

## Reaching Out Dashboard

No of Children 3927

No of HCPs Trained 3502

No of Children Camps 335

## CDiC - INDIA Newsletter

Issue : 10 / May / 2015



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Editorial Committee: Prof. P. Raghupathy, P. Dinakaran, Dr. Shuchy Chugh, Dr. Bharathi R, Anupama Rau Attawar



## Editorial Desk



### Dear Friends / Colleagues,

I thank each one of you for your passion and commitment to the CDiC programme. It is indeed immensely heartening to see my dream of providing a healthy and near normal childhood for children with type 1 diabetes coming true. This has been possible only with your whole-hearted support. I am really proud of our achievements so far.

I would now like to share another good news with you and that is, the Scientific Committee is setting up the registry on type 1 diabetes in place and this would help us to increase our understanding of type 1 diabetes and plan further improvement in our care.

Along with infrastructure, access to medication and capacity building for health care professionals, CDiC programme has also launched scholarships for needy eligible children to support their education with a hope of making them become self-reliant in the long run. This scholarship program is intended to cover~ 10% of the CDiC children, to support their academic or other skill development expenditure. I shall be congratulating all the children who have been selected for receiving these scholarships.

The past four years have been challenging as well as rewarding in many ways. As we move ahead in the next phase of the CDiC programme, it is essential for all of us to make the most of this initiative. Hence I would request every one of you to please take some time and send us some unique CDiC stories. This rich experience can be used by our medical fraternity & all concerned for further reference and for the benefits to all children with type 1 diabetes.

Once again, I wish to convey my sincere thanks to you for your ardent support and commitment.

**With Regards,  
Prof. P. Raghupathy  
Chairperson, CDiC.**



### Dear Colleagues

The CDiC program, as you will agree has been a wonderful journey for all of us, giving us a unique opportunity to offer best of care to the needy children with type1 diabetes, an area having less focus and awareness in India. Last few months have particularly been quite satisfying for us in terms of awareness creation and capacity building. The proceeding of the 2<sup>nd</sup> AACDIC meet held at Delhi in Oct 2014 has been published as a special edition in the April issue of the Indian Journal of Endocrinology and Metabolism. This issue of journal, is exclusively focused on children with diabetes. This wealth of knowledge, has become possible due to all your support and efforts.

On the advocacy side, to get the needed attention of the policy makers, CDiC has made strong presence in both the Madhya Pradesh and Bihar State Round Table meetings, addressing the issue of diabetes in children to the key bureaucrats in these states. These roundtables will culminate at the national level Changing Diabetes Leadership Forum planned in New Delhi later this year. In these State Round Table workshop the main discussions revolve around awareness on diabetes, its complications and associated economic burden in general public and children especially from underprivileged class of society. I will also like to invite all of you to attend the forthcoming Changing Diabetes Leadership Forum. We will shortly inform you about the date of this event.

Looking forward for your continued wholehearted commitment to this noble cause.

**With Best Wishes  
Prof. Ashok Kumar Das**



### Dear Friends

It is a great privilege for me to take this opportunity to thank you for all your continued commitment, passion and support for the success of this program. In Jan 2015, we successfully entered in the second phase of this program. At this juncture, we would like to reaffirm that this program is very close to our heart and we are committed to making a difference in the quality of life for these children with type 1 diabetes with your support. Once again with your guidance we have also extended educational scholarships to around 400 CDiC children across India.

As we move ahead in this endeavour, we look forward to your continued inspiration and support.

**Thank you  
Melvin D'souza,  
Managing Trustee NNEF &  
Managing Director Novo Nordisk India Pvt. Ltd.**



## Quarterly CDiC Update

### Changing Diabetes® in Children (CDiC) – On-going journey of care & commitment for children with type 1 diabetes

Changing Diabetes in Children program was unveiled in India, in September 2011 by our former President Dr. APJ Abdul Kalam. The vision of the program is, "to initiate and strive for comprehensive diabetes care for the economically underprivileged children with type 1 diabetes in India". The program which was to end in December 2014, is now extended up to December 2017, for the benefit of all the registered children.

