single knee lifts

workout 3rd trimester

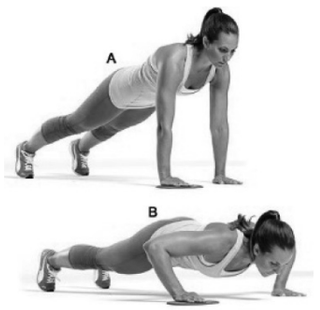
quadruped



cat and camel

pelvic tilt

standing squat



wall push ups

Precautions for exercise during pregnancy

- Review the precautions of the premature labor.
- Avoid exercise involving abdominal trauma.
- During pregnancy, aerobic exercises should not exceed five times per week in order to allow your body to recover and rest properly.
- Avoid rigorous bouncing.
- Avoid arching your back.
- Don't do sit-ups past 45 degrees
- Avoid activities which require precise balance and coordination. As pregnancy progresses, increasing weight, shifting center of gravity, and softening and increased mobility of joints and ligaments may alter coordination.
- Check for separation of the abdominal muscles(diastasis recti) each week and take necessary precautions if indicated.
- Drink fluids liberally before, during, and after exercising to prevent dehydration.
- One should also know about the contraindications to physical activity during pregnancy and warning signs for termination

Warning signs to terminate or avoid exercise	Contraindications to exercise
• Vaginal bleeding	• Significant cardiopulmonary disease
• Dyspnea prior to exertion	• Restrictive lung disease
• Headache or dizziness	• Incompetent cervix/cerclage
• Chest pain	• Multiple gestation at risk for premature labor
• Muscle weakness	• Persistent second-/third-trimester bleeding
• Calf pain or swelling	• Placenta previa after 26 wk of gestation
• Preterm labor	• Premature labor during the current pregnancy
• Decreased fetal movement	• Ruptured membranes
• Amniotic fluid leakage	• Preeclampsia / pregnancy-induced hypertension

How much to exercise?

Exercise programs during pregnancy should be directed toward muscle strengthening to minimize the risk of joint and ligament injuries.

Frequency

- Daily - Stretching, Strengthening, Kegels, Relaxation
- Three times/week - Low or non-impact aerobic activity with appropriate warm-up and cool-down; swimming or cycling
- Once each week - Check for separation of abdominal muscles

Intensity/Duration

Stretching/strengthening:

- Work up to five to 10 repetitions per day
- Don't stretch to extreme discomfort as joints are more loose during pregnancy
- Hold each position or stretch for 20-30 seconds.

Aerobic activity:

- Don't exercise beyond the point of moderately heavy perspiration.
- Sustain aerobic activity for 15-20 minutes as long as you are able to talk comfortably while exercising and are not short of breath.

Don't forget the role of plain & simple walking

One can never ignore that walking is a major health enhancement tool. Barring any orthopedic limitations, walking 2 or 3 times a day may just be the ticket to enhancing her health, and keeping her blood sugars in check over the last half of her pregnancy. Many women feel that exercise programs become more fatiguing as the third trimester approaches, so even getting out for a walk and increasing circulation is a big help in keeping them feeling good. These ladies can choose some roadtracks which have soft surfaces, and usually are not crowded and therefore are advised to choose certain specific times of the day like 4PM after the afternoon nap. Walking with a partner (perhaps one who is also pregnant) may help in keeping motivation levels high during these times. Often the challenge is that with a diagnosis of GDM, and a growing belly, many women feel that they are too big to begin with, let alone trying to keep up with those who may not wish to keep their pace.This is for the educators to motivate by emphasizing on the new

comer's future health prospects. Many women gain enough weight in the second trimester to warrant purchase of a new pair of shoes.

Conclusion

Every woman with pregnancy should engage in physical activity and may benefit from planned and programmed exercise. When used effectively, exercise can be used as a tool of treatment as part of the continuum of care for women with GDM. Vatrious guidelines encourage these women to engage in moderate intensity aerobic and strength training along with recreational physical activity. Exercise programs should be tailored by appropriately trained and qualified professionals (e.g., Exercise Physiologists) who have knowledge, training and experience to understand the individual's physiological needs and associated risks.

Suggested Readings

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PSYCHOSOCIAL ASPECTS OF DIABETIC PATIENTS FOR AN EDUCATOR TO APPRECIATE

Sasthi Chakraborty*, Debasis Basu**

Introduction:-

Like any long-term illness, diabetes can affect physical, mental and social well-being, influencing short and long-term health. Apart from the usually known macro- and micro-vascular disease states, diabetes also affects mental health, as it is associated with an increased risk for depression and may affect thought processes and memory. The stresses and demands of living with diabetes sometimes affect interpersonal and social relationships as well. This area needs to be addressed with care & knowledge.

Mental Effects

Diabetes increases the risk for depression. 40% of these patients may have significantly elevated symptoms of depression. As regards, anxiety (panic, mild obsessional symptoms, generalised anxiety/worry) similar figures have been recorded.

The prevalence rate of depression is more than three-times higher in people with type 1 diabetes (12% vs. 3.2%,) and nearly twice as high in people with type 2 diabetes (19.1%, vs. 10.7%,) compared to those without. Women with diabetes and also women without diabetes experience a higher prevalence of depression than men. Depression risk increases as complications develop. A study report noted that people with diabetes-related foot problems had higher levels of depression compared to people with diabetes without foot problems.

Diabetes can also affect brain function. Diabetes is thought to account for 6% to 8% of all cases of dementia in older people. Studies consistently show a 2.0- to 3.4-fold increased risk of vascular dementia and a 1.8- to 2.0-fold increased risk of Alzheimer's disease in older people with diabetes. People with type 2 diabetes aged 50 and older are at increased risk for declining memory and mental multitasking, which could indicate an augmented vulnerability to dementia later in life.

Psychological aspects of living with diabetics

Diabetes makes many demands on lifestyle and poses debilitating and life-threatening complications which overall have a negative impact on a patient's well-being and social life. In some parts of the developing world with poor healthcare and social support, the economic consequences of living with diabetes can be enormous for the patient, leading to inadequate care and the consequent development of complications.

Lifestyle management of diabetes involves weight reduction in the obese or overweight patient and a change in dietary habits. This is usually difficult for most patients and imposes a psychological burden on them. A lack of understanding of the disease by their peers, colleagues,.and family members also makes it difficult for them to adjust to their new situation.

In some parts of the world unemployment issues may prove an enormous hurdle for a patient with diabetes. Some employers are prejudiced and ignorantly believe that diabetes will result in poor work performance and/ or regular interruptions and absenteeism as a result of frequent hospitalisation and complications. Discrimination in the workplace is reported to be 5–11% in developed countries.

Diabetes also increases the risk of depression. In a meta-analysis, the odds of having depression was two-fold in patients with diabetes compared with those without. Anxiety and eating disorders have also been reported to be common in patients with diabetes.

