

# Transitions of Care in Adolescents with Diabetes

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DISH presentation  
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Checking blood glucoses  
Counting carbs  
Dosing insulin  
Treating highs/low  
Filling prescriptions  
Making appointments  
Calling Diabetes Team  
Driving and Diabetes  
ETOH and Diabetes  
Reproduction and Diabetes  
Long term complications

?



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Long term complications

# Transition of Care in Adolescents with Type 1 Diabetes:



*Teaching patients  
“The Keys” to  
Drive their Diabetes*

# **American Diabetes Association**

## *Clinical Practice Recommendations For Transition*

- Time of frequent lapses in care:
  - moving out of home
  - moving away from “medical home”
  - moving to an adult provider/new team

Diabetes Care, Vol 38,  
January 2015 Diabetes  
Care 2011  
Nov; 34(11): 2477-2485

## **Time of Emerging Stresses:**

- Erratic eating patterns-work, school
- Time constraints: work, school, relationships
- Finances/Food/insurance
- Absence of social support-changes in relationships
- Mental health
- Alcohol

# Time of Emerging Chronic Complications

*Studies looking at young adults ages 18-30 years*

- Retinopathy: 12%-47%
- Nephropathy: 7.3-14.8%
- Hypertension: 30-33%
- Neuropathy: 8.2% of teens+

James et al, BMC Research Notes, 2014:  
7:593

Jaiswal et  
SEARCH Study, Diabetes Care, 2013

# Why important to address: ADA guidelines

- “Pediatric health care providers, working collaboratively with the patient and family, should prepare the developing teen for the upcoming transition in health care delivery beginning at least 1 year prior to the transfer to adult health care providers, and likely during the **early** adolescent years.”
- “Preparation should include a more directed focus on diabetes self-management skills for the teen/emerging adult and his/her parents”

# When to start the Transition Process?

- The average age of transition for patients with T1D is 19–20 years old
- American Academy of Pediatrics (AAP) suggest that transition planning should begin as early as age 14, including regular assessments to identify self-care needs and goals
- AFCH: Can start as early as age 8-10 years



# How to carry out Transition



IDENTIFYING TOOLS FOR  
ASSESSMENT



IMPLEMENTING IN CLINIC



## *Keys To Independence...*

**Transitioning from the Pediatric  
to the Adult Care Team**



- [https://www.uwhealth.org/files/kids/docs/pedsdiabetes/peds\\_diabetes\\_keys\\_independence.pdf](https://www.uwhealth.org/files/kids/docs/pedsdiabetes/peds_diabetes_keys_independence.pdf)



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## Stage 1

Ages 8-10

The diabetes team begins to ask you (instead of your parents) questions about your health. We help you understand how food, insulin, and exercise affect your blood sugars.

### Checklist

- 
- ☐ Explain what it means to have diabetes.
  - ☐ Understand why some people have diabetes and others do not.
  - ☐ Begin to learn how your body uses the food you eat.
  - ☐ Understand why checking your blood sugar is important, and learn to check your blood sugar.
  - ☐ Begin to learn how to give yourself insulin.
  - ☐ Begin to identify foods that contain carbs. (Carbohydrates)
  - ☐ Begin to learn how to make healthy food choices that are part of your food plan.
  - ☐ Begin to understand the causes, symptoms, and treatment for low blood sugars. (Hypoglycemia)
  - ☐ Understand that insulin is going to be part of your daily life even when you are sick.
  - ☐ Name insulin types and simple reasons for taking them.
  - ☐ Begin to understand how sports, play, and exercise affect your blood sugar levels and insulin sensitivity.
  - ☐ Begin to understand how your school day affects diabetes.






## Stage 2

Ages 10-12

We continue to ask you questions about your health and diabetes. Try to answer questions about your health on your own. We will help you to understand your diabetes and how to recognize changes in your control. When you begin to notice these changes, you can start to take charge of your own care. This helps you be more independent.

