

Suppl. Table. Herdecke Training Program for Childrens with Diabetes mellitus (HeKiDi) (6-12 years) – Curriculum

| | Module | Educational objectives /Learning aims | Contents | Methodology | Participants | Time |
|---|-----------------------|---|---|---|--|-----------------------------|
| 1 | Reception of children | Children - feel expected and welcome - feel supported during separation process from parents | - Introduction and assignment to accommodation (bedroom, carer's room, room for injection and measuring) - Play with other children is made possible and promoted | - Personal guidance through the house by carer, moving into rooms - Having ready crafts material and games | Newly arriving children and carers | 2,5 h |
| 2 | Admission Interview | Children and parents - articulate their individual issues, problems and requirements for the course - express the meaning of diabetes - illustrate positive and negative experiences [L1 4/182] - express diabetes-related concerns - speak about their hobbies, their non-diabetic capabilities and skills - speak about their parents and siblings current motivation and intra-familial interactions, resources and obstructions | - Presentation of situation at school and at home [L1 4/190, L1 4/182], leisure time activities [L1 4/206] and habits [L1 4/202] as well as diabetes-related features [L1 4/184] - Discussion of challenges related to the technique as well as injection and catheter sites [L1 4/182] - Evaluation of health condition (comorbidity, medication) [L1 4/184] - Identifying optimal of points in time and frequency of telephone calls between patient and relatives - Individual therapy aims are agreed on between the team, relatives and children [L1 4 /231-236] - Assessment of perception abilities, sensory skills and awareness of patient by | - Structured medical history - Group discussions with patients and their relatives - Unbiased assessment [L1 4/190] of the individual situation and inter-subjective and of documentation [L1 4/188] through a number of members of the diabetes team [L1 4/190] - Standardized knowledge test [L1 4 194] and patient documentation [L1 4 246] | - Child and person having the custody and where required social environment (e.g. grandma) - Doctor (diabetologist) - Diabetic counsellor [L1 4/223-224] | Approximately 30' per child |

| | | | | | | |
|---|--|---|---|--|--|--|
| | | | <p>physician [L1 1/20]</p> <ul style="list-style-type: none"> - Resources and aims are taken up in the following events, such as exercise [L1 4/202-204], ward round [L1 4/198-200], and evening circle [L1 4/206-208] | | | |
| 3 | <p>We discuss our diet / food. Afterwards BGSM and injection</p> | <p>Children</p> <ul style="list-style-type: none"> - measure blood glucose levels independly [L1 254-255] - estimate blood glucose levels - remember to measure blood glucose levels, independently administer insulin, charge of catheter - joy over positive blood glucose levels - react solution-oriented toward derailed values - use various injection/catheter sites - know new techniques and catheter - improve the injection technique - place the catheter at different parts of the body - understand the meaning behind keeping a diary - documente reliable blood glucose levels, insulin dosage, carbohydrates andactivities in diary - practise the weighing out of the food content and estimate the carbohydrate contentyounger children: independently inject insulin, having in mind the insulin calculation of the diabetes consultant / diabetologist [L1-260] - older children: calculate insulin dosages - correct insulin dosage based on blood glucose level and carbohydrate factor [L1-246] | <ul style="list-style-type: none"> - Washing hands - Change of finger tips - Carrying out blood withdrawal - Identifying causes for errors - Keeping a diary - Dietary schooling according to German Diabetes Association - (age-appropriate if needed) announcement or independent calculation of insulin dosage - Insulin injection | <ul style="list-style-type: none"> - Separate room for measuring blood glucose level - Children's utensils (blood-glucose meter, lancets, swabs, diaries), separate table with scales for weighting and calculating carbohydrate units [L1-191] - Blackboard where composition of diet is presented (carbohydrate units, fats, protein) [L1-271- 272] - Group tables | Each time four children with one carer | |