#### The program focuses on 6 needed elements which includes

1. Infrastructure & Equipment
2. Insulin & Supplies
3. Capacity Building & Raising Awareness
4. Patient Education
5. Advocacy
6. Sharing Learnings and the Outcome

Key Achievements so far...

#### Infrastructure & Equipment 2011- 2014

There are 21 CDiC centres & 27 satellite centres operational across India, and these centres take care of 4,000 children with type 1 diabetes, from economically underprivileged families.

#### 2015...

All the centres are operational, with very few children lost to follow up. Newly diagnosed children with type 1 diabetes from economically underprivileged families are being registered under Novo Aid program for free human insulin support.

#### Insulin & Supplies 2011- 2014

Each participating child gets free human insulin vials (HM40) either Actrapid, Insulatard or Mixtard, free syringes, glucometer, strips, doctor consultation / and diagnostic test (which includes HbA1cs, CBCs, Microalbumin, Fundus and tests done on periodic basis).

#### 2015...

The program continues with same dedication and momentum. Special scholarship program is launched to cover 10% of the CDiC children, to support the academic or other skill development expenses, with a view to make them self-reliant.

#### Capacity Building and Raising Awareness 2011- 2014

With the support of the 21 centers, training & diabetes education has

been coordinated for 2302 doctors and 1068 paramedical staff on managing children with type 1 diabetes.

More than 2000 books named "Diabetes in children and adolescents" from ISPAD were distributed among HCPs. Along with it, "Handbook for Diabetes Educators" and "Misthi Guardian", journal for parents and educators made and distributed. To create awareness in a larger population 22 advertorials contributed by all the centre directors were published in the "Week and Smart Life" magazine starting from Oct 2013 to March 2015

#### 2015...

2 accredited HCP training workshops were conducted Dr Ragnar Hanas ISPAD president conducted one of it. 96 doctors were trained and 36 were retrained on managing children with type 1 diabetes.

#### Patient Education 2011- 2015

335 children camps have been conducted so far reaching out to >14000 children. Since, Jan 2014 we have conducted the camps with plan, to provide systematic structured diabetes education. In the last few months, key topics discussed were, Examination and diabetes, Importance of Monitoring, Hypos and Hyperglycaemia – causes and prevention and Diet and Diabetes. Innovative patient education material like NOTTI doll, Mishti books, Snakes & ladders, Make a healthy change, Make your own plate poster, HbA1c calculator, Hypo Kit, Diabetes foot door knob hanger, Mishti video and Healthy eating plate were made and distributed to all the participating children during these programs

#### Advocacy 2011- 2014

Two national level advocacy programs namely CDiC International consensus meet was conducted in Jan 2013 at Bangalore and Afro Asian conclave on diabetes in children was conducted in Delhi in October 2014.

#### 2015...

Participation in Madhya Pradesh and Bihar State Round Table meetings to address the issue of type 1 diabetes to state bureaucrats.

#### Sharing Learning and the Outcomes 2011- 2014

In 2012 we had initiated the, "CDiC – India Newsletter", to show case our activities across CDiC centres. It is now a quarterly publication. 7 advisory board meetings were conducted with the participation of all centre directors.

#### 2015...

Proceedings of 2<sup>nd</sup> AACDiC meet are published in special issue of Indian Journal of Endocrinology and Metabolism.



## CDiC Scholarships for Needy Eligible Children

On 14<sup>th</sup> Nov 2014 as part of the WDD activities, a first time initiative, of a special scholarship program was announced to cover 10% of the CDiC children. The scholarship is aimed at supporting the academic or other skill development expenses, with a view to help them built their future. These children are selected on the basis of set criteria, viz., meritorious academic performance, family and economic status and having good control of their diabetes. Each of these children will be given Rs 10,000/- scholarship.

