Treatment and Education of Children with Type 1 Diabetes and their Parents

Sarah Bläsig
Diabetes Educator
Mail to: onset@hka.de

The Diabetes Team
Auf der Bult

Outpatient Clinic and Ward since 1973
320 – 350 admissions per year
3,400 outpatient visits per year

Diabetes-Team
• Paediatric diabetologists
• Diabetes educators (DDG)
• Dieticians
• Children’s nurses
• Study nurses
• Study coordinator
• Psychologist
• (Social worker)
"The German School"

- **Intensified insulin treatment** based on the basis-bolus principle using insulin injections (ICT) or pump (CSII)
  - ICT: normal insulin, fast-acting insulin analogs (prandial requirements);
    NPH insulin, long-acting insulin analogs (basal requirements)
  - CSII: fast-acting insulin analogs, normal insulin
- Every patient learns **CARB counting** in order to adjust his/her prandial insulin dose (1 carb unit = 10 g of carbs, 1 CU)

**Situation at Admission**

**Day 1-2**

- Initial medical care in the emergency room
- Admission to the special diabetes ward
- Parents are able to stay with the child
- Infusion therapy with fluids and insulin (intravenously), monitoring and care on the ward
- Initial diagnose talk with patient, parents, diabetologist and psychologist few hours after admission ("Diagnoseeröffnung")
- First meeting with diabetes educator, planning of 1st appointment
Diabetes Education Programmes

- 2 diabetes educational programmes for children and adolescents
  - „Jan- Book“ (age 6-12)
  - Diabetes programme for adolescents (age 12-18)

- 1 psychological and medical diabetes guide for parents

Starting with the Diabetes Education

General Schedule - Ward
- Meal times
- Injection times
- Blood glucose check times
- Doctor visits
### Patient’s Agenda on the Ward

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 am</td>
<td>Wake-up</td>
</tr>
<tr>
<td></td>
<td>BG testing</td>
</tr>
<tr>
<td></td>
<td>Insulin injection/bolus</td>
</tr>
<tr>
<td></td>
<td>Breakfast</td>
</tr>
<tr>
<td>10:00 am</td>
<td>Doctor visit</td>
</tr>
<tr>
<td>12:00 pm</td>
<td>BG testing</td>
</tr>
<tr>
<td></td>
<td>Insulin injection/bolus</td>
</tr>
<tr>
<td></td>
<td>Lunch</td>
</tr>
<tr>
<td>18:00 pm</td>
<td>BG testing</td>
</tr>
<tr>
<td></td>
<td>Insulin injection/bolus</td>
</tr>
<tr>
<td></td>
<td>Supper</td>
</tr>
</tbody>
</table>

### Educational Sessions

- Educational sessions on diabetes (7-10 hrs)
- Educational sessions on nutrition (3-4 hrs)
- Psychological counselling (3-4 hrs)
- Hypoglycaemia awareness training with physiotherapist
Diabetes and Nutrition Education Curriculum

Diabetes Basics
(What is Diabetes?)
• Relationship between food, blood glucose and insulin
• Insulin-producing cells
• Difference between Type 1 and Type 2 diabetes
• Insulin and oral antidiabetics
• Honeymoon phase

Nutrition
• Nutrition history, personal nutritional habits
• Nutrition basics (carbs, protein, fat)
• Carb Unit = 10 gram of carbohydrates
• Fast- and long-acting carbs
• Sweetener, nutritive sweetener

1 portion = 1 CU

Rescue carbs, 4 pieces = 1 CU
Diabetes and Nutrition Education Curriculum

Insulin and Injection

• Action of insulin
  • short, intermediate and long acting insulin
  • regular, NPH, insulin analogues
• Storage and durability of insulin
• Handling with syringe, mixing of insulin
• Injection technique
• Injections sites
• Prevention of lipohyperthrophy

Calculation of Insulin Dose

• What is an insulin plan?
• What is an Insulin-Carb-Ratio?
• What is a Correction Factor?
• What is a Glucose Target?
• What is a circadian rhythm?
• Practices in calculating insulin dose
### Insulinplan for MDI (ICT)

**Insulindosierungsbo gen**
Diabetes-Zentrum für Kinder und Jugendliche
Diabetesmelanz Tel. 0511/9115-3335
Diabetesstation Tel. 0511/9115-2208
diabetesmelanz@ika.de

