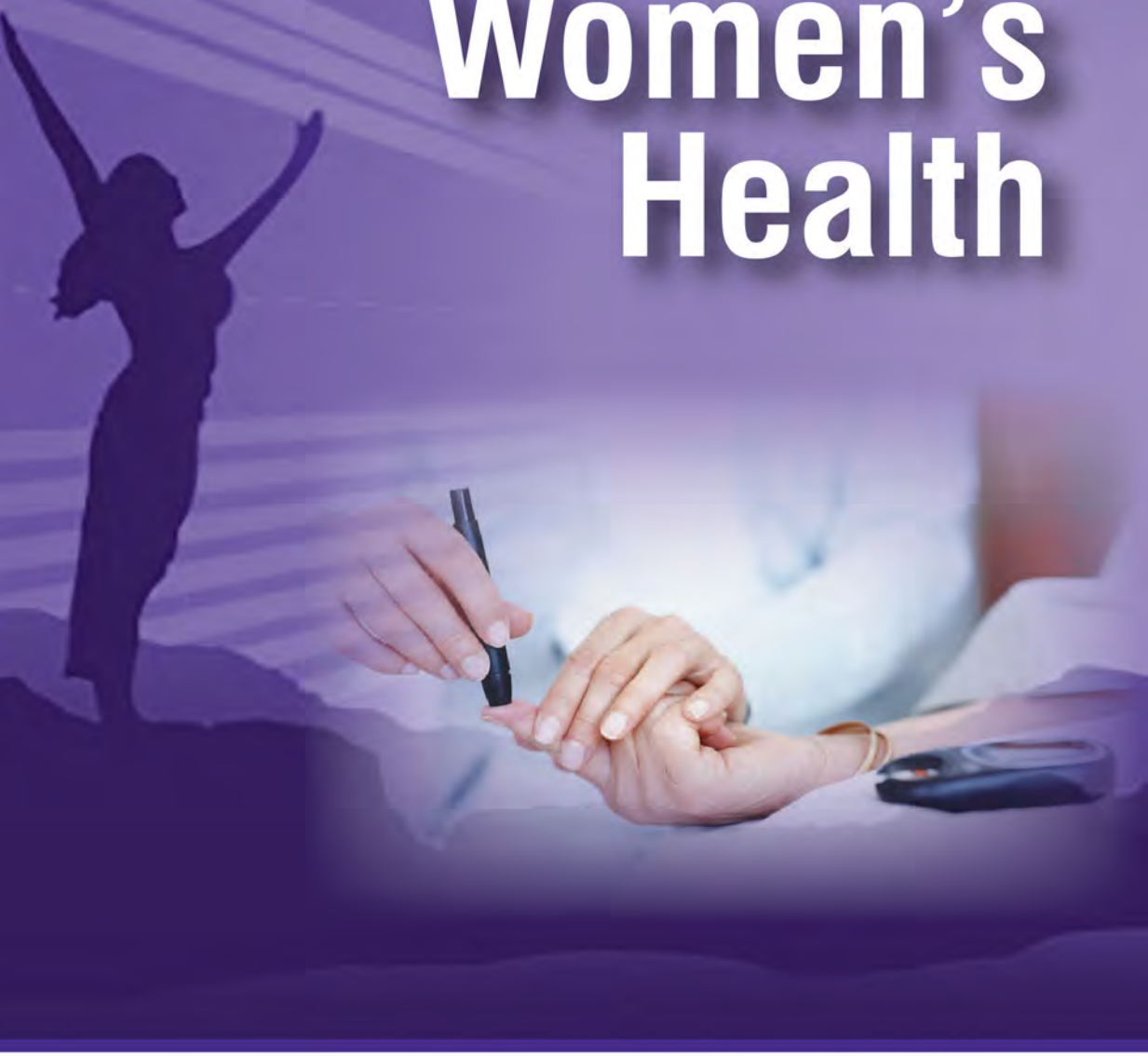
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Diabetes & Women's Health



Sarita Bajaj
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CHAPTER 3

Transitional Care to Young Adulthood in Adolescent Girls with Diabetes Mellitus

Jubbin J Jacob, Edna Steward, Cory Darbyshire, Amalia Mayo, Donald WM Pearson

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INTRODUCTION

Living with diabetes has a continuous impact on an individual and their family. Adaptations are required to cope with developmental, hormonal, and societal changes which all can have an effect on diabetes. The primary goal of transitional care is to offer a gradual and seamless shift from a pediatric, family centered diabetes environment to an independent adulthood in women living with diabetes diagnosed prior to adolescence (Figure 1). Transitional care could thus be described as "the purposeful, planned movement of adolescents and young