### Checklist

- 
- ☐ Continue steps from stage 1.
  - ☐ Remember (most of the time) to check blood sugars on your own.
  - ☐ Choose foods that are healthy for you and fit your meal plan. Discuss ways to make healthy choices at school, eating out with friends, and other special occasions.
  - ☐ Begin to understand how an illness like a cold or flu can affect your body and blood sugar.
  - ☐ Begin to answer questions in clinic.
  - ☐ Understand why you come to clinic every three months.
  - ☐ Begin to understand the importance of A1C values and target goals.
  - ☐ Begin to name insulin types (use proper names), reasons for taking them, and the proper doses.
  - ☐ Continue to understand how sports, play, and exercise affect your blood sugar levels and insulin sensitivity.
  - ☐ Continue to understand how diabetes affects your school day.
  - ☐ Begin to make choices about friends, drinking, and smoking that keep you healthy.
  - ☐ Discuss effects of growth, puberty, and sexual development on diabetes.






### Stage 3

Ages 13-15

The diabetes care team gives you and your family the option of seeing you alone for a portion of the visit. We will ask your parents to join you for the remainder of the visit to review information, talk about the health care plan, and answer any questions or concerns. This helps you to be more independent and to build confidence that you can take care of your health.

#### Checklist

- ☐ Continue with steps from the previous stages.
- ☐ Answer questions independently in clinic.
-  ☐ Mix insulin and give all injections with minimal reminders.
- ☐ Parents review blood sugar logs, help you to think through and double check insulin doses.
- ☐ Let parents know when you need medications or supplies.
- ☐ Understand the significance of A1C, how the choices you make affect it, and how you can change the numbers of your A1C.
- ☐ Introduce the option of attending a teenage clinic.
-  ☐ Begin to understand ketones, what they are, what they do, and how to check them.
-  ☐ Begin to understand the tests that we do each year and why.
- ☐ Discuss effects of growth, puberty and sexual development, sexual activity, and reproduction on diabetes.
- ☐ Begin to understand the impact of diabetes on driving and the importance of checking blood sugar levels prior to driving.






### Stage 4

Ages 16-17

This is a time when you, instead of your parents, begin to talk directly with the diabetes team over the phone when there are changes in your health. We will begin talking about your plans for after high school and how your career choice or school may impact you and your health. We will talk about when to transition to the adult care team. You and your family will have a chance to meet with adult team members during a clinic visit. (See more detail about this clinic visit under, "Common Questions And Concerns About Transition.") You may have already done this if you have attended the "Teenage Clinic" held throughout the year.

#### Checklist

- ☐ Continue with steps from the previous stages.
-  ☐ Independent with monitoring and recording blood sugars.
- ☐ Independent with all insulin doses without parents reminding you.
-  ☐ Begin to call the diabetes team and speak directly with staff if there are changes in your health. (See Keys to Independence Resource Roadmap.)
- ☐ Understand the impact of diabetes on driving and the importance of checking blood sugar levels prior to driving.
-  ☐ Know your health history including major illness, surgeries, allergies, and health care providers.
- ☐ Begin to think about the impact of college, work, and career choices on diabetes management.





## Stage 5

### Ages 18-21

We expect you to call the diabetes team independently if there are changes in your health. You will manage your own insulin and diabetes related medications and supplies and call when refills are needed. We will continue to talk about how school, work and lifestyle choices impact your health. We will talk about and help facilitate transition and link you with the adult diabetes care team.

#### *Checklist*

- ☐ Continue with steps from the previous stages.
- ☐ Routinely call the diabetes team and speak directly with staff if there are changes in your health.
-  ☐ Understand reproductive choices and the impact on your diabetes and overall health.
- ☐ Understand Advanced Directives and complete if desired.
-  ☐ Discuss long-term complications of diabetes, the need for routine follow up and tests, and the importance of glucose control into adulthood.
- ☐ Review the American Diabetes Association guidelines for managing and controlling diabetes. (See Keys to Independence Resource Roadmap.)
- ☐ Explore “Off to College” course offered by the Pediatric Diabetes Team.
- ☐ Establish care with an internist or family practice physician and with an adult diabetes team.

## Pros:

- Existing document to use as tool and provide guidance
- Paper as well as electronic version
- Complete and thorough

## Cons:

- Challenging to address during clinical visit
- Long list can be overwhelming
- No standard implementation
- Age does not always match listed skills
- Tracking in EMR

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## Base Knowledge:

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What type of diabetes do you have?