| | | | | | | |
|---|--|--|---|--|---|---------------------------|
| 4 | Lunch break | <p>Children</p> <ul style="list-style-type: none"> - design their own break (with some supervision) independently - observe blood glucose level in the midst of - movement adjust insulin/carbohydrat in the midst of movement - improve the perception of the own body image - take on responsibility for independent structuring of time management | <ul style="list-style-type: none"> - Movement, crafts, circus games, soccer games, building huts in the forest | <p>Carer:</p> <ul style="list-style-type: none"> - recognize social and motoric behaviour and observe blood glucose metering during action and if needed hypoglycemia management of children and guide [L1-300] | Children, carer, | Daily 60' |
| 5 | Lunch meeting | | <ul style="list-style-type: none"> - Delivery of information regarding individual children based on the admission interview - Sharing observations and perceptions from all therapeutic perspectives - Discussion of individual therapy focal points [DB1-59-61] | <ul style="list-style-type: none"> - Group discussion [DB1-59-61] -[L1 – 312] - The entire team perceives the situation and treatment concerns of the children | Diabetes team | Daily 60' |
| 6 | Who we are and what we would like to achieve | <p>Children</p> <ul style="list-style-type: none"> - experience: group training as pleasant, social event (,holiday feeling') - security and reliability through rules - other children with their diabetes story - own diabetes competence within a group of same aged kids | <ul style="list-style-type: none"> - personal introduction of participating children (age, siblings, place of residence, duration of diabetes, form of therapy - Introduction of carers (including competences and duration of diabetes) - Introduction of group rules - Introduction of the therapy and hypoglycemia management during the course [L1-432-344] | <p>Group room, sitting in a circle with 30 participants</p> | Carer, diabetes team, doctors, children | 1 st day 1,5 h |

| | | | | | | |
|---|---|---|--|-------------------------------------|---|--|
| 7 | Close-meshed blood glucose measuring | <p>Children:</p> <ul style="list-style-type: none"> - change of finger tips for each injection - wash fingers before each measurement - improve measuring technique - estimate blood glucose levels - correct blood glucose level | <ul style="list-style-type: none"> - Assessment of blood glucose levels with guidance by the carers | | Carer, diabetes team, doctors, children | <p>AM: 7:30 9:30 12:00 PM: 3:00 6:00 9:00</p> |
| 8 | Practical training: „What is diabetes?“- game | <ul style="list-style-type: none"> - become acquainted with basic (patho-) physiological relationships of blood glucose regulation [L1 380] - make themselves aware of the function of their self-competences (head needs to take over the function of the pancreas) [L1 – 468-470] - experience that with succeeding self-competence a normal life is possible [L1- 483-485] - experience that it is of advantage to be able to do things independently [L1 - 473-476] | <ul style="list-style-type: none"> - Playfully accessing and understanding human organs [L1-381-382] - unlocking of physiological correlations through accessible models - Children slip into the role of the insulin (key) | - Life-sized models of inner organs | Children, diabetes team, diabetologist, | 1 st day 2 h |
| 9 | Telephone time | <ul style="list-style-type: none"> - use parents as resources - speak to parents about new experiences and successes - include family in own learning processes - strengthen the relationship [L1 486-488] | <ul style="list-style-type: none"> - Homesick children call home during lunchtime (so they do not feel homesick in the evening) [L1-426] | | Children | Daily 1h |

| | | | | | | |
|----|------------------------------------|---|---|--|--|-------------------------|
| 10 | Evening circle with many surprises | <ul style="list-style-type: none"> - develop a feeling for daily rhythm - experience resonance and appreciation for new experiences and successes regarding blood glucose management as well as on other areas - learn to appreciate and be pleased about something well-done - develop and foster social competences - perceive themselves as part of a group of others who are also affected - recognize a group / social contacts as resources - deal with homesickness, separation situation | <ul style="list-style-type: none"> - Reading together - Singing together, if suited also including children who instruments [L1-206] - The sugar phantom: stories about the achievements of the day of individual children - Children included in the stories receive a reward from the „sugar chest“ [L1- 428-428] - Imaginative journeys | <ul style="list-style-type: none"> - „Sugar chest“ - Forming a circle with chairs, - Guitar, Song books - Texts that get read out loud - if needed foot embocation with lavender for aiding sleep [L1-182-185] | Carer, children, | Daily 2 h |
| 11 | Morning visitation | <ul style="list-style-type: none"> - get to know morning circle as element of daily rhythm - „arriving in own body“ | <ul style="list-style-type: none"> - Discussing and agreeing on clear rules of behaviour [L1- 345-346] - Safety rules of the area [L1 342-344] - Movement elements (z.B. eurythmy) [L1-454] | <ul style="list-style-type: none"> - Setting up chairs in a circle/standing outside | Carer, doctor, diabetologist, all children | Daily 10' |
| 12 | Practical training: „Insulin“ | <ul style="list-style-type: none"> - understand the effects of insulin - get to know various insulins and their dose-response curves (potency+ efficacy) - experiencing handling of insulins (storage) [L1-463-464] - develop respect for today's possibilities of insulin-substitution [L1-465-466] - recognise appropriate injection sites - practise independent insulin injection | <ul style="list-style-type: none"> - Different types of insulin and their effects - Effect curves - History of insulin development (animal insulin, human insulin, analogue insulin) [L1-465-466] | <ul style="list-style-type: none"> - Jumping ropes for demonstrating insulin effect curves - Symbolic and pictorial materials for illustrating effect of insulin (key) [L1-494] - „Oskar“- doll [L1-500-504] drawn onto a bedsheet - Display of human body | Children split into 2 groups (beginners and advanced), diabetes team, diabetologist, 2 carers per group as a helper for all training courses | 2 nd day 45' |