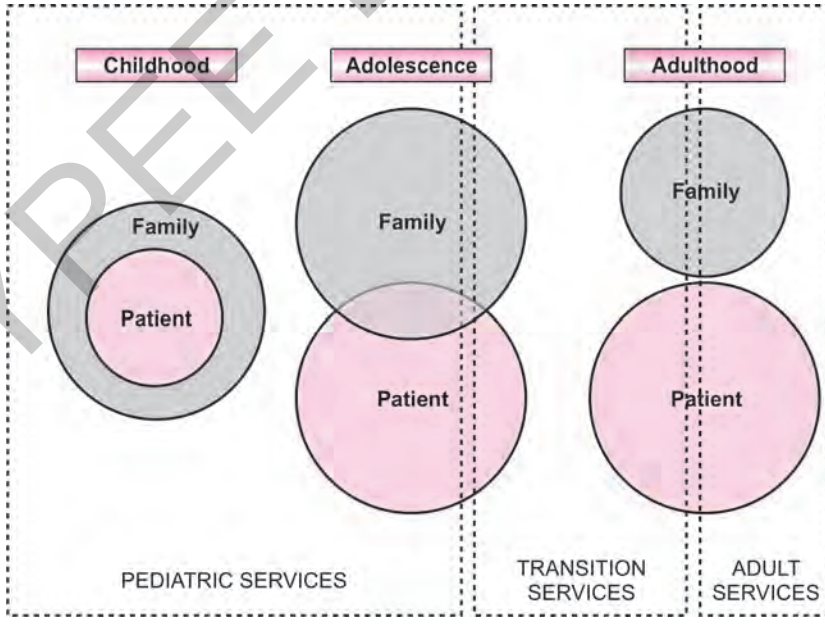


Figure 1 The differences between family and patient dynamics in childhood, adolescence, and adulthood and the placement of transition services.

adults with chronic physical and medical conditions from child-centered to adult-oriented health care systems."[1] In the last three decades, many professional organizations have realized the importance of providing guidelines to encourage the redesign of clinical services to ease the transition from pediatric to adult care in regards to chronic conditions such as cystic fibrosis and type 1 diabetes mellitus (T1DM).[2]

Many guidelines for transitional care in adolescents with diabetes recommend a period of 1 year for preparing a teenager prior to transfer to adult services between the ages of 16 years and 18 years.[3] However, contemporary thinking in some cultures also consider that, true adulthood does not immediately follow adolescence, but instead begins later when the woman is in her mid-20s. Development theorists have divided early adulthood (18–30 years) into early emerging adulthood (18–24 years) and a later phase (25–30 years) when more traditional adult roles are undertaken.[4] This early emerging adulthood corresponds to modern cultural trends whereby women delay assuming adult roles with respect to marriage, parenting, or work and tend to depend on family support while in college or training. Structured transitional care in patients with diabetes involving both pediatric and adult care providers is one way to bridge this substantial gap. Arrangements for the delivery of transitional care may depend on the local care systems with the need for effective planning and integration of pediatric, adolescent, and young adult services. The locus of care may change but the philosophy of care should be continuous.

Additionally, there are physical, psychological and practical issues which are very specific for this period of life and are best dealt with by teams with more insight into these issues.

HORMONAL CHANGES IMPACTING GLUCOSE METABOLISM THAT ACCOMPANY PUBERTY IN YOUNG WOMEN

Puberty is initiated by the release of suppression on the gonadotropin pulse generator that drives progressive increase in secretions of luteinizing hormone (LH) and follicle stimulating hormone (FSH) from the pituitary. This leads to increased steroidogenesis in the ovaries and an increased circulation of biologically active estrogens in women. Additionally, there is a significant increase in the total growth hormone (GH) secretion primarily by an increase in the amplitude of nocturnal GH secretions although there is no change in the overall frequency of the pulses.[5]

A combination of these hormonal changes leads to a state of insulin resistance in late puberty. Almost 40 years ago it was noted that even though glucose tolerance was similar in prepubertal, early pubertal, and late pubertal children there were substantial differences in overall insulin secretions across the developmental stages.[6] Children in late puberty secrete almost double the amount of insulin when compared to early pubertal or prepubertal children. This marked increase was evident even when the insulin secretion was corrected for weight and surface area. Euglycemic clamp studies confirm this significant difference in insulin sensitivity

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index.[7] A longitudinal study which included a cohort of children undergoing puberty reported a doubling of the first phase of insulin secretion between prepuberty and late puberty.[8]

This resistance to insulin appears to be limited to glucose metabolism. There appears to be no impact in the extraction of branched chain amino acids during hyperglycemic clamp studies. In fact, extraction of branch chained amino acids improve as the pubertal process progresses implying that in puberty insulin maintains it ability to incorporate proteins into muscle. The elevated GH levels, increased estrogens, and increased insulin levels lead to improved muscle growth and characteristic fat distribution in women.[9]

In adolescents with diabetes, the development of GH induced insulin resistance is associated with a need for an increase in exogenous insulin both for glucose control and for improving muscle growth and maintaining appropriate fat distribution. Inadequate monitoring and adjustments of exogenous insulin doses during late puberty is a contributing factor to poor control of diabetes observed during late puberty.[10]

In practical terms, awareness of this increase in insulin requirements during the later part of the pubertal process should alert the physician to proactively increase insulin doses to prevent underinsulinization. It is also important to remember that in girls some of these increases need to be reversed by the end of puberty to prevent weight gain due to excess insulin dosing. The hormonal changes that accompany puberty can also unmask the emergence of dawn phenomenon in a small number of adolescents. Girls also may notice an increase in insulin requirements premenstrually. Both these issues are best managed with the use of continuous subcutaneous insulin infusion (CSII) regimens by varying basal rates.

PSYCHOSOCIAL ISSUES IN ADOLESCENCE AND YOUNG ADULTS

All adolescent girls are faced with similar issues in the development of identity and autonomy. Girls living with diabetes face additional challenges related to treatment and monitoring of their chronic condition. These include:[11]

- Adhering to regimens with frequent blood testing, multiple injections, and restraints with regards to diet. This can lead to discouragement and a feeling of being overwhelmed
- Lack of clear and concrete goals for the management of diabetes which have been set with the participation of the individual rather than the parents
- Uncomfortable interactions with peers, friends, roommates, and coworkers with regards to diabetes and its ongoing care
- Disagreements and tensions with concerned family members regarding diabetes management
- Fear of short-term complications especially hypoglycemia and hospitalizations
- Fear of long-term complications combined with feelings of guilt and anxiety when going off track with self-management.