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What is an A1c? Goal A1c?

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What are your goal blood glucoses?

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How do your insulins/pump settings work?

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What is your sick day plan?

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## **Daily Management**

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**How often to you check blood glucoses on own?**

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**Dose Insulin on own?**

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**Change pump site?**

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**Adjust for exercise?**

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**Treat a low blood sugar?**

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## **Transition and Logistics:**

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What are the longterm complications of DM?

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How does ETOH effect your blood glucoses?

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What do you need to know about driving and DM?

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Pregnancy and DM?

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Filling prescriptions?

---

Contacting DM team?

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# How to carry out Transition



A CHALLENGE



IDENTIFYING TOOLS FOR  
ASSESSMENT

IMPLEMENTING IN CLINIC

# Diabetes Transition Clinic at AFCH

The AFCH DM TC began in 2016, lead by a pediatric and adult diabetes team member. The purpose of the clinic is to have a conversation with the young adult, focusing on current readiness for transition, listening to patients needs and concerns in moving to the Adult Diabetes Clinic, and communicating differences and expectations of the Adult Diabetes Clinic.

From 2016-2018, had a total of 24 patients seen in the TC, average age 19 years, average A1c 9.2%

	No Transition clinic n=32	Transition clinic n=24	p-value
Loss to follow up; % (n)	31.2 (10)	16.7 (4)	0.110
Months from last pediatric to first completed adult visit; mean (sd)	10.5 (7.6) <sup>a</sup>	6 (4.2) <sup>a</sup>	0.026*
Months from referral to first completed adult visit; mean (sd)	5.0 (3.7) <sup>a</sup>	4 (3.2) <sup>a</sup>	0.303
ED visits or hospitalizations during transition; % (n)	9.1 (2) <sup>a</sup>	10.0 (2) <sup>b</sup>	0.461
Change in A1c during transition; % (sd)	+0.51 (1.1) <sup>a</sup>	+0.16 (2.0) <sup>b</sup>	0.480

a total *n*=22 subjects who completed transition

b total *n*=20 subjects who completed transition

Mann et al, PES 2020 Annual meeting

# What happened next?

## *Staffing and Covid*

- 2019=0
- 2020 n=9
- “Need to make 2021 a better year.”
  - Organize TC dates, staff and campaign
  - Work with the Adult providers on a Transfer Letter

# 2021 Transition Clinics

provider	Number of pt seen in TC	Number of pts with Peds NP only	Transfer letter	Number with Adult appt made	Number of those attended adult app
East	5	3	8	7	5
West	6	6	12	9	3
Total	11	9	20	18	14*

\*Pt not being seen yet either due to  
future appointment (2) or no show (2)

# Breakdown by age

Age	N	TC/TL
18	74	2
19	38	7
20	14	7
21	11	1
22	5	3

# What about 2022?

- Continue promoting and improving the TC
- Identify patients going to outside providers and provide Transfer Letter visit prior
- Look how to implement a standard Transition Curriculum



# Role of School RNs

- Frequent interaction with students, sometimes daily
- School orders-opportunity for discussion
  - Assess DM knowledge
  - Assess DM Self Care
  - Assess Transition Readiness







