


**AUF
DER
BULT**


KINDER- UND
JUGEND-
KRANKENHAUS


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

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The Diabetes Team Auf der Bult





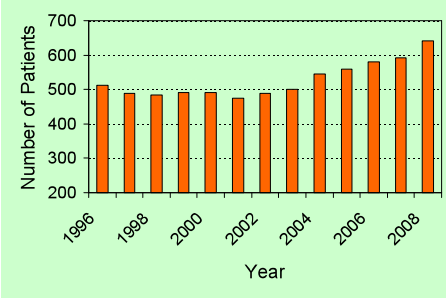
Outpatient Clinic and Ward since 1973

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)



Year	Number of Patients
1996	510
1997	490
1998	480
1999	490
2000	490
2001	480
2002	490
2003	500
2004	550
2005	560
2006	580
2007	590
2008	640

„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



TERMINPLANER FÜR SCHULUNGEN			
ZEIT	MONTAG	ZEIT	DIENSTAG
7:00	Wecken, BZ messen, Insulingabe, Frühstück	7:00	Wecken, BZ messen, Insulingabe, Frühstück
10:00	VISITE	10:00	VISITE
12:00	BZ messen, Insulingabe, Mittagessen	12:00	BZ messen, Insulingabe, Mittagessen
18:00	BZ messen, Insulingabe, Abendbrot	18:00	BZ messen, Insulingabe, Abendbrot

ZEIT	DONNERSTAG	ZEIT	FREITAG
7:00	Wecken, BZ messen, Insulingabe, Frühstück	7:00	Wecken, BZ messen, Insulingabe, Frühstück
10:00	VISITE	10:00	VISITE
12:00	BZ messen, Insulingabe, Mittagessen	12:00	BZ messen, Insulingabe, Mittagessen
18:00	BZ messen, Insulingabe, Abendbrot	18:00	BZ messen, Insulingabe, Abendbrot

7.00 am	Wake-up BG testing Insulin injection/bolus Breakfast
10.00 am	Doctor visit
12.00 pm	BG testing Insulin injection/bolus Lunch
18.00 pm	BG testing Insulin injection/bolus Supper

Telefonnr. für Terminänderungen: 0511/ 8115 und jeweils Diabetesberatung: - 3351 oder - 2409 Ernährungsberatung:- 3350
 Psychl. Beratung: - 2401

Structure of Initial Education



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



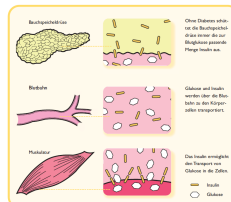
Diabetes and Nutrition Education Curriculum



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



Diabetes and Nutrition Education Curriculum



Nutrition

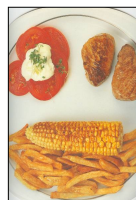
- Nutrition history, personal nutritional habits
- Nutrition basics (carbs, protein, fat)
- Carb Unit = 10 gram of carbohydrates
- Fast- and long-acting carbs
- Sweetener, nutritive sweetener



1 portion = 1 CU



Rescue carbs, 4 pieces = 1 CU



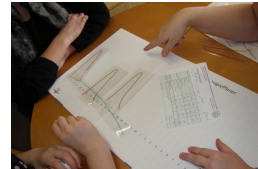
Estimating CU

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
- Injection sites
- Prevention of lipohypertrophy



Diabetes and Nutrition Education Curriculum



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)



INSULINDOSIERUNGSBOGEN

Diabetes-Zentrum für Kinder und Jugendliche
Diabetesambulanz Tel. 0511/8115-3335
Diabetesstation Tel. 0511/8115-2209
diabetesambulanz@hka.de

		Arzt schnell		Datum	
		morgens	mittags	abends	spät
Mahlzeiteninsulin	Deine Standard KE-Verteilung	4 2	4 2	4 2	
	Für eine KE spritzst Du (Einheiten)	3	1,5	2,5	1,5
	Deine Standardddosis Mahlzeiteinsulin (Einheiten)	18	9	15	
Korrekturinsulin	Eine Einheit Normalinsulin senkt den Blutzucker um (mg/dl)	40	50	40	70
	Dein Blutglukosezielwert (mg/dl)	100	100	100	120
Basalinsulin	Deine Standardddosis Basalinsulin (Einheiten)	13			22
Mahlzeiteninsuline Humalog Basalinsuline Levemir		Weitere Medikation: keine		Blutzucker zur Nacht < 100 mg/dl 1,0 KE < 80 mg/dl 1,5 KE < 60 mg/dl 2,0 KE	

Insulinplan for CSII



AUF DER BULT

Diabetes-Zentrum für Kinder und Jugendliche
Prof. Dr. med. Thomas Danne
Diabetesstation Tel. 0511/8115-2209
Diabetesambulanz Tel. 0511/8115-3335
eMail diabetesambulanz@hka.de

PUMP SETTINGS

Name: _____ Age: _____ Onset: _____ Weight: _____ kg

Type of Pump: _____ Insulin: _____

[illegible]

Blood glucose during night <90mg +1.0 CU <70mg+1.5 CU <60mg+ 2.0 CU

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



Diabetes and Nutrition Education Curriculum



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



Diabetes and Nutrition Education Curriculum



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



Diabetes and Nutrition Education Curriculum



Hypoglycaemia

Loss of consciousness

- Glucagon injection
- Recovery position
- Emergency call



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Hyperglycaemia

Signs

- Thirst
- Pollakisuria
- Headache
- Loss of weight

Reasons

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

Diabetes and Nutrition Education Curriculum



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



Diabetes and Nutrition Education Curriculum



Information for School and Kindergarten

- Diabetes educator visits school or kindergarden
- 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)