** Dr. Sasthi Chakraborty, Asst. Professor, Dept. of Community Medicine, IQ City Medical College & NH Hospital, Durgapur, Dr. Debasis Basu President DiabetesAwareness & YOU

DAWN (Diabetes Attitudes, Wishes and Needs) Study showed that as many as 41% of the patients had poor psychological well-being. These psychological problems were recognised by providers as affecting patients' diabetes self-care. However, despite this, only about 10% of these patients received psychological care. This study also showed that across the world, the relationships that patients have with family members, colleagues at their workplace, or groups of friends, is a critical factor in improving the patient's sense of wellbeing, and leads to more effective self-management of diabetes. People without such networks of support, especially those living alone, are not likely to manage their disease as effectively. In addition, the wide diversity among patients, showing how differences in everyday life and psychology affect the self-management of diabetes, indicates the need for different emotional support packages for different types of patient. There appears to be no universal best practice.

Key Points

Co-Morbidity and Psychological Disturbances:-

Both the diagnosis of diabetes and its subsequent management can potentially be disturbed with the presence of psychological problems. Most common conditions include:

a) Depression

b) Anxiety

c) Eating Disorders

d) Phobias

e) Adjustment disorders

f) Sexual Dysfunction

One in three with diabetes will suffer from depression that impairs functioning, adherence to medical treatment and glycemic control.

Social Effects

Diabetes management requires strict adherence to a self-care regimen which challenges both patients and their care givers, potentially affecting interpersonal relationships and indirectly affecting glucose control. Family members' nonsupportive behavior for adults with T2D was associated with less medication adherence and worse blood glucose control.

For teens with type 1 diabetes, lack of peer support can affect compliance with self-care. Some studies show that teens with type 1 diabetes who had conflict with their peers tend to have worse self-care. Hence social conflict was harmful while social support was helpful. They and their parents understand that independent teen self-management is a component of transition to adulthood, but worry about teen self-management outcomes. Concerns specific to health care transition include health insurance, T1DM resources, and teens' abilities to handle new situations. [12]

Physicians view diabetes as a metabolic disturbance affecting isolated individuals, but the condition looks very different when viewed within its social context. The prevalence of diabetes closely reflects the lifestyle of a population - its affluence, dietary and cultural habits, and even its social divisions. Conversely, the wealth, social organization and culture of a society will largely determine its ability to mount an effective response to the challenge of diabetes. Diabetes is a major economic burden for affluent nations, representing 5-10% of total health expenditure. This is largely due to the cost of long term complications such as kidney disease or leg amputations, whereas drug costs make up no more than 10-20% of the total. In poorer countries, diabetes has a worse prognosis and medication costs, often borne by the patient, may then constitute the major expense. Diabetes confers the psychological and social cost of a chronic disease, and may still carry a social stigma in addition to its implications for employment, driving, insurance and many other activities.

The Needs Hierarchy

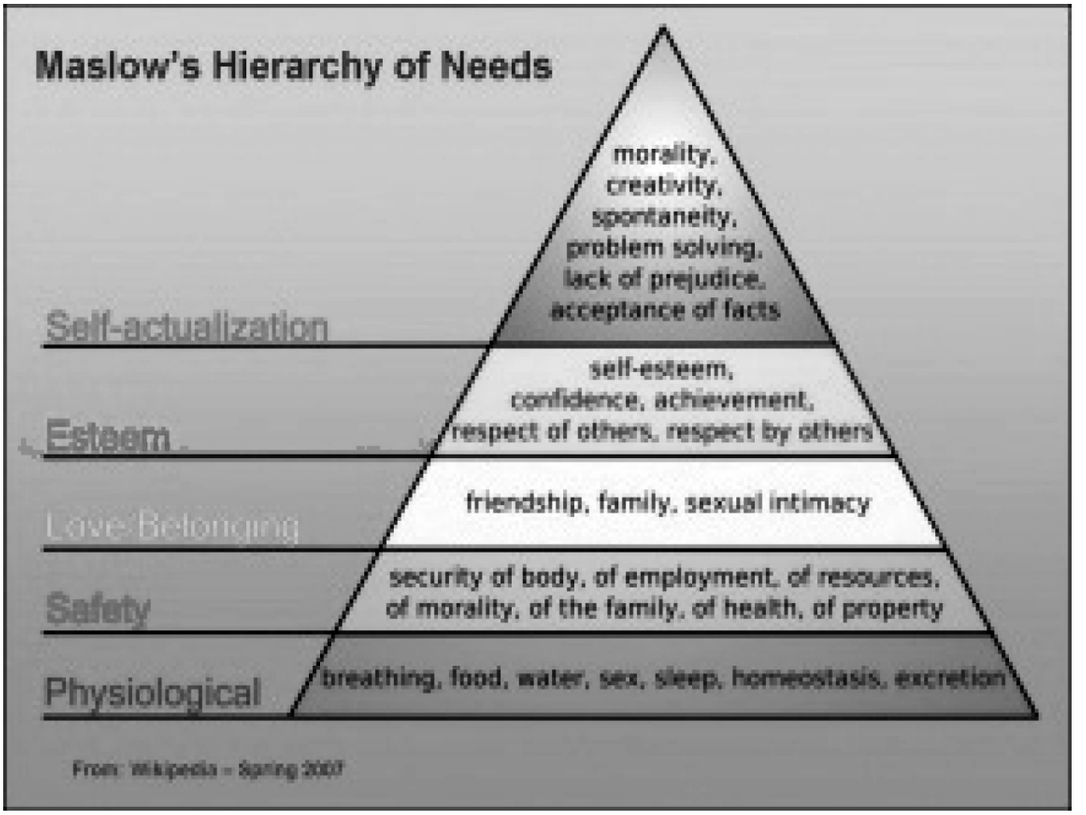

Figure 1. The pyramid of needs

There is this simple and intuitive formulation of human needs developed by Abraham Maslow, and is typically represented as a pyramid (figure1). Simple physiological needs are represented at the base, followed by the need for security, love and belonging, respect and esteem and self-actualization - "being all that you are capable of being".

All these may be considered fundamental human rights for those with diabetes as for those without, but these are often not equally on offer, and almost all societies offer some degree of impediment to those with diabetes.

At higher levels of human need, as represented by Maslow's pyramid, the obstacles to those with diabetes are more subtle, and may operate at the level of folk belief, unconscious prejudice, fear of intimacy, lower expectation or other types of almost invisible stigmatization. These pressures may be reflected by a defensive response on the part of the person with diabetes.

Cultural Issues related to Diabetics

Cultural origins will inform the decisions that most patients make about managing their condition.

Problems may be caused by:

a) Lack of knowledge about diabetes and available services for treatment and support.

b) Poverty

c) Fatalism - "It is God's Will"

d) Religious convictions

e) Barriers to diet and exercise interventions

f) Scepticism regarding the values of preventative health behaviours

g) Language and barriers to understanding

That Remember information and treatment recommendations suggested may well be at odds with the patient's cultural background, so cultural sensitivity and awareness will be more important than simply providing information about how to manage the condition

Personality, social support and diabetes

Experienced clinicians often feel they can predict which people will do well and which will encounter difficulties, but no psychological instrument has yet been capable of doing the same.

