

PAFP RPC/CHC COLLABORATIVE

2016 MINI-MONOGRAPH SERIES

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INSULIN NON-ADHERENCE IN THE DIABETIC PATIENT

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INTRODUCTION

When managing a patient with poorly controlled type II diabetes, non-adherence to insulin therapy stems from multiple patient oriented barriers.

CASE STUDY

- 49 y.o F
- PMH: depression, obesity, DM2, HLD, hypothyroidism, asthma, cognitive impairment.
- Most Recent Data: Hgb1c:12.9%, BMI:30.79, LDL:119, Creatinine: 0.96, Fasting glucose:168-412, Postprandial glucose:304-485
- SH: patient lives with father, abandoned by her mother. History of sexual abuse, learning disability and poor dietary insight.
- Medications: Glargine, lisinopril, levothyroxine, simvastatin, levetiracetam, fluticasone
- Issue: poorly controlled DM w/ insulin non-adherence.

BACKGROUND

In diabetic patients, non-adherence to insulin therapy contributes to rising costs in healthcare. Poor glyce-

mic control increases the severity and progression of macrovascular and microvascular disease. (1) Studies have shown that patient reported non-adherence with

insulin regimens ranges from 33.2% (1) to 88.1% (2). Multiple patient centered factors contributing to this statistic include: “being too busy” (18.9%), travelling (16.2%) and stress/emotional problems (11.7%) (1).

It is important for physicians to remember that receiving the diagnosis of diabetes is extremely stressful and can have psychological effects on patients. One study found that 85.2% of patients reported feeling shocked, guilty, angry, anxious, depressed or helpless at the time of diagnosis. (3) Literature suggests that a patient’s reaction at the time of diagnosis (poor vs. good reaction) is directly associated with regimen adherence. (3)

There have been multiple studies identifying many different patient barriers to adherence to an insulin regimen. It is imperative to remember that each patient will have different barriers, and the importance of the patient-physician relationship in promoting continuity of care has been shown to improve patient adherence and outcomes (4).

DISCUSSION

The above patient has an A1C that is not at goal. It would be inappropriate to continue increasing insulin dosing without first addressing barriers to care. This patient has multiple risk factors for non-adherence in-

cluding polypharmacy, cognitive impairment and psychosocial stressors. A conversation to identify personal barriers to insulin therapy should be pursued in the context of a patient-centric relationship. This patient should continue to meet with the same provider to develop rapport and continuity of care. Furthermore, a multidisciplinary team approach should be utilized to address identified barriers. Having a certified diabetes educator contact the patient provides accountability which improves compliance. Involving a psychologist to address her past history of abandonment and abuse is an appropriate intervention to address the social/emotional problems that contribute to non-adherence. Home visits to ensure up to date medication reconciliation can be helpful to address polypharmacy.

SUMMARY

When faced with a diabetic patient who is not at goal, it is imperative to understand that many factors contribute to insulin non-adherence. Identifying those barriers in the context of a patient-centered physician relationship and utilizing a multidisciplinary approach to address specific barriers lead to improved outcomes.

REFERENCES

1. Peyrot M, Barnett AH, Meneghini LF, Schumm-Draeger P-M. Insulin adherence behaviours and barriers in the multinational Global Attitudes of Patients and Physicians in Insulin Therapy study. *Diabetic Medicine*. 2012;29(5):682-689. doi:10.1111/j.1464-5491.2012.03605.x.
2. Riaz M, Basit A, Fawwad A, Yakoob Ahmedani M, Ali Rizvi Z. Factors associated with non-adherence to insulin in patients with type 1 diabetes. *Pakistan Journal of Medical Sciences*. 2014;30(2):233-239.
3. Skovlund SE, Peyrot M.: on behalf of the DAWN International Advisory Panel: The Diabetes Attitudes, Wishes, and Needs (DAWN) program: a new approach to improving outcomes of diabetes care. *Diabetes Spectrum* 18: 136– 142, 2005

4. García-Pérez L-E, Álvarez M, Dilla T, Gil-Guillén V, Orozco-Beltrán D. Adherence to Therapies in Patients with Type 2 Diabetes. *Diabetes Therapy*. 2013;4(2):175-194. doi:10.1007/s13300-013-0034-y.