Implementation of the program started at BDH on 25<sup>th</sup> February. 38 children received scholarship on this occasion. On 12<sup>th</sup> April, scholarship program and diabetes education was organized at

### List of toppers from BDH CDiC center, Bangalore

1) Tejes P	PUC 2nd PUC Science	93.5 %
2) Riffa Bibi Ruquiyah	1 <sup>st</sup> PUC (PCMB)	94 %
3) Sinchana	10 <sup>th</sup> CBSC	94 %
4) Bindu K	10 <sup>th</sup> CBSC	86 %





Constitution Club, New Delhi by Dr. A. k. Jhingan, Diabetes Education and Research Foundation. Health Minister of Delhi, Dr. Satendra Jain was the chief guest and he handed over the scholarship DDs to eligible children. On 17<sup>th</sup> April 5 children selected on above criteria were awarded scholarships at Patna during the State Round Table Meeting with the policy makers and Government officials on Changing Diabetes®. One such program was conducted at MV Diabetes center, Royapurum on 9<sup>th</sup> May, 15 children selected on set criteria were awarded scholarship. A total of 400 children all over India would be given this scholarship.

The topics discussed related to diabetes awareness, covering:

- Basic information on diabetes, types of diabetes, prevention possibilities and management.
- Type 1 diabetes in children, special characteristics
- Management of type 1 diabetes in schools.

The programme was followed by a Q&A session. The team received queries from all over Gujarat even from the most remote areas such as Kutch, Valsad, and Gandhi Dham. Most people had queries related to prevention of diabetes especially in children and how difficult it is to manage children with type 1 diabetes. Among others, one such inquiry came from a mother of a one year old child with type 1 diabetes, she happened to be a school teacher and asked about the possibility of cure of type 1 diabetes in the near future. The program has reached out to large group of people who can make a difference to the current status of diabetes care in the state of Gujarat.

## Talking Diabetes in School

“Talking Diabetes in school” campaign reached a new height when for the first time, a “SatCom”, mass diabetes awareness campaign was conducted for > 35,000 school teachers and health workers in Gujarat, India. The program was conducted in Bhaskaracharya Institute for space applications and geo-informatics department, Gandhi Nagar, near Ahmedabad.

“Talking Diabetes in School / College” e-mailer campaign, is designed to share simple facts about type 1 diabetes for the school teachers. The mailer campaign aims to increase awareness and empower teachers to support, children with type 1 diabetes under their tutelage, So far, we could reach to 500 schools through this email campaign.





## HCP Training

It was a great occasion, when we had Dr. Ragnar Hanas, ( ISPAD President 2014 – 2016) with us on 5<sup>th</sup> April 2015 at Bangalore. A day long workshop was organized for doctors in association with IGICH (Indira Gandhi Institute of Child Health), a prestigious government hospital for children. Around 90 doctors participated in this event. Dr. K. M. Prasanna Kumar, Dr. P. Raghupathy ,Dr. S. S. Srikanta, Dr. Ranjit Unnikrishnan and Dr. A. Ahila along with Dr. Ragnar Hanas were the key speakers in this program. Unlike regular CME's which focus purely on scientific updation of knowledge, this program had the unique distinction of ensuring a real life perspective of living with diabetes for doctors. It was for the first time that children with type 1 diabetes and their parents were invited for a CME. Children and their parents were told that they could avail the expertise of Dr. Ragnar and ask any questions on their mind to him. About 15 children from the age group 6 -17 attended the program with their parents and had an interaction with Dr Ragnar Hanas. Naturally, the queries were many. One of key concern areas for parents seemed to be future options for their child with Type 1 diabetes. The question ranged from - better treatment options, newer technologies on the horizon, non-invasive blood glucose monitoring and also about possibility of cure of type 1 diabetes in near future.

However, it was the questions from children which really moved the audience and gave an insight of how diabetes touches every aspect of a child's life. One child innocently asked, "How many times, can I eat pizza, burger, chocolate and ice-cream in a week?" Another child asked "When exercise is considered good for children with type 1 diabetes, how is it that whenever I participate in swimming competitions and running race my sugar levels increase" This small interaction touched a chord in every doctor's heart and gave this CME a unique patient centric approach. All the doctors who attended the program were enriched by rich experience of speakers and moved and motivated by presence of these children. The program was accredited by Karnataka Medical council (KMC) with 3 Credit hours to faculty and 2 Credit Hours to Delegates.

One more HCP training accredited by KMC on management of children with type 1 diabetes was conducted at JSS Hospital Auditorium, Mysore on 22<sup>nd</sup> March. This program was organized by NNEF in association with BDH CDiC centre and PRIMER Academy of Medical sciences, Bangalore. Dr. K. M. Prasanna Kumar, Dr. Anish Behl, Dr. Chitra Selvan and Dr. Anjana Hulse enriched the audience by their rich experience. 45 doctors attended this workshop.