As in other areas of life character is fortune, and it seems clear that the personality and coping ability of the person affected will play a major role in their ability to manage their diabetes. There are however other key elements to success including social support (especially for children), professional support, and training in the requirements of life with diabetes.

Diabetes, work and leisure

Although individuals with diabetes have shown that almost any heights can be scaled in any aspect of human activity including sport at the highest level, a number of societal restrictions have been imposed in different areas of life. These restrictions mostly relate to insulin treatment in relation to activities which might have disastrous consequences for the person concerned or other people should hypoglycaemia develop, for example driving a heavy goods vehicle. Certain occupations are also restricted, for example front-line military service, but with considerable variation from one society to the next.

The underlying rationale for such restrictions is self-evident but education & awareness should play a key role in ensuring that the rules are fair and fairly applied to avoid individual injustice.

The problem of hypoglycemia on Psychosocial factors in diabetic patients

Although only a small minority of people with diabetes experience recurrent severe hypoglycaemia, the fear of this condition rates high among the concerns of many others on insulin treatment, as of their friends and relatives. Concerns mainly relate to loss of self-directed autonomy, whether resulting in social embarrassment, accidents, bizarre behaviour or loss of consciousness.

An area of particular concern at the interface between society and the law relates to the claim that an individual with diabetes accused of criminal activities carried these out under the influence of hypoglycemia, and was therefore not fully responsible for his/her actions.

Diabetes in different societies

Differences in general perception provide considerable scope for misunderstanding, and it does not help that standard medical training in western countries assumes western culture and attitudes as the norm. Almost all potential problems can be overcome by sensitivity, good-will, careful exploration of concerns and mutual respect, but advice offered without understanding will rarely prove effective.

Social Status and diabetes

In less affluent countries diabetes has made its greatest impact upon town-dwellers and wealthier segments of the population, a process sometimes referred to as coca-colonization, so that it might be said that diabetes is a now a disease of the poor in rich countries and of the rich in poor countries.

Diabetes is more common in some socially disadvantaged communities, particularly when low social status is associated with discrimination based upon ethnicity, culture or lifestyle. This is frequently linked to poor access to health care and advice, resulting in increased morbidity and mortality.

Economic costs of diabetes

These can be divided into direct and indirect costs. Direct costs are those directly attributable to management of the condition, including medical costs, medication costs and the cost of hospitalization. Indirect costs are more difficult to estimate and include loss of productive

employment due to illness, and the impact of diabetes upon carers and family.

It is undeniable that diabetes contributes to about 5-10% of total health costs in many developed health care systems.

Impact of Diabetes across the Lifespan on Patient & Family:-

Diabetes may have a psychological impact on the outlook on life and lifespan that a patient may take. For example:

- ✓ Parental concern about the possibility of their children developing the condition.
- ✓ The need to manage the condition in addition to the psychological demands of meeting commonly experienced challenges faced throughout the life cycle, such as leaving home, marriage, and pregnancy.
- ✓ The development of diabetic complications.

Adherence and Motivation

- ✓ Sticking to treatment regimes for the condition is a challenge
- ✓ This is determined by the extent to which a patient's behaviour coincides with health advice/recommendations

As adherence to treatment and diabetic control is monitored it needs to be remembered that patients facing this challenge may well feel demoralised or depressed if outcomes are poor.

It is vital to ensure that the patient does not feel blamed for these as this could potentially undermine their motivation to comply with all aspects of treatment.

Remember it is not simply enough to educate and instruct the patient on how to manage their condition. Support and encouragement are vital if the patient is to feel empowered. In clinic the role of the professional should be one of facilitator rather than expert. He or she should take time to find out what is going on in the patient's life that may contribute to difficulties in managing the condition, and where appropriate, offer support and suggestions for how these 'life issues' might best be approached

General Treatment

If there are concerns that the patient is suffering from some form of mood disorder it may well be worth suggesting that they consider the possibility of commencing on a short course of anti-depressant medication. However, in the first instance simply talking to the patient and providing some support and reassurance may be of help.

The Listening Project (Diabetes UK, 2001/2002) found that people with diabetes reported shock, lack of understanding and fear at diagnosis to such an extent that they were unable to take in any other information. It also noted that a third of diabetic patients felt that they needed someone to talk to.

Therapeutic interventions have also been shown to be of help, however at primary care level it is perhaps more helpful to adopt a preventative approach in treatment. Helpful strategies include:

- ✓ De-emphasising dieting.
- ✓ Counselling patients about the need to express negative feelings about diabetes self-management.
- ✓ Helping the patient with conflict over normal developmental and life-span struggles.
- ✓ Encouraging participation/support from other family members.
- ✓ Diabetes specific coping skills training - focusing on specific sticking points/active problem solving.

The American Diabetes Association has a four step approach to ending discrimination:

- ✓ 1.educate,
- ✓ 2,negotiate,
- ✓ 3.litigate,
- ✓ 4.legislate.

Conclusion

The psychosocial aspects of living with diabetes have been recognised in recent years and this has prompted the establishment of guidelines to ensure that these issues are recognised and properly dealt with by medical practitioners looking after patients with diabetes. This is because it has been realised that psychological disorders in patients negatively impact on their quality of life and ability to handle many aspects of their management. This leads to poor glycaemic control and further worsening in quality of life. It is hoped that proper management of these issues will lead to better outcomes in these patients.

People live in communities or social networks within larger societies, and their ability to manage diabetes effectively will inevitably be affected by the attitudes and expectations of those around them.These attitudes can determine the level of social support, and the ability of the person concerned to work, marry, and function effectively. The structure and organization of the wider society within which they live will largely determine their possibilities of access to effective health care.

Health care workers too often view people with diabetes in isolation from their respective background, own expectations and aspirations. Sensitivity to such issues cannot really be taught but must nonetheless be solemnly learned by all those who wish to manage diabetes effectively.

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WHAT'S NEW?

Debasis Basu*

In India 9 people are diagnosed with Diabetes every minute. There are 69 million diabetics and nearly 70 million pre-diabetics in India. It costs roughly USD 31 billion annually in diabetes related costs for patients and healthcare providers. Poor diabetes self-management results in large treatment and in-patient costs and poor outcomes. More than 95% of diabetes care comes from patients themselves. Eating Healthy, staying active, regularly monitoring blood glucose and staying adherent to medications can lead to improved outcomes.

Current solutions only address one piece of the puzzle. Blood glucose meters provide only singular data points whereas patients actually need to know the trend of where their glucose levels are headed. The BG meters do not provide any interpretation of information and patient need actionable insights for better self-management. Fingerstick readings therefore miss nearly 78% of high and low glucose levels. Typical diabetes education and management programs are standard one size fits all solutions with no tailoring to the challenges faced by diabetics.