| | | | | | | |
|----|---|---|---|--|--|----------------------------|
| 13 | Practical Training: Hypoglycemia Perception | <ul style="list-style-type: none"> - grasp the meaning and necessity of treating hypoglycemia - improving/developing self-perception / schooling of the senses - training of reactivity - developing appropriate hypo-prevention and reactivity strategies - learn / experience that it is important for the individual to let others help you in case of hypoglycemia [L1- 198] - practise to get a feel for the blood glucose level - recognize the interaction between hypoglycemia and emotions - become more aware of subjective hypo-symptoms [L1-637] - learn safe dealing with hypoglycemias - fearless handling of risk of hypoglycemias | <ul style="list-style-type: none"> - Symptoms of hypoglycemia and their individual variability - Assignment of meaning and reflection successful strategies for action | - Group room with chairs | diabetologist, psychologist, children, carer | 3 rd day 60' |
| 14 | Practical Training: Hyperglycemia | <ul style="list-style-type: none"> - train perception for hyperglycemia - know different severity degrees for various levels of hyperglycemias (for instance, correction scheme for Hyperglycemia) - can apply and interpret ketone strips (and if necessary adjust insuline dosage) - reflect and overcome feelings of helplessness (L1-733) - maintain possible courses of action | <ul style="list-style-type: none"> - What is lack of sensitivity tinsulin - Pathophysiological processes during hyperglycemia - Dangerous / harmless situations - What are ketones and what do they do for the body? Ketones testing - Error-correction scheme in affected insulin sensibility (L1733) | <ul style="list-style-type: none"> - Group room with chairs - child-appropriate language and pictures (L1 46-48) - ketones strips, sugar solution | All children (split into 2 groups) | 3 rd day 45' |

| | | | | | | |
|----|---|--|---|---|---|----------------------------|
| 15 | Practical training: Learning kitchen | <ul style="list-style-type: none"> - prepare meals by themselves - experience joy in preparing a meal - expand the meaning of the meals beyond the carbohydrate consumption and calculation of blood glucose level - extend variety of diet (L1-619) - get to know the developing process of a dish (L1-676) - get to know the influence of various edibles and their preparation in relation to their carbohydrate calculation (peeling fruit, boiling pasta) | Joint preparation of meals Practical handling with ingredients and their calculation | <ul style="list-style-type: none"> - Teaching kitchen with proper kitchen equipment and appropriate food - recipes | Children in groups of 3-4 kids | 3 rd day 90' |
| 16 | Individual visits | <ul style="list-style-type: none"> - feel being taken serious in their individual diabetes-relevant needs - communicate the newly acquired knowledge to the doctor in order to anchor it - talk about their mental states, worries and fears - name further learning objectives and desire for change regarding interactions at home - practise the observation of blood glucose developments less emotionally - experience support for their issues - acquire new motivation for everyday living with diabetes - achieve specific tasks (e.g. new catheter locations, reliable measurement of blood glucose level) (in relation to individual reward plans) | <p>Questions during daily visits: How was the day? Which aims did you have? How do you manage to arrange these? What do you still require (new injection sites, new experiences)? How would you want to modify your therapy? What is important to you today? How was your blood glucose level? Which modifications are we going to undertake? [L1-542]</p> <p>Improvement of interaction with parents with the help of reward plans and individual agreements structured in small steps</p> | <p>With younger children – coloration of blood glucose levels - green = „fine“, blue (hypoglycemia „dim“) and red (hyperglycaemia: „construction sites, challenges“) with colored pencils rewarding plans</p> | Physician and one child at a time, one carer and partly a psychotherapist | Daily, 10' |
| 17 | Art | <p>Children</p> <ul style="list-style-type: none"> - expresse themselves in creative ways - express emotions - increase feeling of self-efficacy in other than | <p>1. Background and basis of the motto (e.g. Olympics, underwater world)</p> <p>2. Background, handling of art</p> | Clay, crafts room, aprons | Children in groups, art therapist, 2-3 carers | On four days for 2h |