## Children Camps

CDiC is one of its kind program which addresses the need for proper treatment and good care for children with type 1 diabetes from poor socio economic families. Dr. Elliott P. Joslin, the founder of the Joslin Diabetes Center, said way back in 1934, "the diabetic, who knows the most, lives the longest." Keeping in mind the important of diabetes education, CDiC centres focuses on imparting diabetes education whenever the children come for regular visits and also in systematic diabetes education camps. Last year we discussed basic

diabetes education topics through these camps. This year our focus is more on practical topics. Around 20 camps were conducted till now in 2015. The following topics were covered, viz., Examination and diabetes, Hypoglycaemia and hyperglycaemia – prevention and management, Prevention of complications, Holidays and managing diabetes, Living with diabetes and Diet and diabetes.





## Diabetes Education Material

### Mishti - 4

Mishti series – Mishti is a fictional character of a little girl having type 1 diabetes. The little girl explains in simple and plain words her understanding of diabetes and its management. In the previous issues.

**In Mishti - 1:** In this issue, Mishti tells about basic management of diabetes.

**In Mishti - 2:** Mishti discusses the importance and precautions to be taken while playing as she participates in sports competition.

**In Mishti - 3:** Mishti discusses points to note when staying alone and traveling as she goes for a school trip.

**In Mishti - 4:** In this issue “Mishti and sick day rules” she gives few tips on management of diabetes during acute illness. This is very important as the blood glucose levels are profoundly affected during any illness in these children.



### Time Table

Time Table is an integral part of every school going kid. This timetable is a very simple educative tool. On one side there is a timetable, where a child can write their period of study and play and on the other side there are simple facts and tips for the school teachers and classmates, to increase their awareness and empower them to support, their friends with type 1 diabetes.

Name: _____							
Class: _____							
School: _____							
Time Table							
Let's help a friend with type 1 diabetes							
Period	Mon	Tue	Wed	Thu	Fri	Sat	
1							
2							
Snack Break							
3							
4							
5							
Lunch Break							
6							
7							
8							
Snack Break							
9							
10							

### Talking Diabetes in School

Diabetes can affect children at any age.

Your support can make a big difference

Permit the child with diabetes:

- To eat a snack to prevent hypoglycaemia (low blood glucose)
- To use the restroom for frequent urination in case of acute hypoglycaemia (high blood glucose)
- To check blood glucose levels and take insulin when needed

If any child shows these signs, seek immediate medical attention:

- Frequent urination
- Weight loss
- Lack of energy
- Excessive thirst

Ensure that blood glucose level of that child is checked!

Support children with diabetes, manage diabetes while at school!

Children with diabetes just need insulin and the right environment

Every child has a right for education and safe environment!

HYPOLYCEMIA (Low Blood Glucose)

Symptoms mostly disappear in 15-30 minutes. Help with the person and follow up with additional food such as biscuits, fruit or sandwiches. If the child has a fit or an unconscious, get an emergency help. This may happen only on rare occasions.