Sugar.IQ is an intelligent diabetes assistant app. It tracks a patient's current vitals and state of diabetes management, provides analytics on future trends and guides the patient on best practices to manage their diabetes. It provides customized diabetes coaching through integrated 2 way messaging; diet, exercise and glucose tracking; insights, predictions and self-management tools and assists with lifestyle modifications through gamification and social interface. In collaboration with IBM's Watson the Sugar.IQ platform learns about the patient's diet, lifestyle and medication patterns and provides patient centric pathways for:

- Diabetes Disease Education
- Managing burden of Chronic Disease
- Improving Daily Decision making
- General wellness support

The app will offer real-time and personalized insights so people with diabetes can spend less time worrying about their data, and have more freedom to enjoy life. The app will provide individualized guidance in understanding and helping manage elements of daily diabetes decisions by creating a single platform that brings together relevant data and provides context and insights.

The Sugar.IQ app will help answer key questions that people with diabetes have about their current health status, about where their health is trending, and what actions they can take to better manage their diabetes in the future as part of their disease-management plan with their provider.

- Insights – As the Sugar.IQ app uncovers behaviors associated with glucose patterns, personalized messages will be delivered in real-time to help people with diabetes understand how specific actions and habits affect their glucose levels.
- Glycemic Assist – People with diabetes can ask the Sugar.IQ app to follow specific food or therapy-related actions and events. By following items, Sugar.IQ will help discover the impact these items have on their personal glucose levels.
- Food Logging – The Sugar.IQ app will quickly and easily track food in a diary to deliver meal related insights that illustrate how specific foods impact an individual.

Sugar.IQ provides a holistic approach to Diabetes population management for;

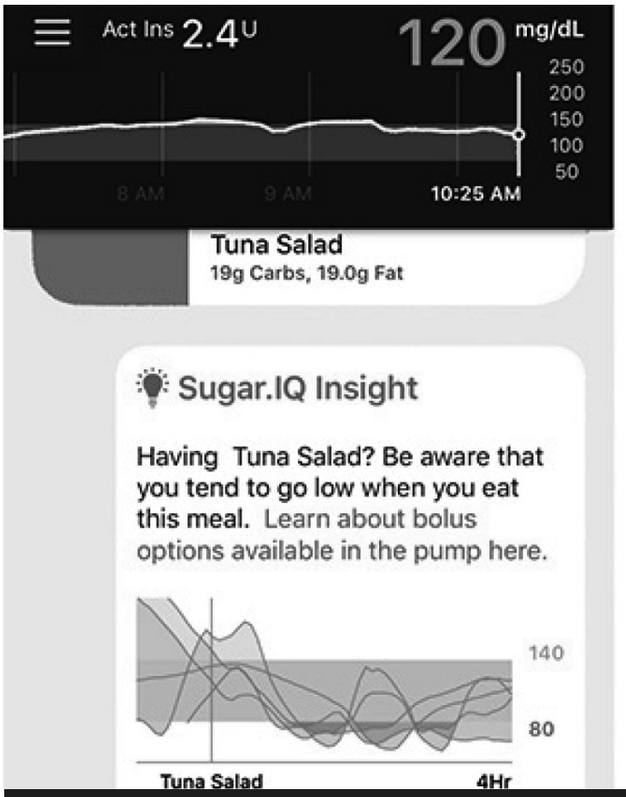
a) Type 1 Diabetics – Advanced monitoring, insights and coaching to improve outcomes and reduce costs.

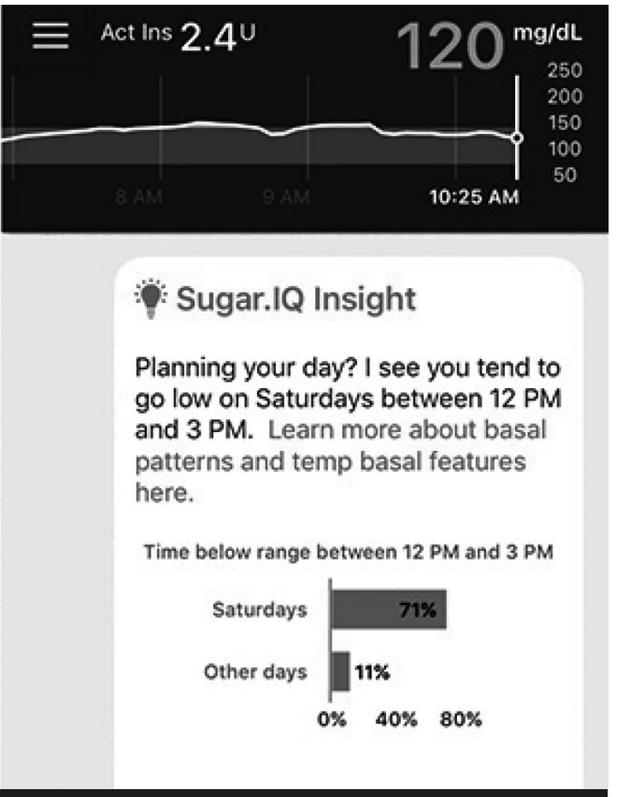
b) Type 2 diabetics – Coaching and insights for success even without daily monitoring.

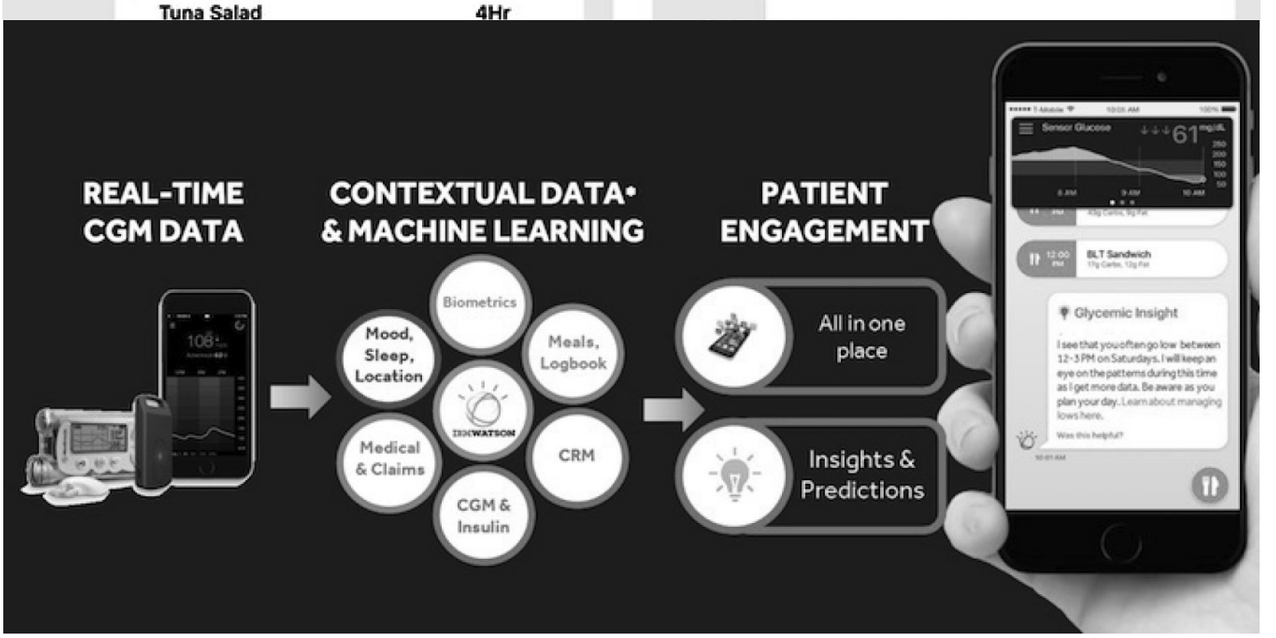
* **Dr Debasis Basu, President Diabetes Awarness & YOU.**

c) Pre-diabetics – Proven 1 year diabetes prevention program.