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Anxiety disorders are common in adolescents and young adults. Presence of anxiety disorders can complicate management of adolescent girls with diabetes especially when accompanied by a fear of hypoglycemia. Panic attacks may be confused with hypoglycemia leading to inappropriate treatment. There is no indication that there is any increase in panic disorders and psychological distress among girls with T1DM compared to healthy peers.[12] Longitudinal studies indicate similar patterns of psychological distress and social development in patients with T1DM compared to peers without diabetes.[13] The presence of psychological distress in an adolescent girl with diabetes is associated with poorer metabolic control, reduced involvement with transitional care, and an increased risk of being lost to follow-up.[14]

Depression and presence of depressive symptoms is a well-recognized comorbidity with diabetes.[15] In young women, the presence of depression can hinder effective self-management contributing to poor metabolic control and increased risk of complications.[16,17] Among 1,391 adolescent girls with diabetes evaluated for depressive symptoms as part of the SEARCH study, 15.6% had symptoms of mild depression and 10.9% had symptoms of moderate to severe depression. This is 4–5% higher when compared to adolescent boys.[18] In the older age group (18–28 years) of emerging adults the prevalence was higher at 35% of patients experiencing depressive symptoms with 23% of young adults having features of severe depression. However, in this age group there were no gender differences with regards to the prevalence of depression.[19]

Eating disorders are 2.4 times more likely to develop in young women with diabetes compared to nondiabetic women of similar ages.[20] Around one-third of young women taking insulin therapy report struggling with disordered eating with symptoms such as restrictive eating, preoccupation with weight and body shape, omitting insulin doses in an attempt to lose weight, and feelings of guilt after eating.[21] Eating disorders are reviewed in chapter 4 (Section 1).

Sexual and Reproductive Health Issues in Adolescents and Young Women

There is no reason to expect that girls and young women with diabetes would behave any different from their nondiabetic peers with regard to the potential for unintended pregnancies and contracting sexually transmitted diseases. Girls and young women should have preconceptional counseling and educated about the importance of pregnancy planning and adequate contraception. Preconceptional counseling is covered in detail in chapter 7 (Section 2)

Alcohol, Smoking, and Drug Use among Adolescents and Young Women with Diabetes

There is no evidence that the rates of alcohol, tobacco, and drug use among diabetic young women is any different from that of their peers. In a sample of 117 youth

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from Pittsburgh, which included 59 girls with a mean age of 18 years over 50% of both men and women reported the use of alcohol although fewer women reported binge drinking and smoking (34.7%) compared to the men.[22] Although use of alcohol, tobacco, and recreational drugs is likely to be lower among Indian women compared to the West few data have been published to confirm this supposition. Alcohol worsens hyperglycemia immediately and also increases the risk for delayed hypoglycemia. Though abstaining from alcohol is the safest response, in practical terms, young women need to be educated about safe drinking and decreasing any risks by maintaining hydration, eating adequate carbohydrates, reducing insulin doses if required, and monitoring blood glucose levels.

PRACTICAL ISSUES IN MANAGING DIABETES IN WOMEN AND YOUNG ADOLESCENTS WITH DIABETES

As previously mentioned, transition of care is potentially associated with the interruption of a long-term "comfortable" relationship with healthcare providers at a time when the girl is confronting multiple issues related to her changing metabolism and the development of her identity and autonomy. This period is complicated by the development of insulin resistance to glucose metabolism leading to increased insulin requirements. Poor health choices with smoking, alcohol use especially binge drinking and loss of parental supervision of diet and insulin administration may complicate matters further. Women in this age may also struggle with anxieties related to body shape, weight, and acceptance. Suboptimal glycemic control and intentional insulin omission are reported as strategies to aid in weight loss. Clinical issues faced by healthcare teams supporting these young women include poor metabolic control, increased risk of acute complications, limited engagement with healthcare providers including poor attendance, loss to follow-up, and the emergence of chronic microvascular complications of diabetes.

Poor Metabolic Control

Current glycosylated hemoglobin (HbA1c) targets from the American Diabetes Association (ADA) for teenagers between the ages of 13 years and 18 years is less than 7.5% (58.5 mmol/mol) and after the age of 19 years is less than 7% (53 mmol/mol).[23] In reality, most teenagers and young adults struggle to meet these targets. The data from SEARCH Study in youth with T1DM suggests that only 32% of teenagers (13–18 years) and 18% of the young adults (19 onwards) achieved these ADA recommended targets.[24] This stands in contrast with 56% of adults achieving HbA1c targets of less than 7% (53 mmol/mol).[25]

Teenagers with T1DM remain the most at risk group for poor glycemic control (defined as HbA1c ≥9.5%). Over 25% of patients over the age of 12 years had HbA1c in the above range.[24] In addition to the SEARCH study other studies have also documented similar poor control in older teens. Longitudinal data from

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United Kingdom of over 113 young adults (17–25) of whom 62 were women found an average HbA1c of 9.3% in women compared to 8.5% in men. On reevaluation as older adults (now aged 28–37 years), the average HbA1c had dropped to 8.7% in the women.[26]