changing diabetes in children

ISPAD International Society for Pediatric and Adolescent Diabetes

novo nordisk



## DIETS – Factors affecting Management of Diabetes

<h1>D</h1>	<h1>I</h1>	<h1>E</h1>	<h1>T</h1>	<h1>S</h1>
<p><b>Diet:</b></p> <ul style="list-style-type: none"> <li>• Inappropriate quality</li> <li>• Quantity</li> <li>• Timing of food</li> </ul>		<p><b>Emotions:</b></p> <ul style="list-style-type: none"> <li>• Any kind of stress</li> <li>• Feeling low</li> <li>• Lack of sleep</li> </ul>		<p><b>Sports</b></p> <ul style="list-style-type: none"> <li>• Lack of physical activity</li> <li>• Less exercise</li> <li>• Inappropriate exercise</li> </ul> <p><b>Support</b></p> <p>Lack of support from family, friends and community</p>
	<p><b>Insulin:</b></p> <ul style="list-style-type: none"> <li>• Inappropriate dosage</li> <li>• Skipping a recommended insulin doses</li> <li>• Taking wrong insulin</li> </ul>		<p><b>Testing</b></p> <ul style="list-style-type: none"> <li>• Inappropriate timing of testing</li> <li>• Wrong testing (not washing hands / pressing too hard)</li> <li>• Wrong reading (expired strips)</li> </ul>	
<p><b>Drugs:</b> Intake of drugs which cause high blood glucose levels, Eg.</p> <ul style="list-style-type: none"> <li>• Steroid</li> <li>• over the counter drug like cough syrup</li> <li>• Indigenous drug of unknown nature</li> </ul>				
	<p><b>Illness, infection</b></p> <ul style="list-style-type: none"> <li>• any seasonal illness</li> <li>• Skin, ear, nose, throat, teeth, chest, foot, urinary tract infections</li> <li>• Any surgery</li> </ul>	<p><b>Other Endocrine and autoimmune disorder, Eg.</b></p> <ul style="list-style-type: none"> <li>• Thyroid disorders</li> <li>• Coeliac diseases</li> <li>• PCOD (Polycystic ovarian diseases)</li> </ul>	<p><b>Technique-</b></p> <p>Inappropriate technique or site of taking insulin</p>	<p><b>Somogyi Phenomenon-</b></p> <p>A rebound high blood glucose level in response to low blood glucose</p>
			<p><b>Teaching-</b></p> <p>Lack of diabetes education and hence not balancing appropriately between Diet ~ Exercise ~ Monitoring ~ Insulin</p>	

Derived from Diabetes Educator Handbook - care for children Adolescent living with diabetes, page - 21 1<sup>st</sup> edition oct 2014



## Media Coverage

Media coverage is an integral part of any social awareness campaign. To increase the awareness, advocacy and reach to a much larger population, media has a great role to play. In our perusal to address the seriousness of this issue, we have invited participation of the media to various CDiC programs. This is very useful in ensuring optimal care and improved quality of life for children and young people with diabetes. Apart from getting media coverage in leading newspapers for various events, we also had periodic advertorial campaign in the Week and Smartlife to increase reach and awareness. Four new advertorials were released, through the advertorial campaign initiated in the Week and Smartlife. The topics covered

were; "Management of children with type 1 diabetes during illness" by Dr. Nikhil Tandon, "Living with type 1 diabetes" by Dr. Vaman Khadilkar, "The teen years and children with type 1 diabetes" by Dr. Manoj Chadha and "Exercise and children with type 1 diabetes" by Dr. Surendra Kumar. Along with this the proceeding of the 2<sup>nd</sup> AACDiC meet were released as a special issue in the Indian Journal of Endocrinology and Metabolism.



### ASK THE EXPERT: Management of children with type 1 diabetes during illness

**Dr Nikhil Tandon**  
Professor & Head Dept. Endocrinology & Metabolism, AIIMS, New Delhi

**Reasons for low blood glucose levels**  
Gastrointestinal system, the digestive and excretory associated with any illness leads to poor absorption of food.

**Diabetes with type 1 diabetes and acute illness**  
During acute illness children patients with diabetes face more risk factors.

**When does one need to go to the hospital?**  
Severe or usual hypoglycaemia, ketone bodies, or other symptoms of acute illness, or if the patient is unable to eat or drink for more than 24 hours.

**When does one need to go to the hospital?**  
Severe or usual hypoglycaemia, ketone bodies, or other symptoms of acute illness, or if the patient is unable to eat or drink for more than 24 hours.

**What you should do if you have hypoglycaemia?**  
Check your blood sugar levels. If you are feeling unwell, check your blood sugar levels. If you are feeling unwell, check your blood sugar levels.