Sugar.IQ is slated for launch in early-2019 in India.







QUESTION AND ANSWERS

Q) What is malnutrition modulated diabetes mellitus?

A) Malnitrition-modulated diabetes mellitus ((MMDM) is a rare type of diabetes which was previously known as protein-deficient diabetes mellitus (PDDM) is similar to that of type 1 diabetes clinically, but it develops over a background of chronic malnutrition from childhood. Patients with MMDM are extremely lean and for good glycemic control they require high doses of insulin over 2.0 U/kg/day. The most important marker of MMDM is despite severe hyperglycemia there is absence of ketonuria and ketosis in young subjects.

CLINICAL FEATURES IN PATIENTS WITH MMDM

Low BMI (usually <17 kg/m2)

Polyuria, Polydipsia, weakness, wasting, cramping abdominal pain, Skin, respiratory and urinary infections, softening and redness of the hair, steatorrhoea, Sensory neuropathy with numbness, sensation of pins and needles, episodic sweating, burning paraesthesia, lack of secondary sexual characters, peculiar cyanotic hue of the lips, glossitis, cheilitis, angular stomatitis, dry protuberant belly, insulinopenia, failure of the beta-cells in the pancreas, Pulmonary tuberculosis, Infertility, oligomenorrhoea and amenorrhoea, growth retardation

Types of MMDM:

1. Fibro Calculus diabetes mellitus (FCPD)- This type of MMDM manifests itself in pancreatic duct calculi.
2. Protein deficient diabetes mellitus (PDDM)- This type of MMDM Is related to the presence of ketosis-resistant hyperglycaemia.

ACUTE COMPLICATIONS:

1. Pyogenic and fungal infections.
2. Scabies
3. Pulmonary tuberculosis.
4. Hypoglycaemia
5. Periodontitis leading to premature loss of teeth.

CHRONIC COMPLICATIONS:

1. Autonomic neuropathy
2. Cataract
3. Retinopathy
4. Nephropathy

PROTEIN DEFICIENT DIABETES MELLITUS

1. These patients require insulin but they are not ketosis prone.
2. These patients have early onset of diabetes usually before the age of 30.
2. To maintain normal blood glucose levels these pateints require insulin.
4. In these patients there is an absence of imaging evidence of pancreatic' calculi or ductal dilation.
5. These patients have a low BMI of (less than 17) along with other clinical features of malnutrition and often growth retardation.

Symptoms :

1. emaciation, asthenia, extreme weakness, retardation of growth, micronutrient deficiency, severe diabetes, fasting blood glucose more than 200mg/dl, leanness.

FIBRO CALCULUS PANCREATIC DIABETES (FCPD)

1. High prevalence of this form of diabetes is found in tropical and developing countries.
2. It is usually seen in young and malnourished individuals.

3. It is caused due to chronic calculous pancreatopathy.
4. This type of diabetes is associated with an increased risk of pancreatic carcinoma.
5. Radiologically it demonstrates pancreatic calcification and/or evidence of impaired exocrine pancreatic dysfunction.

Symptoms:

1. Recurrent abdominal pain.
2. Steatorrhoea
3. Pancreatic calculi are usually large multiple and intraductal.
4. Hyperglycemia ranging from mild to severe.

MANAGEMENT:

1. Most important management is the glycemic control.
2. Patients need large doses of insulin for the treatment of hyperglycemia.
3. In patients with FCPD, management includes oral enzyme replacement, and relief of pain. Surgical intervention is often required if the pain is severe and intractable.
4. Steatorrhoea may be relieved by pancreatic extract and low fat diet.

DIVYA JAIN

Q) How does chronic psychological stress lead to hyperglycemia?

A) Stress has long been suspected as having major effects on metabolic activity. The effects of stress on glucose metabolism are caused by a variety of "counter-regulatory" hormones that are released in response to stress and result in elevated blood glucose levels and decreased insulin action . Stress, whether physical or mental, has been proven to cause changes in blood sugar levels, which for people with diabetes can be problematic. There is strong evidence that psychological stress is related to a deterioration in blood glucose control in non symptomatic patients. Stress hyperglycemia refers to transient elevation of the blood glucose due to the stress of illness. The blood glucose is usually in the range of 140–300 mg/dl but occasionally can exceed 500 mg/dl especially if amplified by drugs or intravenous glucose. People who have experienced psychological stress during severe illness have a threefold risk of developing diabetes in subsequent years.

Psychological stress can be caused by simple factors such as :

- Work pressure
- Marriage and relationships
- Parenting/children
- Health problems such as diabetes (see below)
- Financial insecurity
- Traffic
- Experiencing emotional stress, such as family conflict or workplace challenges.

PATHOPHYSIOLOGY

Hyperglycemia causes by tissue damage, which can further release of stress hormones, such as adrenaline and noradrenaline, and cytokines, such as interleukin -1 and tumor necrosis factor alpha. A hypermetabolic state is created due to this stress response which indicates that the amount of tissue damage is related to the degree of hyperglycemia.

Stress induced hyperglycaemia in patients without diabetes

4-12% of hospitalized patients who are not diabetic, are found to have stress induced hyperglycemia .An adverse outcome is associated stress related hyperglycaemia in patients with myocardial infarction, stroke, cardiovascular surgery, pneumonia, patients who underwent vascular surgery and patients admitted to a general ward.As discussed above the amount of tissue damage, is related to the degree of hyperglycemia. Thus patients with stress

induced hyperglycemia are simply sicker and that hyperglycemia itself is not the cause of a worse prognosis. Both physical and emotional stress can cause an increase in these hormones, resulting in an increase in blood sugars, and decrease in insulin action.

CLINICAL SITUATIONS LEADING TO STRESS-INDUCED HYPERGLYCEMIA

- Hypoxia
- Hypotension
- Hypoglycemia—by causing neuroglucopenia
- Myocardial infarction (MI)
- Surgery
- Burns
- Trauma
- Cold stress

MANAGEMENT

Management of glycemic control usually includes insulin therapy, and in the surgical and medical ICU insulin infusions are favoured. Hyperglycemia due to chronic stress is completely dependent on insulin for its correction which is rapidly titratable in response to changes in glucose concentrations. Intravenous insulin is highly effective and can be adjusted frequently. In patients with oedema or hypoperfusion, subcutaneous insulin might result in insulin stacking and hypoglycaemia.