Loss to Follow-up

Transitioning older teenagers and young women are at particularly high risk of disengagement from healthcare providers because of the competing distractions that these women face. This in turn increases the risk of presentations with acute complications and also increases the chances that chronic complications would be missed. There is limited published information about the frequency of contact between young people and healthcare professionals. Clinic attendance was significantly lower (8.5 ± 2.3/years vs. 6.7 ± 3.2/years) over 3 years when teenagers were transitioned from pediatric to adult services in Germany when compared to previous attendance at pediatric clinics.[27] Overall, women were more likely to engage with heathcare providers with more clinic visits compared to men.[28]

Increased Risk of Acute Complications During Transition

Loss of contact with healthcare providers and loss of parental supervision in young women during the transition process contribute to the increased risk of acute emergency room presentations (diabetic ketoacidosis and severe hypoglycemia) among these women. The incidence of diabetic ketoacidosis is highest in adolescent girls. A large cohort of 1,243 children (aged from infancy to 19 years) was followed up for 3,994 person-years in Denver.[29] The primary outcome in the study was the rate of acute presentation to emergency department with ketoacidosis and severe hypoglycemia. The overall incidence of diabetic ketoacidosis was 8 episodes/100 person-years in the cohort. The highest incidence of diabetic ketoacidosis was seen among adolescent girls between the ages of 13 years and 19 years with rates over 12 episodes/100 person-years. The statistically significant factors associated with these high rates were higher HbA1c levels at baseline, higher prescribed total insulin doses, underinsurance, and the presence of psychiatric comorbidity. The incidence of severe hypoglycemia, however, decreased with age and was the lowest in adolescent girls (14 episodes/100 person-years compared to an overall rate of 19 episodes/100 person-years and 24 episode/100 person-years in girls less than 7 years).[29] Another study from Ontario looked at 1,507 patients with T1DM followed for 4 years after transition to adult clinic. The hospitalization rates increased from 7.6 episodes/100 patient-years prior to transition to 9.5 admissions/100 patient-years after transition ($p = 0.03$). Women in this group were more likely to be hospitalized compared to men.[30]

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Emergence of Chronic Complications of Diabetes

Rates of diabetes related chronic complications among preadolescents are low. Even among adolescents, clinically apparent diabetes related complications are very rare. Early preclinical evidence of microvascular and macrovascular complications may be present among adolescents. Microalbuminuria is three times more common in adolescents with type 2 diabetes mellitus (T2DM) versus adolescents with T1DM. Around 10% of adolescents with T1DM have microalbuminuria compared to approximately 30% incidence of microalbuminuria in adolescents with T2DM.[31,32] Similar to microalbuminuria, retinal changes are rare in adolescents with T1DM and more common in those with T2DM.[33] Around 20% of adolescents with diabetes have evidence of peripheral neuropathy and/or findings of autonomic neuropathy when testing is performed.[33]

Evidence of early atherosclerotic processes including fatty streaks and intimal lesions are seen in autopsy studies conducted on adolescents and young adults.[34] Risk factors are similar to older adults and include higher body mass index, high total and low-density lipoprotein cholesterol levels, elevated triglycerides, and higher systolic and diastolic blood pressures.[35] The presence of diabetes is associated with elevated intima-media thickness, stiffer blood vessels, and higher levels of inflammatory markers compared to nondiabetic adolescents.[36,37]

Premature Mortality during the Transition Period

All-cause mortality rates are increased in patients with diabetes compared to the general population at all ages. Within the diabetic cohort, men have an increased risk of death compared to women at all age groups except between the ages of 5 years and 15 years. However, the relative risk (RR) of death is much higher in women at all ages. The RR of death [standardized mortality ratio (SMR)] is 4 for women and 2.7 for men. The peak SMR in women was between the ages of 20 years and 29 years at which point it was as high as 5.7. Most of this information has come from a very large cohort of patient with insulin treated diabetes from the United Kingdom.[38] The increased risk of death in women in this age group may be linked to the increased risk of diabetic ketoacidosis in this age group, increased risk associated with pregnancy and related complications in women and the higher prevalence of psychiatric morbidity, eating disorders, and self-harm among young women.

CURRENT MODELS OF TRANSITION CARE AND INTERVENTIONAL STUDIES IN THE TRANSITIONAL PERIOD

Currently, there are no randomized controlled trials examining the overall efficacy of a structured transition program among adolescents and young adults. However, structured transitional care has been demonstrated in cohort studies to have better outcomes in terms of less loss to follow-up, better HbA1c levels, fewer admissions with diabetic ketoacidosis, and fewer long-term complications at the

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end of the transition.[39-42] A multicenter randomized controlled trial on structured transition care in adolescents and young adults with T1DM is currently underway (NCT01351857)

The current structured transition models include, dedicated young adult clinic, separate yearlong transition clinic, dedicated transition care coordinator/diabetes specialist nurse for young adults, transition planning, combined consultation with pediatric and adult care providers at handover on a background of existing adult and pediatric clinics and the provision for young adult support groups. The model chosen will depend on the local care delivery systems and expertise. A checklist of the educational needs for patients and their parents/carers during the period of transition is listed on table 1.