# **Additional Tools for Transition Specific to Diabetes:**

- Endocrine Society Transition Assessment
- National Diabetes Education Program

# Endocrine Society Transition Assessment

## Basic knowledge of your diabetes:

☐ Type 1   ☐ Type 2   ☐ Other Forms

	DATE	INITIALS
 <input type="checkbox"/> Describe what insulin does	_____	_____
<input type="checkbox"/> If you take oral medications, describe how they keep blood glucose in range	_____	_____
<input type="checkbox"/> Describe what happens if you don't take your medications	_____	_____
 <input type="checkbox"/> Describe the meaning of HbA1c	_____	_____
 <input type="checkbox"/> Describe the link between HbA1c level and the risk of diabetes complications	_____	_____
<input type="checkbox"/> Describe how nutrition/diet affects blood glucose and cardiovascular (heart and blood vessel) health	_____	_____
 <input type="checkbox"/> Describe the effect of exercise on blood glucose (right after exercising and overnight)	_____	_____
<input type="checkbox"/> Describe how to drive safely	_____	_____
<input type="checkbox"/> Describe how to drink alcohol responsibly and reduce risk of low blood glucose levels	_____	_____
 <input type="checkbox"/> Describe importance of excellent blood glucose control before & during pregnancy to support the development of a healthy baby	_____	_____
<input type="checkbox"/> Describe risk for other autoimmune diseases and symptoms to look for (for type 1 patients)	_____	_____
<input type="checkbox"/> Describe the need for and recommended frequency of routine check-ups	_____	_____
 <input type="checkbox"/> Describe the need for annual lab work to assess kidney, eye, and cardiovascular health	_____	_____
<input type="checkbox"/> Describe the need for routine dental care exams	_____	_____

### Experience in the following skills:

DATE INITIALS

- ☐ Accurately measure and give yourself insulin injections (even if you're on insulin pump therapy)
- ☐ Calculate correct dose of insulin according to both blood glucose level and carbohydrate intake
- ☐ Monitor blood glucose
- ☐ Monitor ketone levels (urine or blood) during illness, stressful times or when blood glucose levels are persistently elevated
- ☐ Log or download blood glucose readings
- ☐ Be able to state target blood glucose levels/range and goal HbA1c level
- ☐ Show how to program date/time into blood glucose meter and any other devices you may use
- ☐ Be able to count/estimate carbohydrates
- ☐ For those on fixed dosing, state number of carbohydrates to eat at each meal/snack
- ☐ Describe the reasons for changing/rotating injection/infusion sites
- ☐ Wear a medical alert identification

### For those on insulin pump therapy/continuous glucose meter:

- ☐ Demonstrate how to insert infusion set
- ☐ Demonstrate how to check diabetes supplies and when it's time to order new supplies
- ☐ Demonstrate how to access insulin pump basal and bolus settings and how to alter them
- ☐ Demonstrate how to download pump/glucose monitor information
- ☐ Demonstrate how to share pump/glucose monitor information with the diabetes care provide
- ☐ Demonstrate how to program the pump (date, time, correction dose, carb dose, insulin on board, types of boluses, basal rates and temporary basal rates)
- ☐ Demonstrate when to use insulin injections and monitor for ketones to prevent diabetic ketoacidosis (DKA)

### Show ability to arrange for medical care:

- ☐ Be able to make appointment
- ☐ Identify what insurance you have now
- ☐ Identify what insurance you will have when you are over 18 years of age
- ☐ Be able to keep track of insurance claims and co-pays
- ☐ Be able to maintain prescriptions and obtain medications/supplies before you run out
- ☐ Identify the name and phone number of pediatric endocrinologist
- ☐ Identify the name, phone number, and office location of adult endocrinologist
- ☐ Confirm contact information for urgent issues after office hours, weekends, holidays

Describe what to do in emergency situations or when ill:

DATE INITIALS

- ☐ Create a list with names and numbers of people who should be contacted
- ☐ Describe how to reach your doctor's office
- ☐ Describe when you should be calling your doctor's office
- ☐ State what information you will need to tell the diabetes care provider
- ☐ Identify a nearby emergency room/hospital if ever needed
- ☐ Create an emergency plan for high blood glucose, low blood glucose, and illness
- ☐ State how to manage high blood glucose levels  
(insulin, glucose, ketone monitoring, drinking sugar-free liquids/water)
- ☐ State how to manage low blood glucose levels  
(carbohydrate intake, low dose glucagon)
- ☐ State how to manage diabetes when sick  
(monitoring glucose, insulin adjustments)
- ☐ Review the significance of vomiting and the need to check glucose and ketone levels, give insulin, and call healthcare team.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____



## Pediatric to Adult Diabetes Care TRANSITION PLANNING CHECKLIST

This checklist helps the health care provider, young adult, and family discuss and plan the change from pediatric to adult health care. While a variety of events may affect the actual timing when this change occurs, below is a suggested timeline and topics for review. The young adult, family, and health care provider can obtain a copy of this checklist and access many online transition resources at the NDEP website ([www.YourDiabetesInfo.org/transitions](http://www.YourDiabetesInfo.org/transitions)).