Care must be taken to adjust therapy in response to changes in nutritional needs. The therapy should include consistent carbohydrate diets or giving prandial insulin according to estimated carbohydrate intake.

DIVYA JAIN

PROBLEMS & SOLUTIONS IN DIABETES EDUCATION

Sasthi Chakraborty*, Debasis Basu**

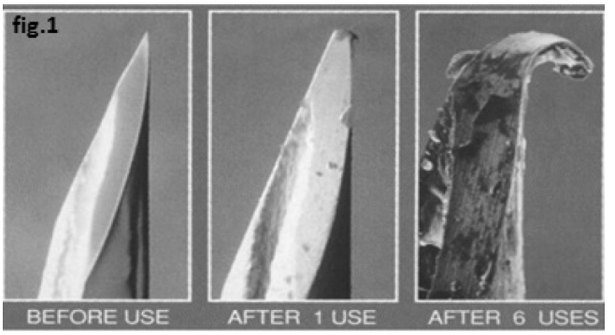
Problem:

Mr. Krishna, 48 year old tropical pancreatopathy patient in a state of near OHA failure was counseled to take premixed insulin. Insulin injection technique and SMBG were properly explained. He was given a starting insulin dose of 16 & 8 units before breakfast & dinner and was asked to follow up on phone for regular insulin dose titration. He did not call until 4 months later he came with a cellulitis of the abdominal parietal wall with uncontrolled blood sugar. Patient stated that he was still taking the same doses of insulin but struggled to inject on his abdomen as it was explained to him because he had multiple abdominal surgery scars (herniorrhaphy, pancreatic stone removal & appendicectomy).

On evaluation it was seen that his insulin delivery technique was correct i.e. he was keeping insulin pen (both the one that is being used & unopened cartridges) in an empty compartment on the door (as he was afraid of contamination if there were other bottles containing pickles & jam in the same) of the fridge of a busy kitchen of a big extended family.. He also tried to rotate the injection sites. On examination there was diffuse rubbery feel all over the abdomen with occasional small bruises & an ugly cellulitis wound.

Solution:

An interview with the educator revealed that the lack of the follow up visits and calls failed to titrate the dose of insulin to the extent desired. Patient was counseled about the importance of regular follow up even over phone to understand the calculation of dose optimization. It was found that the needles were being changed at after every 5th day (10 pricks) as patient did not feel any difficulty except mild tolerable pain towards the later ones. Patient was also shown microscopic change of same needle used from 1st dose to the 6th dose as in **fig.1**, below.



Patient understood that needle change should be done at 2 to 3 days interval otherwise there will be pain and possibility of less dose delivery.

Frequency of daily insulin injection and needle reuse may relate to the incidence of lipohypertrophy. The bleeding and bruising at the injection sites may also be associated with suboptimal absorption of injected insulin. Lipohypertrophy is defined an accumulation of subcutaneous fat tissue at a site where insulin has been injected continuously. Insulin absorption diminishes in the areas of lipohypertrophy. Not only is there a danger of hyperglycaemia but conversely, when the same dose of insulin is injected into an area without lipohypertrophy, there is an increased risk of hypoglycaemia leading to erratic diabetes control finally putting the individual at risk of developing chronic complications. It is vital that the educators recognise this condition by inspecting insulin sites regularly and encouraging site rotation. A scheme dividing the abdomen into 9 zones, with 2 imaginary parallel horizontal and vertical lines periumbilically, will ensure that an

**** Dr Sasthi Chakraborty, Asst. Professor Dept. of Community Medicines, IQ City Medical college & NH Hospital, Durgapur, Dr. Debasis Basu, President Diabetes Awarness & YOU.**

injection is only repeated in an area after about 4 – 5 days(**fig.2**), and is therefore more likely to be effective than 'site rotation'.

fig.2

Improved education in optimal insulin injection technique, including suggestion of switching to rapid acting analogues, reducing needle reuse and correct choice of injection sites were emphasized in view of less available space of "healthy skin" for abdominal injections.

Storing pens in use, in the ever moving busy refrigerator door can cause air bubbles in insulin. Temperature fluctuates more in the door than other parts of the refrigerator and one should not open and close the refrigerator door so hard that the insulin gets completely shaken. Vigorous shaking can also cause clumping or create threads in the insulin. Therefore inspect insulin before each use to look for changes in colour or clarity, clumps, solid white particles or crystals on the wall of the pen. Opened pens are best kept at room temperature (15ºC-30ºC). Unopened disposable pens and cartridges are best stored in the butter compartment. One has to carefully note and learn the stability(how long the potency lasts when opened or unopened, whether kept in a fridge or at room temperature) of insulin in view of the different types of insulin & the makes of the pens from various companies. If the needle is removed every time to put back in the fridge an airshot is to be carefully performed before the next dose with the pen being brought out from the fridge. One can procure something like a HangTite insulin(**fig.3**) pen holder which can keep all the insulin pens organized on the door of the fridge firmly, while saving space and keeping an easy count at a quick glance.

fig.3

Finally the educator has to address the problem of the cellulitis and quick referral to the surgeon for the infection management protocol.

WHAT'S COOKING ?

BROWN RICE SPINACH PULAV

INGREDIENTS	AMOUNT
Brown rice	1 cup
Spinach	1 bunch
Corn	1/2 cup boiled
Capsicum	1/4 cup
Paneer	150gm
Onion	1 medium size
Garlic	5-6
Green chilly	2
Oil	1 tbsp
Salt	To taste
Garam masala	1 tsp
Ghee	1 tsp
Cheese	2 tsp

Method of preparation:

1. Wash the rice till the water runs clear, then soak brown rice for 1 hour in 1 cup of water, then cook the rice till done, add water if required.
2. Wash the spinach leaves properly and then grind spinach, garlic and green chilly together. Make a smooth paste, dont make the gravy very thin.
3. Cut the paneer into cubes. Heat the ghee on a tawa and roast the paneer pieces, keep

VEGETABLE AND OATS DALIYA

INGREDIENTS	AMOUNTS
Daliya	3/4 cup
Oats	1/4 cup
Moong dal	1/2 cup
Carrot	3 tbsp
French beans	3 tbsp
Onion	1 small
Capsicum	1/2 medium size
Cabbage	3 tbsp
Ginger	11/2 inch
Garlic	2-3 cloves
Ghee	1 tsp
Oil	2 tsp
Paneer	20gm
Green chilly	1
Salt	To taste
Red chilly powder	1 tsp
Turmeric powder	1/4 tsp
Coriander powder	1 tsp
Garam masala	1/2 tsp
Jeera	1tsp
Hing	2 pinch

Method of preparation:

1. In a kadai, heat ghee and roast the daliya on medium flame , roast till a pleasant aroma

aside.

4. Heat oil in a pan and then add onions, sautee till it becomes translucent, then add capsicum and sautee for few minutes, then add the above gravy cook for 3-4 minutes on medium flame.
5. Then add the salt and garam masala mix well, and then add the cooked rice, boiled corn and paneer pieces. Mix well and garnish with grated cheese.