Table 1: Checklist of educational needs for patients and their parents/care givers during the period of transition

Checklist for transition education for young adults
■ Preparation for self-management of diabetes throughout childhood
■ Dedicated time for education sessions
■ Positive promotion of transition as step towards adulthood
■ Experience of attending transitional clinic alone as a rehearsal for adult services
■ Awareness of their legal rights as children and as adults (including autonomy, consent, and confidentiality)
■ Knowledge about their disease, its management, and their responsibility for their own health
■ Preparation for adult services with accurate information about adult services including inpatient services
■ Understanding of how to use an independent advocate if they choose to do so
■ Awareness of local and internet based peer groups support
■ Awareness of general healthcare and how to access general and emergency medical services
■ Coping and self-advocacy skills
■ Self-care skills
■ Other life-related skills (e.g., educational and housing issues, driving, benefits, employment options, etc.)
Checklist for transition education for parents/carers
■ The rationale for self-management skills as early as possible
■ Awareness of the legal rights of their child and their responsibility as parents
■ Preparation for their changed status in relation to their child's autonomy
■ Preparation for changes in health service provision for adults with diabetes
■ Understanding the natural history of the child's diabetes
■ Preparation for letting go and accepting their child's healthcare decisions

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Dedicated Young Adult/Transition Clinics

Initial studies on structured transition care followed up pediatric patients after transfer to a dedicated young adult clinic. Initial findings from Orr et al., suggested that HbA1c did not deteriorate upon transitioning onto a dedicated young person's clinic thereby negating the adverse effect of transitioning on HbA1c.[39] In another retrospective study of two cohorts of patients, one seen at a dedicated young adult clinic and the second cohort followed up in a general adult endocrinology clinic did not reveal any differences in HbA1c or "no shows". In this case, the young adult clinic was staffed by an endocrinologist, two nurse educators, and two dieticians. Patients were seen four times a year. In contrast, the general endocrinology clinic was staffed by number of providers and follow ups were arranged at 3–6 months' time.[40] In Australia, the addition of a transition coordinator to help young adults (15–25 years) to maintain attendance at a dedicated young adult clinic reported data over a period of 5 years. Patients in the program had lower HbA1c, decrease in episodes of hospitalizations for diabetic ketoacidosis and among the hospitalized patients a decrease in the length of hospital stay.[41]

Logan et al. from the United Kingdom reported data from a structured intervention that consisted of a year long transition clinic which comprised of both pediatric and adult physicians and nurses. This clinic in turn fed into a dedicated young person clinic run by adult physicians mainly in the evenings. Patients were seen three times a year and on two out of the three occasions, the patient could choose the provider they wished to see (doctor, nurse, dietician, or clinical psychologist). Over a period of 3 year, patients had an 84% attendance rate, a drop of HbA1c from 9.7% to 9.0% (first to last visit), and a significant increase in percentage of patients with HbA1c less than 7.5%.[42]

Transition Care Coordinators

Homes-Walker et al.[41] from Australia used transitional care coordinators for the first time to help maintain attendance at the dedicated young adult clinic. The Maestro project in Canada used a systems navigator or "maestro" to help access adult medical care as standalone in routine pediatric to adult transition patients. Additionally, the intervention consisted of a website, a regular newsletter, group meetings, and access to especially devised young adult educational events. The program was successful in reducing loss to follow-up and helping older transition patients reconnect with medical care.[43] Cadario et al. compared a transition program consisting of a transition coordinator, last pediatric clinic visit attendance by both pediatric and adult care provider with formal medical summary presented by the pediatric doctor to the patient and the adult physician and a combined first visit (adult and pediatric care providers) to the adult clinic. Patients in this program were compared to a traditional group were the transition was through a formal medical letter summarizing the clinical history from the pediatric care provider to

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adult provider. There was much better follow-up rates in the structured transition group and better HbA1c compared to the traditional group.[44] A randomized trial involving transitional coordinators in currently underway involving two centers in Canada and one in the United Kingdom.[45]

Young Adult Support Group

A recent publication has highlighted the utility of support groups for young adults with T1DM during the transition period. In this particular study, the participants attended monthly support groups sessions for 5 months. Eighty percent of the participants attended at least three sessions and two-thirds of patients had significant improvements in HbA1c at the end of the program.[46]

Grampian Model

In Aberdeen, transition is discussed with teenagers and their family at around the age of 15. If and when they agree to transition they are referred to a nurse led transition clinic in the first instance which is led by the young person's diabetes specialist nurse (YPDSN) and has the current pediatric diabetes specialist nurse (PDSN) in attendance. This appointment is for the teenager to meet the adolescent nurse and for her to find out about the young person, explain the current system in the young person's clinic and answer any questions and concerns they may have. Written information introducing the young person's service is given at this point. This appointment also identifies any gaps in knowledge allowing for further education to be given prior to move into transition services if required.

The next stage is a final appointment at the pediatric diabetes clinic with the pediatrician and the YPDSN. All clinical markers, blood, etc. are checked at this appointment (this means that there is no call to have blood tests at first young person clinic appointment). The teenager is then referred to the young person's service. These first two stages can take 2–6 months to complete and is very flexible, dependent on the needs of the young person.