**Diabetes Educator**  
Novo Nordisk Education Foundation  
Novo Nordisk Center, 2nd Stage, Bangalore 560075

### ASK THE EXPERT: Exercise and children with type 1 diabetes

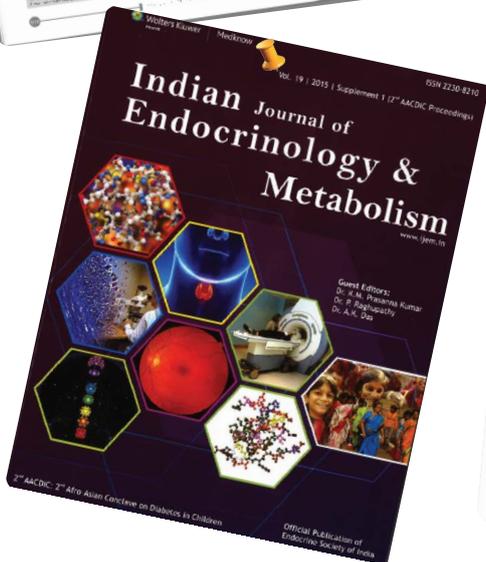
**Dr Surendra Kumar**  
Assistant Professor of Endocrinology, Postgraduate Institute of Medical Education & Research, Patna

**Effect of walking on blood glucose levels**  
Any aerobic activity like walking, running, swimming, etc. can help in lowering blood glucose levels.

**When does one need to go to the hospital?**  
Severe or usual hypoglycaemia, ketone bodies, or other symptoms of acute illness, or if the patient is unable to eat or drink for more than 24 hours.

**What you should do if you have hypoglycaemia?**  
Check your blood sugar levels. If you are feeling unwell, check your blood sugar levels. If you are feeling unwell, check your blood sugar levels.

**Diabetes Educator**  
Novo Nordisk Education Foundation  
Novo Nordisk Center, 2nd Stage, Bangalore 560075



### ASK THE EXPERT: The teen years and children with type 1 diabetes

**Dr Manoj Chadha**  
Consultant Endocrinologist, Kasturba Medical College, Gandhinagar, Gandhinagar, Gandhinagar

**Reasons for low blood glucose levels**  
Gastrointestinal system, the digestive and excretory associated with any illness leads to poor absorption of food.

**When does one need to go to the hospital?**  
Severe or usual hypoglycaemia, ketone bodies, or other symptoms of acute illness, or if the patient is unable to eat or drink for more than 24 hours.

**What you should do if you have hypoglycaemia?**  
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**Diabetes Educator**  
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### ASK THE EXPERT: Living with type 1 Diabetes

**Dr Vaman Khadilkar**  
Professor & Assistant Endocrinologist, Kasturba Medical College, Gandhinagar, Gandhinagar, Gandhinagar

**Reasons for low blood glucose levels**  
Gastrointestinal system, the digestive and excretory associated with any illness leads to poor absorption of food.

**When does one need to go to the hospital?**  
Severe or usual hypoglycaemia, ketone bodies, or other symptoms of acute illness, or if the patient is unable to eat or drink for more than 24 hours.

**What you should do if you have hypoglycaemia?**  
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## FAQ

### Q1 - Why does diabetes happen in children?

Cause of development of diabetes in children is still not known. It is important to realize that it is not caused by eating too much sugar, any specific food, toxins and due to any fault of the parents and family. Although, it has been speculated that it is a combination of genetic and environmental factors such as viruses.

### Q2 - Is insulin the only thing that can help treat type 1 diabetes?

We all require insulin to convert the food we eat into energy. In healthy people, the pancreas is triggered to produce insulin when the body's blood sugar rises. In type 1 diabetes, almost all insulin producing cells die, so there is insulin deficiency and as a result they require insulin from the beginning. This is unlike people with type 2 diabetes who have some of the beta cells alive in initial years. During this period people with type 2 diabetes can use tablets for regulating their glucose levels. Goal of any therapy in diabetes is to maintain blood glucose in the desired range; this is essential to keep good health and avoid many of the complications caused by uncontrolled diabetes.

### Q3 - What happens without insulin?

Without insulin, the body is unable to convert the glucose into energy.

- After a meal the blood glucose (sugar) rises very high resulting in what is termed as hyperglycaemia.

- The excess sugar (glucose), which is normally stored in the liver and muscles for later use also remains in the blood stream.
- The stored glucose in the liver and muscle is broken down, further increasing the blood glucose level.
- Also fats are used for energy and ketones are produced as a by product.
- There is no utilization of glucose even when a meal has been taken, so the body is unable to use the energy from the meal, which leads to fatigue and sometimes weight loss.