Nutritive value for 1 serving:

Energy (kals)	Carbohydrates (gm)	Protein (gm)	Fats (gm)	GI
300	28 gms	10gms	15g	Medium

comes and daliya is slightly brown.

2. Wash the moong dal and keep aside
3. In a pressure cooker, heat oil add hing, add jeera, garlic and ginger paste, sautee for few minutes.
4. Add onion, green chilly and saute till onions turn light pink, then add all other vegetables and sautee for few minutes, then add all the spices mix well and then add the daliya, moong dal oats and paneer cubes and mix properly.
5. Add 2-3 cups of water as required, lastly add salt and mix .
6. Cover the cooker with the lid , and cook on low flame for 3 whistles.

Nutritive value for 1 serving:

ENERGY (kcal)	CARBOHY-DRATES (gm)	PROTEIN (gm)	FATS (gm)	GI
335 kcal	28.5	10	15	medium

MEMBERSHIP FORM

Association of Diabetes Educators (ADE)

(For eligibility criteria: Check Website www.diabeteseducatorsindia.com)

Name .....

Address .....

.....

Telephone: Res: ..... Office: ..... Cell: .....

E-mail id: .....

Educational Qualifications:.....

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Work Experience: .....

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Currently employed at: .....

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Certificates attached regarding educational qualification and work experience:

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₹ 1000/- is payable in cash / cheque / draft with the application form

Add ₹ 100/- for outstation cheques

Cheque Drawn in favour of: Association of Diabetes Education

Payment Details: Cheque No./Draft No. _____ Dated _____

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Signature

BOOK REVIEW

RSSDI text book of Diabetes Mellitus; Editor-in-Chief: H B Chandalia, Executive Editor: G R Sridhar, Editors: A K Das, S V Madhu, V Mohan, P V Rao

Jaypee Brothers Medical Publishers; New Delhi; 2014; pages 1457; Price Rs 2995

The third edition of RSSDI Text Book of Diabetes Mellitus (D M) has been published six years after the second edition. It is authored and edited by those clinicians and professors who have been teaching and practising diabetes over many years within the country. A few chapters are contributed by Non-resident Indians. As pointed out by the editor-in-chief, this edition has undergone considerable revision. The material published both within the country and outside till the end of 2013 has been critically analysed and included. A few topics which are paid scant attention in other books, like-the complexity of insulin resistance, the criteria applicable to metabolic syndrome in Asians,challenges in the management of children and elderly with diabetes,musculoskeletal manifestation of diabetes, malnutrition modulated diabetes, Latent Autoimmune Diabetes in Adults (LADA), neonatal diabetes and the role of Yoga and relaxation techniques are unique to this book.

The flow chart on the management of diabetic ketoacidosis available in this book should be in possession of all ICUs. The colour pictures of retinopathy, foot lesions, skin diseases and musculoskeletal manifestation are well presented. The role of alternate therapy is extensively discussed. The guidelines for the beginner to organise a diabetic clinic and optimal health care for diabetes amidst diversity of social, economic and regional food habits is noteworthy. The limitation of stem cell therapy as of now is a good reminder. Some controversial issues are discussed in individual chapters. Much alike the chapter on A Glimpse in the Future, I wish a full chapter was devoted to controversies in diabetes. New chapters added in this edition are valuable and discuss important current issues. These include Sleep and Type 2 diabetes-mellitus, Early-onset Type 2 DM, Nutrient blockers and Bromocriptine, Insulin Pump Therapy, Glycemic Management in Hospitalized Patients, Continuous Glucose Monitoring System, Vitamin D and DM, HIV in Diabetes, Diabetes and Cancer.

The appendix is retained from the previous edition and gives a wealth of information applicable to Indian subjects like BMI and waist circumference and laboratory values in S I and conventional units.The index has attained perfection.The novel feature of this edition is mentioning the chapter number on the right edge of each page.

The book will prove to be valuable to students, physicians, diabetologists, endocrinologists and providers of diabetes care. It should be on the shelf of every medical library. The availability of this book has made the Western text books redundant. The single volume covering so many topics is bulky and heavy. I wish it was brought out in two volumes.

C. Munichoodappa. F.R.C.P.C.
Diplomate, American Board in Internal Medicine
Bangalore
Email id: dr.munichoodappa@gmail.com

JOIN US IN DIABETES PREVENTION PLAN

IF YOU HAVE A FAMILY MEMBER WITH TYPE 2 DIABETES, IT PUTS YOU AT RISK OF DEVELOPING IT TOO

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GET YOUR FASTING BLOOD SUGAR LEVELS TESTED FREE OF COST AT OUR CLINIC

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Colaba – 022-22840244
(Ms. Shruti Ankat)

(104, Lady Ratan Tata Medical Centre, M.Karve Road, Mumbai)

Charni Road – 022-23634320
(Mr.Pravin)

(14 Kala Bhavan, 3 Mathew Road, Mumbai)

"Enhance your knowledge of Diabetes and manage diabetes in day to day life"

CONQUEST OF DIABETES BY DIET AND EXERCISE

A book by Prof (Dr) H B Chandalia, Ms Sonal Modi and Dr Shaival Chandalia. This book is specially meant for people with diabetes. It serves as a complete guide on diet and exercise.

Available in 3 languages English, Hindi and Gujarati

Prof (Dr) H B Chandalia's creative writing abilities & practical acumen has always been illustrated by his multiple contributions as an author of chapters in various textbooks. One such outstanding example is the book **'Conquest of Diabetes- by diet & exercise'** which is running its fourth edition in the English language and also available in Hindi as well as Gujarati. The Marathi version of the book is under preparation. It is a comprehensive, extensively illustrated two color book which is characterized by its brevity, clarity and offers a systematic approach towards the management of diabetes by diet and exercise.

The book highlights very important issues and controversies in the form of a large number of box inserts. Also, the scientific and technical words have been explained in the glossary, which appears throughout the book.

It also deals with recipes and an exercise plan for diabetics, which would prove helpful.

This book is directed to persons suffering from diabetes, health-care practitioners like doctors, nutritionists and diabetes educators and other health professionals involved in the care of diabetics.