The first appointment at young person's clinic is with the adult physician and the YPDSN thus there is continuity with YPDSN being at each stage of the process. The young person's clinic is currently run once a month and includes two full time adult diabetologists, one trainee physician, one pediatrician, young persons' diabetes specialist nurse, dietician, and a clinical psychologist (Flowchart 1). Parents/carers are included at each stage of the process, it is explained to them that after the age of 16 that our confidentiality is with the young person so should they choose to attend clinic on their own it is then up to young person to share information after clinic should they wish to do so. Most patients will continue to attend the young person clinic till the age of 22–23 years (or earlier if they complete education sooner or start a family) when they are transferred to routine adult services. Patients are encouraged to come to the clinic at least three times

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a year. The YPDSN acts like a transition coordinator to keep telephone contact with the patients and to encourage engagement and attendance at the clinic. A preconsultation checklist has been implemented to encourage young people with T1DM to take a more active role in negotiating the topics discussed during routine consultations. The checklist contains 26 items relating to various aspects of diabetes and diabetes care, including some of the more sensitive topics (e.g., diabetes and sexual activity, pregnancy, drugs and alcohol) to normalize and encourage discussion of important issues that may not be otherwise raised. The checklist provides a time-efficient, collaborative, approach to identifying and addressing the specific needs of the young person. The checklist and the percentage of young adults selecting the individual topics for discussion at a recent audit is summarized in table 2.

Table 2: The percentage and number of young people selecting individual checklist items at the Aberdeen young person's clinic

Managing your diabetes—routine visit	
My blood results from the laboratory today (glucose, HbA1c)	60.2% (n = 62)
Current insulin doses and adjusting my insulin	32.0% (n = 33)
Managing and avoiding high blood glucose levels and calculating correction doses	30.1% (n = 31)
My blood glucose levels on my meter diary since my last visit	21.4% (n = 22)
Equipment, e.g., pens, meters, pumps	18.4% (n = 19)
Other topics, e.g., new research in diabetes	16.5% (n = 17)
Injection sites	15.5% (n = 16)
Managing diabetes when unwell	12.6% (n = 13)
New information about food and counting carbohydrates	11.7% (n = 12)
Managing and avoiding hypoglycemia	11.7% (n = 12)
What does HbA1c mean?	9.7% (n = 10)
Other medicines	6.8% (n = 7)
Other forms of support with your diabetes—would you like to see?	
The results of your screening tests, e.g., retinopathy	19.4% (n = 20)
A diabetes specialist nurse	6.8% (n = 7)
Someone to help me improve my diabetes control in a way that does not feel too tough	3.9% (n = 4)
A clinical psychologist for emotional/psychological support	3.9% (n = 4)
A dietician	3.9% (n = 4)

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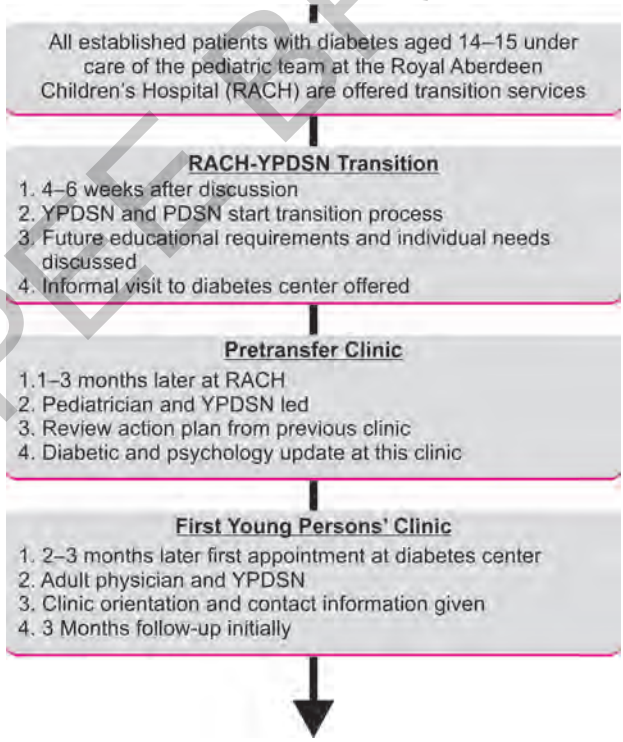
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Lifestyle	
Diabetes and exercise/physical activity	20.4% (n = 21)
Diabetes and travel, holidays	17.5% (n = 18)
Diabetes and alcohol	17.5% (n = 18)
Diabetes and study/work	17.5% (n = 18)
Diabetes and driving	15.5% (n = 16)
Diabetes and pregnancy	2.9% (n = 3)
Sources of information about diabetes, e.g., on the internet, leaflets, diabetes UK	2.9% (n = 3)
Diabetes and drugs	1.0% (n = 1)
Diabetes and sexual activity	1.0% (n = 1)

Courtesy: Corry Darbyshire.

Flow chart 1 Pretransition and first young person clinic attendance followed in NHS Grampian.



Abbreviations: YPDSN, young person's diabetes specialist nurse; PDSN, pediatric diabetes specialist nurse.

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SUMMARY OF RECOMMENDATIONS

Regardless of the model of transition care used, the current recommended minimum checklist for transition care from the ADA includes.[3]

1. Start transition care at least a year before the anticipated transfer to general adult services.
2. Assess self-management skills; there should be a gradual transfer of self-care responsibilities from the parent to the teenager. In addition to basic diabetic care, e.g., monitoring blood and taking injections teenagers should also be educated about managing and scheduling clinical appointments, ensuring proper supply of medications and consumables, and access to care in the case of emergencies.
3. Create a clinical summary for the adult care provider and patient.
4. Prepare patients for the differences between pediatric and adult care and these will include issues related to confidentiality.