### Q4 - What is the ideal amount of insulin, which a child with diabetes should take?

This can be decided only by the treating doctor as there are various factors which determine the requirement of insulin. Every child needs different amounts of insulin depending upon its height, weight, activity and amount and type of food. In children with type 1 diabetes insulin dose increases as the child grows with increase in height and weight. There may be temporary increase in insulin requirement in situations like puberty, illness, stress and surgery.

This was our first issue in May 2012, our next issue will be our 11<sup>th</sup> Issue. Do write to us at [cdcindia@novonordisk.com](mailto:cdcindia@novonordisk.com) to make it more better to cause of creating awareness about type 1 diabetes and CDiC program.





## Diabetes Educator Column

### Tips to give to parents for prevention of complications

Once a child is diagnosed with type 1 diabetes, parents need to learn many things. Sooner or later they come to know about short term and long term complications of diabetes. This scares them a lot. Right information can help not only parents to be at ease but also prevent most of the complications.

#### Key Message

Most of these complications are related to poor blood glucose control and can be prevented by keeping blood glucose levels in normal range.

So, one needs to work constantly to manage blood sugar levels near normal range.

#### Uncontrolled Diabetes and its effects

##### Short-term Diabetes Complications

##### Hypoglycaemia:

Hypoglycaemia or low blood glucose level is a condition which develops when there's too much insulin and this happens mostly when your insulin administration is not properly planned according to meals or exercise.

##### Diabetic Ketoacidosis

It is a serious complication due to lack of insulin. It is possible to develop diabetic ketoacidosis if a child is not taking care of blood glucose levels, is skipping or taking less dose of insulin or is having any other acute illness with high blood glucose levels. If the blood glucose levels are constantly above 250mg/dl, then a person with type 1 diabetes can have diabetic ketoacidosis. Ketone strip can be used to test urine for ketones at home. If found positive; then a person with type 1 diabetes needs to go to the nearest hospital emergency for evaluation and treatment.

##### Long-term Diabetes Complications

These complications develop over many years usually after > 10 years of diagnosis of type 1 diabetes and are mostly related to how high blood glucose levels that can affect blood vessels and nerves. Uncontrolled blood glucose can, over time, damage the body's tiny and large blood vessels which results in microvascular and macro vascular complications affecting various organs, like eye, kidney, feet, nerves and heart.

##### Prevention of Complications

By tight control of blood glucose levels, one can avoid most of the complications of type 1 diabetes. Diet, exercise, insulin and monitoring along with diabetes education are five pillars essential for proper management of type 1 diabetes. To avoid long term complications, people with diabetes need to undergo few more

tests apart from glucose monitoring regularly. This will help to detect , if there is any complication and treat at the earliest stage.

The goal of treatment is to maintain the best possible level of glucose control by providing appropriate insulin at appropriate time as it will help children with diabetes to live healthy, long and near normal lives

#### Elements for Good Glucose Control

- Injecting required insulin at required time
- Monitoring blood glucose levels daily
- Adjusting insulin doses according to food intake and exercise
- Following a diet and exercise plan
- Making regular visits to a health care team

S.no	Test	Frequency
1	Growth	Ideally every quarter/ at least twice a year
2	Weight	Every Visit
3	BMI	Ideally every quarter / at least twice a year
4	Blood Pressure	Once a year unless elevated
5	Blood Lipids	Three months after diagnosis, if 12 years or older. If normal, repeat every 5 years
6	HbA1c	Three- Four times / year
7	Microalbuminuria	At least once a year from puberty or from 7 years after diagnosis
8	S. Creatinine	At diagnosis and annually if microalbuminuria is present
9	Eye fundus examination	Once a year
10	Neuropathy	Once a year

\*Diabetes in children and adolescent (ISPAD) 2<sup>nd</sup> edition

with least complications. The Diabetes Control and Complications Trial (DCCT), a major clinical study conducted from 1983 to 1993 involving 1,441 volunteers, ages 13 to 39, with type 1 diabetes showed conclusively that keeping blood glucose levels as close to normal as possible slows the onset and progression of the eye, kidney, and nerve damage caused by diabetes. Epidemiology of diabetes interventions and complications study published in 2015, showed benefits of early tight glycaemic control in terms of marked reduction in all complications on long term of follow up of 27 years. Also keeping blood glucose levels in near normal range brings optimal quality of life for children on a day to day basis.