<table>
<thead>
<tr>
<th>Art</th>
<th>morgens</th>
<th>mittags</th>
<th>abends</th>
<th>spät</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mahlzeiteninsulin</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deine Standard KE-Verteilung</td>
<td>4 2</td>
<td>4 2</td>
<td>4 2</td>
<td></td>
</tr>
<tr>
<td>Für eine KE spritzt Du (Einhheiten)</td>
<td>3 1,5</td>
<td>2,5 1,5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deine Standarddosis Mahlzeiteninsulin (Einhheiten)</td>
<td>9 15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Korrekturinsulin</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eine Einheit Normalinsulin senkt den Blutzucker um (mg/dl)</td>
<td>40 50</td>
<td>40 70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dein Blutzuckerspiegel (mg/dl)</td>
<td>100 100 100 120</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalinsulin</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deine Standarddosis Basalinsulin (Einhheiten)</td>
<td>13 22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mahlzeiteninsuline</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humalog</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basalinsuline</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Levant®</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weitere Medikation:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blutzucker zur Nacht</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 100 mg/dl 1,0 KE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 80 mg/dl 1,5 KE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 60 mg/dl 2,0 KE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

### Insulinplan for CSII

**Pumpe Settings**
Kinder- und Jugend-Krankenhaus

<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>Gender</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Pump</th>
<th>Time</th>
<th>Daytime</th>
<th>Nighttime</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Glucose</th>
<th>Insulin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Correction Insulin</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Notes:**
- Insulin: Dhabi®, Levant®
- Basalinsulin: Humalog
- Korrekturinsulin: Normalinsulin

---

23.03.2012
Diabetes and Nutrition Education Curriculum

Self-management
- Demonstration and handling of different glucometer devices
- Areas to check the blood glucose (finger, ear, arm)
- Technical issues like temperature, storage etc. of glucose stripes
- Documentation, blood glucose diary

Hypoglycaemia

Signs
- Early signs
  - Shaky, sweaty, cold
  - Poor coordination
  - Hunger
  - Anxiety/nervousness
  - Pale colour
- Late signs
  - Irritability/personality change
  - Mental confusion, decreased concentration
  - Speech difficult or slurred
Hypoglycaemia

Reasons
- Too much insulin
- Missing of carbs or wrong estimation
- Exercise, physical activity
- Alcohol consume

Treatment
- 10-20 gram of fast acting carbs
- (juice, dextrose tablets)
- 10-20 grams of long acting carbs, snack

Loss of consciousness
- Glucagon injection
- Recovery position
- Emergency call
Hyperglycaemia

Signs
- Thirst
- Pollakisuria
- Headache
- Loss of weight

Reasons
- Too less Insulin
- Too much carbs (wrong estimation)
- Illness, Fever
- Lipohyperthrophy

Hyperglycaemia

Treatment
- Insulin correction
- Lots of fluid
- Test for acetone (Blood/Urin)
- What is acetone?
- Hotline
Diabetes and Nutrition Education Curriculum

Special Situations

• Birthday parties
• Holidays
• School trip
• Overnight stay at friends
• Whole day sport event
• Diabetes Health Pass

Information for School and Kindergarten

• Diabetes educator visits school or kindergarten
• Education for teachers, nursery nurses, classmates
• External support for mealtimes and blood glucose tests
Discharge from Hospital

Outpatient clinic
- 1st appointment 2-3 weeks after discharge
- Further appointments every 6- (8) weeks
- Procedure during the outpatient visit
  - Laboratory
  - Height, Weight, Prescriptions
  - Meeting with Diabetologist

Summary of the Initial Diabetes Education on the Ward
- Patient stays for ca. 10-14 days on the ward
- Before discharge patient leaves the ward for several hours (mostly on weekend) in order to test his/her knowledge at home
- Our Philosophy:
  - take a break from routine day life
  - focus on diabetes
  - find space for emotions and questions
  - develop personal solutions for living with diabetes
Follow-up Education in an Outpatient Setting

• 2-day educational course for school children during holidays
• “Fit for School” (special course for preschoolers)
• 1-day educational course for parents at weekend
• Special workshops (coeliac disease, insulin pump users)

Tools
The Hannover MDT:
Big team, different personalities, one philosophy

Thank you for your attention!
Experiences

When I was first diagnosed I was on 2 injections a day and my blood was up and down like a yoyo. I didn’t really understand and did used to sneakily eat cake, but this would send my blood sugars high, but my average (HbA1c) was still very good. When I moved to Germany I went on to 4 injections a day and was kept in under observation for nearly 2 weeks. I was first put on a drip to see how much incline I needed; I was then put on a scheme which worked very well. During the time I was in hospital my blood didn’t go above 12 (216). This scheme works better for me and I like how I compensate my incline with my food not my food with incline.

I now hope to move onto a pump, but for now this scheme works very well for me, I must say I prefer the German method to the English.

Jordan Evans (12)