REFERENCES

1. Weissberg-Benchell J, WolpertH, Anderson BJ. Transitioning from paediatric to adult care: a new approach to the post-adolescent young person with type 1 diabetes. Diabetes Care. 2007;30:2441-6.
2. American Academy of Pediatrics; American Academy of Family Physicians; American College of Physicians-American Society of Internal Medicine. A consensus statement on health care transitions for young adults with special health care needs. Pediatrics. 2002;110:1304-6.
3. Peters A, Laffel L, American Diabetes Association Transitions Working Group. Diabetes care for emerging adults: recommendations for transition from pediatric to adult diabetes care systems: a position statement of the American Diabetes Association, with representation by the American College of Osteopathic Family Physicians, the American Academy of Pediatrics, the American Association of Clinical Endocrinologists, the American Osteopathic Association, the Centers for Disease Control and Prevention, Children with Diabetes, The Endocrine Society, the International Society for Pediatric and Adolescent Diabetes, Juvenile Diabetes Research Foundation International, the National Diabetes Education Program, and the Paediatric Endocrine Society (formerly Lawson Wilkins Paediatric Endocrine Society). Diabetes Care. 2011;34(11):2477-85.
4. Arnett JJ. Emerging adulthood. A theory of development from the late teens through the twenties. Am Psychol. 2000;55:469-80.
5. Rosenfeld RG, Cohen P. Disorders of growth hormone/insulin-like growth factor secretion and action. In: Sperling M (Ed). Pediatric Endocrinology. Philadelphia, PA: Saunders Elsevier; 2008. pp. 254-334.
6. Rosenbloom AL, Wheeler L, Bianchi R, Chin FT, Tiwary CM, Grgic A. Age-adjusted analysis of insulin responses during normal and abnormal glucose tolerance tests in children and adolescents. Diabetes. 1975;24:820-8.
7. Bloch CA, Clemons P, Sperling MA. Puberty decreases insulin sensitivity. J Pediatr. 1987;110:481-7.
8. Hannon TS, Janosky J, Arslanian SA. Longitudinal study of physiologic insulin resistance and metabolic changes of puberty. Pediatr Res. 2006;60:759-63.
9. Caprio S, Plewe G, Diamond MP, Simonson DC, Boulware SD, Sherwin RS, et al. Increased insulin secretion in puberty: a compensatory response to reductions in insulin sensitivity. J Pediatr. 1989;114:963-7.

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10. Sperling MA, Weinzimer SA, Tamborlane WV. Diabetes mellitus. In: Sperling MA (Ed). Pediatric Endocrinology. Philadelphia, PA: Saunders Elsevier; 2008. pp. 374-421.
11. Polonsky WH, Anderson BJ, Lohrer PA, Welch G, Jacobson AM, Aponte JE, et al. Assessment of diabetes-related distress. Diabetes Care. 1995;18:754-60.
12. Reynolds KA, Helgeson VS. Children with diabetes compared to peers: depressed? Distressed? A meta-analytic review. Ann Behav Med. 2011;42:29–41.
13. Helgeson VS, Snyder PR, Escobar O, Siminerio L, Becker D. Comparison of adolescents with and without diabetes on indices of psychosocial functioning for three years. J Pediatr Psychol. 2007;32:794-806.
14. Northam EA, Lin A, Finch S, Werther GA, Cameron FJ. Psychosocial well-being and functional outcomes in youth with type 1 diabetes 12 years after disease onset. Diabetes Care. 2010;33:1430-7.
15. Mathew CS, Dominic M, Isaac R, Jacob JJ. Prevalence of depression in consecutive patients with type 2 diabetes mellitus of 5-year duration and its impact on glycemic control. Indian J Endocrinol Metab. 2012;16(5):764-8.
16. Lustman PJ, Anderson RJ, Freedland KE, de Groot M, Carney RM, Clouse RE. Depression and poor glycemic control: a meta-analytic review of the literature. Diabetes Care. 2000;23:934-42.
17. de Groot M, Anderson R, Freedland KE, Clouse RE, Lustman PJ. Association of depression and diabetes complications: a meta-analysis. Psychosom Med. 2001;63:619-30.
18. Lawrence JM, Standiford DA, Loots B, Klingensmith GJ, Williams DE, Ruggiero A, et al. SEARCH for Diabetes in Youth Study. Prevalence and correlates of depressed mood among youth with diabetes: the SEARCH for Diabetes in Youth study. Pediatrics. 2006;117: 1348-58.
19. Hislop AL, Fegan PG, Schlaeppi MJ, Duck M, Yeap BB. Prevalence and associations of psychological distress in young adults with type 1 diabetes. Diabet Med. 2008;25:91-6.
20. Jones JM, Lawson ML, Daneman D, Olmsted MP, Rodin G. Eating disorders in adolescent females with and without type 1 diabetes: cross sectional study. BMJ. 2000;320:1563-6.
21. Polonsky WH, Anderson BJ, Lohrer PA, Aponte JE, Jacobson AM, Cole CF. Insulin omission in women with IDDM. Diabetes Care. 1994;17:1178-85.
22. Palladino DK, Helgeson VS, Reynolds KA, Becker DJ, Siminerio LM, Escobar O. Emerging adults with type 1 diabetes: a comparison to peers without diabetes. J Pediatr Psychol. 2013;38:506-17.
23. American Diabetes Association. Standards of medical care in diabetes–2012. Diabetes Care. 2012;35(1):S11-63.
24. Petitti DB, Klingensmith GJ, Bell RA, Andrews JS, Dabelea D, Imperatore G, et al. SEARCH for Diabetes in Youth StudyGroup. Glycemic control in youth with diabetes: the SEARCH for diabetes in Youth Study. J Pediatr. 2009;155:668-72.
25. Hoerger TJ, Segel JE, Gregg EW, Saaddine JB. Is glycemic control improving in U.S. adults? Diabetes Care. 2008;31:81-6.
26. Bryden KS, Dunger DB, Mayou RA, Peveler RC, Neil HA. Poor prognosis of young adults with type 1 diabetes: a longitudinal study. Diabetes Care. 2003;26:1052-7.
27. Busse FP, Hiermann P, Galler A, Stumvoll M, Wiessner T, Kiess W, et al. Evaluation of patients' opinion and metabolic control after transfer of young adults with type 1 diabetes from a pediatric diabetes clinic to adult care. Horm Res. 2007;67:132-8.
28. Sparud-Lundin C, Ohrn I, Danielson E, Forsander G. Glycaemic control and diabetes care utilization in young adults with Type 1 diabetes. Diabet Med. 2008; 25:968-73.
29. Rewers A, Chase HP, Mackenzie T, Walravens P, Roback M, Rewers M, et al. Predictors of acute complications in children with type 1 diabetes. JAMA. 2002;287:2511-8.
30. Nakhla M, Daneman D, To T, Paradis G, Guttmann A. Transition to adult care for youths with diabetes mellitus: findings from a Universal Health Care System. Pediatrics. 2009;124:e1134-41.