| | | | | | | |
|----|----------------------------------|---|--|--|---|-----------------------------|
| | | <ul style="list-style-type: none"> - diabetes-related correlations - improve motoric skills - connect with the subject cognitively - connect with the material and their process of arrangement emotionally - deal emotionally with a subject of succeeding / failing of one's own arrangement - disengage themselves again and reflecting their emotions - find out about the proportions of a form - experience joy over one's own work [L1-514-515] - practise of hypoglycemia perception under ,engaged' circumstances | <p>material (clay) [MAK/38]</p> <ol style="list-style-type: none"> 3. Theory of colors/chromatic circle 4. Modeling of a design / collecting and choosing material 5. Painting, plasticizing, sand pictures created within the framework of the motto / topic of the week each on three days [MAK/226] 6. Observation of total art whilst suppressing the knowledge and cognitive schemes 7. Own motivational-affective evaluation of the art work 8. Connection of cognitive evaluation whilst taking into consideration the affective evaluation 9. Tidying up collectively | | | |
| 18 | Practical training "Circus" | <ul style="list-style-type: none"> - experience joy in movement - rely on others - perceive the body as a functioning entity - practise the understanding of different body sensations (useful for improving recognition of hypoglycemia) | Circus games: pyramids, acrobatic, plate spinning, unicycle, diabolo | Circus equipment (plate, Diabolo, unicycles, scarves etc.) L1-595 | Children, therapist with circus experience, carer | 2 nd day 2h |
| 19 | Blood glucose measuring at night | | - Assessment of nightly blood glucose levels by carers | | Carer, nurses, children | Nightly between 0.00 – 3.00 |
| 20 | Practical training: Exercise | - develop awareness for the correlations between exercise and progression of blood glucose levels | - different effects of sport and everyday activities (e.g. ballgames, rollerblades/inliners, | - lesson work sheets | diabetologist, children, carer, | 4 th day 45' |

| | | | | | | |
|----|---------------------------------------|---|--|---|--------------------------|-----------------------------|
| | and Assi- milation Training | <ul style="list-style-type: none"> - reflect the significance of consequences of exercise or the lack of exercise - practise courses of action for diabetologically unproblematic exercise - generate new exercise habits | <ul style="list-style-type: none"> - basketball, stroll through the town) - Fitness test | | | |
| 21 | Practical training: Swimming | <ul style="list-style-type: none"> - experience or develop joy during movement in water - practice competent exposure to food/insulin, blood glucose level readings before/after swimming - practise the handling of a pump (discarding, laying of a new catheter) - train the reduction of basal levels before/during/after exercise [L1 708-722] | Swimming, discarding of the pump, applying a catheter, BGSM and appropriate reaction | - Emergency backpack with glucagon, glucose drip, band aids, snacks | 1 carer / per 2 children | 4 th day 2,5h |
| 22 | Practical training: Pizza | <ul style="list-style-type: none"> - eat as much as they want to and calculate their consumption - eat ‚difficult‘ ingredients also successfully in public | briefing in regard to tasks to be fulfilled, calculation of quantity of food, CU's ¹ , FPU's ² joint task completion, followed by evaluation of successful event | - Pizzeria, Pizza, Chips and similar | dietician, children | 4 th day 2 h |
| 23 | Practical training: Day trip | <ul style="list-style-type: none"> - how to prepare for a trip, independently („packing bag“) - consider and assemble necessary equipment - experience themselves as independently empowered - older children: „self-provisioning day“ as a preparation for class trips - learn reliable, independent BGSM - train age-appropriate steps in order to become | Trip with public transport/bus, | Emergency kit, Emergency backpack, snacks | everyone | 5 th day 8 h |