Available at:

Dr. H.B. Chandalia's

Diabetes Endocrine Nutrition Management and Research Centre (DENMARC),
103-104, Lady Ratan Tata Medical and Research Centre
Maharshi Karve Road, Mumbai 400 021
Contact Us: 022- 22840244 / 22871613

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For patients taking heavy carbohydrate meals

Humalog® mix50™ KwikPen™
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ABRIDGED PRESCRIBING INFORMATION:

PRODUCT DESCRIPTION: Trulicity (dulaglutide) 0.75 mg/1.5 mg solution for injection in pre filled pen. **INDICATIONS AND USAGE:** Trulicity is indicated in adults with type 2 diabetes mellitus to improve glycaemic control as Monotherapy (The recommended dose is 0.75 mg once weekly) and Add-on therapy (The recommended dose is 1.5 mg once weekly). In monotherapy, when diet and exercise alone do not provide adequate glycaemic control in patients for whom the use of metformin is considered inappropriate due to intolerance or contraindications. Add-on therapy- In combination with other glucose-lowering medicinal products including insulin, when these, together with diet and exercise, do not provide adequate glycaemic control. **CONTRAINDICATIONS:** Hypersensitivity to the active substance or to any of the excipients. **ADVERSE REACTIONS:** In the phase II and phase III studies conducted, 4,006 patients were exposed to Trulicity alone or in combination with other glucose lowering medicinal products. The most frequently reported adverse reactions in clinical trials were gastrointestinal, including nausea, vomiting and diarrhoea. In general these reactions were mild or moderate in severity and transient in nature. **USE IN SPECIFIC POPULATIONS:** For pregnancy, there are no or limited amount of data from the use of Trulicity in pregnant women. Studies in animals have shown reproductive toxicity. Therefore, the use of Trulicity is not recommended during pregnancy. For Breast feeding, it is unknown whether Trulicity is excreted in human milk. A risk to newborns/infants cannot be excluded. Trulicity should not be used during breast-feeding. The effect of Trulicity on fertility in humans is unknown. In the rat, there was no direct effect on mating or fertility following treatment with Trulicity.

HUMALOG® 200 units/mL U-200 Abbreviated Prescribing Information

HUMALOG 200 units/mL U-200 is available as: • 3 mL Humalog KwikPen® (prefilled). **INDICATIONS AND USAGE:** HUMALOG 200 units/mL is a rapid acting human insulin analog indicated to improve glycemic control in adults and children with diabetes mellitus. **ROUTE OF ADMINISTRATION:** Subcutaneous Injection: HUMALOG U-100 or U-200. Administer the dose of HUMALOG U-100 or HUMALOG U-200 within fifteen minutes before a meal or immediately after a meal by injection into the subcutaneous tissue of the abdominal wall, thigh, upper arm, or buttocks. **DOSAGE INFORMATION:** Individualize and adjust the dosage of HUMALOG based on route of administration, the individual's metabolic needs, blood glucose monitoring results and glycemic control goal. Dosage adjustments may be needed with changes in physical activity, changes in meal patterns (i.e., macronutrient content or timing of food intake), changes in renal or hepatic function or during acute illness . Do NOT transfer HUMALOG U-200 from the KwikPen to a syringe for administration. Do NOT perform dose conversion when using either the HUMALOG U-100 or U-200 KwikPens. The dose window shows the number of insulin units to be delivered and no conversion is needed. Do NOT mix HUMALOG U-200 with any other insulins. Do NOT administer HUMALOG U-200 using a continuous subcutaneous infusion pump (i.e., insulin pump). Do NOT administer HUMALOG U200 intravenously. **DOSAGE FORMS AND STRENGTHS:** HUMALOG 200 units per mL (U-200) is available as: • 3 mL Humalog KwikPen (prefilled) **CONTRAINDICATIONS:** HUMALOG is contraindicated: • During episodes of hypoglycemia. • In patients who are hypersensitive to HUMALOG or to any of its excipients **UNDERSIRABLE EFFECTS/ADVERSE EVENTS:** Hypoglycemia is the most common adverse reaction associated with insulins, including HUMALOG. Severe hypoglycemia can cause seizures, may be life-threatening, or cause death. Hypokalemia All insulin products, including HUMALOG, cause a shift in potassium from the extracellular to intracellular space, possibly leading to hypokalemia. Untreated hypokalemia may cause respiratory paralysis, ventricular arrhythmia, and death.

Consult the package insert for complete prescribing information.

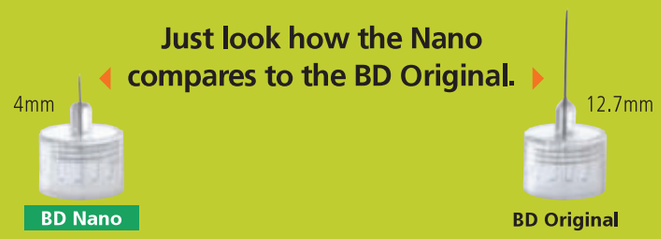
Humalog® (Insulin Lispro I.P.), Humalog Mix25® Insulin Lispro Biphasic Injection I.P. (25% Insulin lispro and 75% insulin lispro protamine suspension) (100 IU/mL, 3 mL Cartridge) and Humalog® Mix50 Insulin Lispro Biphasic Injection I.P. (50% Insulin Lispro and 50% insulin Lispro protamine suspension) (100 IU/mL, 3 mL Cartridge) **INDICATIONS AND USAGE:** Humalog® is indicated for the treatment of patients with diabetes mellitus who require insulin for the maintenance of normal glucose homeostasis. **CONTRAINDICATIONS:** Humalog® is contraindicated during episodes of hypoglycemia. It is also contraindicated in patients with hypersensitivity to insulin lispro or any of the excipients contained in the formulation. **ADVERSE REACTIONS:** Hypoglycaemia is the most frequent undesirable effect of insulin therapy that a patient with diabetes may suffer. Severe hypoglycaemia may lead to loss of consciousness, and in extreme cases, death. No specific frequency for hypoglycaemia is presented, since hypoglycaemia is a result of both the insulin dose and other factors e.g. a patient`s level of diet and exercise. Local allergy in patients is common (1/100 to <1/10). Redness, swelling and itching can occur at the site of insulin injection. This condition usually resolves in a few days to a few weeks. **USE IN SPECIFIC POPULATIONS:** Data on a large number of exposed pregnancies do not indicate any adverse effect of insulin Lispro on pregnancy or on the health of the foetus/newborn. It is essential to maintain good control of the insulin-treated (insulin-dependent or gestational diabetes) patient throughout pregnancy. Insulin requirements usually fall during the first trimester and increase during the second and third trimesters. Renal and hepatic Impairment: Insulin requirements may be reduced in the presence of renal impairment.

HLG/Cycle Feb 2017/06

Shorter, thinner and effective for patients of all sizes.[1]

Introducing the NEW 4mm x 32G
BD Ultra-Fine™ Nano Pen Needle.

Just look how the Nano compares to the BD Original.



BD

Helping all people live healthy lives

72% of patients who tried the new BD Nano preferred it over their current pen needle.[2]

Proven effective for patients of all sizes[3]

- Clinically proven effective in maintaining glycemic control for patients of all sizes[4]
- Provides predictable insulin absorption, same as the 8mm and 5mm
- No increased leakage when compared to the 8mm and 5mm

Proven less painful, delivers a more comfortable injection[5]

- 64% of patients found the 4mm pen needle to be more comfortable than both the 8mm and 5mm

Shown to be less intimidating[6]

- 88% of the patients reported feeling "not at all anxious" after seeing the 4mm pen needle

BD Nano fits all pens sold in the US.[7]

Needles are actual size.

NDC/HRI# 08290-3201-22