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31. Alleyn CR, Volkening LK, Wolfson J, Rodriguez-Ventura A, Wood JR, Laffel LM. Occurrence of microalbuminuria in young people with Type 1 diabetes: importance of age and diabetes duration. Diabet Med. 2010;27:532-7.
32. Copeland KC, Zeitler P, Geffner M, Guandalini C, Higgins J, Hirst K, et al. TODAY Study Group. Characteristics of adolescents and youth with recent-onset type 2 diabetes: the TODAY cohort at baseline. J Clin Endocrinol Metab. 2011;96:159-67.
33. Eppens MC, Craig ME, Cusumano J, Hing S, Chan AK, Howard NJ, et al. Prevalence of diabetes complications in adolescents with type 2 compared with type 1 diabetes. Diabetes Care. 2006;29:1300-6.
34. McGill HC Jr, McMahan CA, Zieske AW, Sloop GD, Walcott JV, Troxclair DA, et al. The Pathobiological Determinants of Atherosclerosis in Youth (PDAY) Research Group. Associations of coronary heart disease risk factors with the intermediate lesion of atherosclerosis in youth. Arterioscler Thromb Vasc Biol. 2000;20:1998-2004.
35. Li S, ChenW, Srinivasan SR, Bond MG, Tang R, Urbina EM, et al. Childhood cardiovascular risk factors and carotid vascular changes in adulthood: the Bogalusa Heart Study. JAMA. 2003;290:2271-6.
36. JärvisaloMJ, Putto-Laurila A, Jartti L, Lehtimäki T, Solakivi T, Rönnemaa T, et al. Carotid artery intima-media thickness in children with type 1 diabetes. Diabetes. 2002;51:493-8.
37. Haller MJ, Samyn M, Nichols WW, Brusko T, Wasserfall C, Schwartz RF, et al. Radial artery tonometry demonstrates arterial stiffness in children with type 1 diabetes. Diabetes Care. 2004;27:2911-7.
38. Laing SP, Swerdlow AJ, Slater SD, Botha JL, Burden AC, Waugh NR, et al. The British Diabetic Association Cohort Study, I: all-cause mortality in patients with insulin-treated diabetes mellitus. Diabet Med. 1999;16:459-65.
39. Orr DP, Fineberg NS, Gray DL. Glycemic control and transfer of health care among adolescents with insulin dependent diabetes mellitus. J Adolesc Health. 1996;18:44-7.
40. Lane JT, Ferguson A, Hall J, McElligott M, Miller M, Lane PH, et al. Glycemic control over 3 years in a young adult clinic for patients with type 1 diabetes. Diabetes Res Clin Pract. 2007;78:385-91.
41. Holmes-Walker DJ, Llewellyn AC, Farrell K. A transition care program which improves diabetes control and reduces hospital admission rates in young adults with type 1 diabetes aged 15–25 years. Diabet Med. 2007;24:764-9.
42. Logan J, Peralta E, Brown K, Moffett M, Advani A, Leech N. Smoothing the transition from paediatric to adult services in type 1 diabetes. J Diabetes Nurs. 2008;12:328-38.
43. Van Walleghem N, Macdonald CA, Dean HJ. Evaluation of a systems navigator model for transition from pediatric to adult care for young adults with type 1 diabetes. Diabetes Care. 2008;31:1529-30.
44. Cadario F, Prodam F, Bellone S, Binotti M, Trada M, Allochis G, et al. Transition process of patients with type 1 diabetes (T1DM) from pediatric to the adult health care service: a hospital-based approach. Clin Endocrinol (Oxf). 2009;71:346-50.
45. Spaic T, Mahon JL, Hramiak I, Byers N, Evans K, Robinson T, et al. JDRF Canadian Clinical Trial CCTN1102 Study Group. Multicentre randomized controlled trial of structured transition on diabetes care management compared to standard diabetes care in adolescents and young adults with type 1 diabetes (Transition Trial). BMC Pediatr. 2013;13:163.
46. Markowitz JT, Laffel LM. Transitions in care: support group for young adults with type 1 diabetes. Diabet Med. 2012;29:522-5.

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