¹ Carbohydrat Units

² Fat-Protein-Units

| | | | | | | |
|----|---|--|--|---|--|-----------------------------------|
| | | <ul style="list-style-type: none"> - more independent during everyday life - learn insulin adjustment for different variations of movement and unscheduled meals (ice cream) - learn to secure diabetes care under exceptional circumstances | | | | |
| 24 | <p>Practical training: Nutrition</p> | <ul style="list-style-type: none"> - age-appropriate development of own understanding of relationship between food and blood glucose effects - know carbohydrate content glucose tabs - be able to use tools in order to calculate carbohydrate units (table of nutritional value, scales) - to be able to estimate carbohydrate content of foods in everyday situations (ready-made meals, restaurant food) - develop flexibility when handling meals (LI-617-629) - know the meaning of fats and protein for the calculation | <ul style="list-style-type: none"> - Food components and their effect on blood glucose - (carbohydrate units, fats, proteins, fibres) - Handling of sweets | <ul style="list-style-type: none"> - Group room with chairs - Visualization of food for the estimation exercise | <p>Dietician assistant, children, carer</p> | <p>6th day 45'</p> |
| 25 | <p>Practical training: „Quiz“</p> | <ul style="list-style-type: none"> - apply learned knowledge to possible everyday situations - anchor the knowledge practised and learned during the training week, playfully - feel positively supported in their perception of newly acquired knowledge - work together in groups and value the ability of other children | <p>Assessment of knowledge and competences in acting out with the help of everyday-relevant queries in topics related to diabetes (Hyper-/Hypo management, insulin dosis adjustment during physical activity etc.)</p> | <p>test stations with everyday-relevant queries</p> | <p>diabetologist, carer, children in groups of 2-3</p> | <p>6th day 60'</p> |
| 26 | <p>Practical training: Closure Brunch</p> | <p>Parents of diabetic children</p> <ul style="list-style-type: none"> - exchange their worries, questions, impressions with one another - put their personal situation into perspective - realize similarities in the everyday life treatment | <p>Gather new motivation for treatment for everyday life, Appreciation of their children compared to others, outlook of how to reach next few years of life</p> | <p>information material, refectory, seating arrangements in house</p> | <p>parents, carers, children</p> | <p>7th day 3h</p> |

| | | | | | | |
|--|-------------------------------|--|--|--|---|----------------------------|
| | | of their children - be impressed about the newly acquired skills of their children | with diabetes, decreasing worries, fears and insecurities | | | |
| 27 | Individual closure interviews | Parents learn - which skills and abilities the child acquired during the week and how these can be further cultivated - about the therapy alterations - to make concrete appointments for further intrafamilial collaboration - to report about successful reward plan and confirmation of agreed reward plan, if applicable - to generate reward plans for home are if necessary | - (Positive) communication in regard to blood glucose levels - Point in keeping a daily diary - What do you need in order to integrate the newly learned things at home? - Agreements (L1 438-438) - Planning of further coordinated events (f.e. for school) - Parents are being explained the therapy regime that has been followed during the course | - Insulin therapy plan - Reward program | physician, parents, child, carer | 7 th day 30' |
| 28 | Closing event | Children - provide feedback to the carers and entire diabetes team - present acquired knowledge and regrounded material artistically to parents and siblings - receive undivided attention by the adults for their skills and resources - present normality of life with diabetes as described by a child | - Appraisal through present adults and siblings - Parents and relatives' - Appreciation of abilities and vitality of their children | - Stage, room with chairs, props for final presentation of circus performance, sketch - Quiz for parents, learned songs, etc. | everyone | 7 th day 60' |
| Additional module (time-wise and spatially independent from children course) | | | | | | |
| 29 | Parent training | Parents: - find out which new skills were acquired by their child [L1-230] - find out how they can support children in their implementation of the newly acquired knowledge - learn developmental steps in childhood and the | - Improvement of diabetes- and development-related parental - Knowledge in order to be able to support children better in the future - Encouragement for appreciation of childrens' abilities | - Forming circle with chairs, - Introduction round - Workshop oriented towards participants' questions - Interactive | Diabetologist, children and adolescent psychiatrist, dietician, young carer personally affected | Middle of the week |

| | | | | | | |
|----|----------------|---|---|---|---------------|-----------------------|
| | | <p>meaning for the practical implementation for diabetes in daily routine</p> <ul style="list-style-type: none"> - experience relevance of stepwise conversion of their child to independence - refresh insights regarding diet, rules of adjustment, insulin and similar issues and learn recent facts of knowledge (for instance, adjustment, movement, therapy of hyper- and hypoglycaemia) - recognize necessity of accompaniment during this process (L1-761) - come to terms with own fear (hypoglycaemia, consequences), feelings of guilt, problems regarding interaction, conflicts with surrounding, school | <ul style="list-style-type: none"> - Emotionally adequate accompaniment during diabetes tasks - Appropriate autonomisation of children in terms of ‚relating individuation‘ - Optimizing safety of parents, appreciation of the parents‘ work in the group | <p>conversation</p> <ul style="list-style-type: none"> - If needed role play - Exchange of parents amongst each other | | |
| 30 | Sibling module | <p>Siblings</p> <ul style="list-style-type: none"> - feel recognized - experience themselves as recognized in certain situations - can communicate concerns regarding their role - can recognize and develop resources | <ul style="list-style-type: none"> - How do I feel about the fact that I have a sibling who suffers from diabetes? - Which consequences does this have for the family system? - Resource-oriented perception of the siblings‘ needs | | Team (carers) | 1x/year for 1 weekend |