### ☐ 1 to 2 years before anticipated transition to new adult care providers

(Date completed \_\_\_\_\_)

- ☐ Introduce the idea that transition will occur in about 1 year
- ☐ Encourage shared responsibility between the young adult and family for:
  - Making appointments
  - Refilling prescriptions
  - Calling health care providers with questions or problems
  - Making insurance claims
  - Carrying insurance card
- ☐ Review how smoking, drugs, and alcohol affect diabetes

### ☐ 6 to 12 months before anticipated transition (Date completed \_\_\_\_\_)

- ☐ Discuss health insurance issues and encourage family to review options
  - Assess current insurance plan, e.g. length time on family health insurance plan, COBRA, pre-existing conditions
  - Explore new insurance options – college, employer
  - Consider making an appointment with a case manager or social worker
  - Discussion of career choices in relationship to insurance issues
- ☐ Encourage family to gather health information to provide to the adult care team  
(See Clinical Summary Page at [www.YourDiabetesInfo.org/transitions](http://www.YourDiabetesInfo.org/transitions))
- ☐ Review health status: diabetes control, retina (eye), kidney and nerve function, teeth and mouth, lipids (cholesterol), blood pressure, smoking status
- ☐ Discuss issues of independence, emotional ups and downs, depression, and how to seek help

### ☐ 3 to 6 months before anticipated transition (Date completed \_\_\_\_\_)



- ☐ Review the above topics
- ☐ Suggest that the family find out the cost of current medication(s)
- ☐ Provide information about differences between pediatric and adult health systems and what the young adult can expect at first visit
  - Patient's responsibilities

(over)

NATIONAL DIABETES EDUCATION PROGRAM (NDEP)  
**Pediatric to Adult Diabetes Care Transition Planning Checklist**  
*Continued*

- Other possible health care team members
- Confidentiality/parental involvement (e.g., HIPAA Privacy Act and parents need permission from young adult to be in exam room, see test results, discuss findings with health care providers)
- ☐ Help identify next health care providers if possible or outline process (*See online resources*)
- ☐ Discuss upcoming changes in living arrangements (e.g., dorms, roommates, and/or living alone)

☐ **Last few visits** [Date completed \_\_\_\_\_]

- ☐ Review and remind of above health insurance changes, responsibility for self-care, and link to online resources at [www.YourDiabetesInfo.org/transition](http://www.YourDiabetesInfo.org/transition)
- ☐ Obtain signature(s) for release for transfer of personal medical information and for pediatric care providers to talk with the new adult health care providers
-  ☐ Identify new adult care physician
  - If known – request consult (if possible) and transfer records
  - If unknown – ask teen to inform your office when known to transfer records and request consult
-  ☐ Review self-care issues and how to live a healthy lifestyle with diabetes
  - Medication schedules
  - Self-monitoring of blood glucose schedule
  - Meal planning, carb counting, etc
  - Physical activity routine and its effects on blood glucose
  - Crisis prevention-management of hypoglycemia (low blood glucose), hyperglycemia (high blood glucose), and sick days
  - Need for wearing/carrying diabetes identification
  - Care of the feet
  - Oral/dental care
  - Need for vision and eye exams
  - Preconception care (preparing for a safe pregnancy and healthy baby)
  - Immunizations
  - Staying current with the latest diabetes care practice and technology
- ☐ Suggest options for a diabetes “refresher” course

To learn more about living well with diabetes contact NDEP:  
1-888-693-NDEP (6337), TTY: 1-866-569-1162 or [www.YourDiabetesInfo.org](http://www.YourDiabetesInfo.org)



June 2013

# Role of School RNs

- Frequent interaction with students, sometimes daily
- School orders-opportunity for discussion
- Develop a system of Transition Assessment and education through the school?
  - What Assessment tools to use?
  - How to implement?
  - How to measure?
- If interested in working to pilot a project, reach out to me at [mtbekx@wisc.edu](mailto:mtbekx@wisc.edu)



■ *List team members involved*

# Team Members

- Dr. M. Tracy Bekx, MD and Whitney Beaton, Peds Diabetes CNS (Peds Endo Diabetes/Project Leaders)
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