HIGHLIGHTS

increasing awareness that causes of therapy failure often include (more than we think), insulin noncompliance for multiple reasons and to address those barriers instead of just increasing insulin dosing.



THE TREATMENT-NAÏVE DIABETIC PATIENT

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INTRODUCTION

When confronted with a patient newly diagnosed with type 2 diabetes, there is a stepwise approach to treatment involving education, lifestyle modifications, and medications, based upon the patient’s goals, co-morbidities, and initial glycemic levels.

CASE STUDY

- 47 y.o. male
- Past medical history: hyperlipidemia, obesity, seasonal allergies
- Medications: atorvastatin 20 mg qd, cetirizine 10 mg qd
- Pertinent social history: non-smoker; rarely exercises; drinks some wine with dinner; recently lost his job and finances are of concern
- Most recent data: body mass index (BMI) 34, HGBA1C 6.8, LDL 127, creatinine 1.1
- Issue: For a patient with newly-diagnosed diabetes, in addition to aggressive atherosclerotic cardiovascular risk reduction (BP, lipids, smoking, weight), immunizations, foot and eye exams, how should you address glycemic control?

BACKGROUND

Lifestyle therapy includes education, nutrition/weight loss, and exercise. This can be done through



a variety of mechanisms. The patient’s individual goals, capabilities, resources, and co-morbidities must be considered in developing customized plans.

Current guidelines suggest starting medications at time of diagnosis, along with aggressive lifestyle modifications (1). The initial HGBA1C level can help guide therapies, with a suggestion of monotherapy if <7.5, dual or triple therapy if >= 7.5, and possibly insulin if the initial HGBA1C is >9, especially if the patient is symptomatic. Dual or triple therapy should usually include metformin, which is the preferred agent for monotherapy (barring contraindications). Metformin is “The only medication shown in randomized controlled trials to reduce mortality and complications.” (2)

Encouraging patients to monitor their blood sugars at home is usually not necessary: “There is no benefit to daily finger glucose testing in patients with type 2 diabetes mellitus who are not on insulin or medications associated with hypoglycemia, and there is negative economic impact and potential negative clinical impact of daily glucose testing.” (3) However, reassessing HGBA1C in three months will then direct the clinician to further changes and interventions.

Ensuring the patient has a multidisciplinary team should be part of the initial (and ongoing) care for patients with diabetes. This may include “Physicians, nurse practitioners, physician’s assistants, nurses, dietitians, pharmacists, and mental health professionals with expertise in diabetes.” (4)

DISCUSSION

Given this patient’s elevated body mass index and co-morbid hyperlipidemia, aggressive nutrition education and dietary interventions should be initiated promptly. A diabetic educator and nutritionists would be great resources, however, costs should be considered. Starting monotherapy via an oral agent would be indicated as his HGBA1C is < 7.5. Since his creatinine is within normal limits, metformin would

ENSURING THE PATIENT HAS A MULTIDISCIPLINARY TEAM SHOULD BE PART OF THE INITIAL (AND ONGOING) CARE FOR PATIENTS WITH DIABETES

be the agent of choice, especially in light of his obesity and financial constraints.

SUMMARY

Lifestyle modifications including proper nutrition and exercise should always be part of initial treatment. In most patients, metformin should be the first-line medication, started concurrently with lifestyle modifications. Dual or triple therapy – even insulin – should be started in certain circumstances. Atherosclerotic cardiovascular risk reduction and other components of comprehensive diabetes care should be part of the initial and ongoing interventions.

REFERENCES

1. Garber, AJ, et al. Consensus Statement by the American Association of Clinical Endocrinologists and American College of Endocrinology on the Comprehensive Type 2 Diabetes Management Algorithm – 2016 Executive Summary. Endocrine Practice Vol 22 #1, January 2016, 84-113.
2. George CM, Bruijn L, Will K, Howard-Thompson A. Management of Blood Glucose with Non-insulin Therapies in Type 2 Diabetes. Am Fam Physician. 2015 Jul 1;92(1):27-34.
3. Society of General Internal Medicine. Five Things Physicians and Patients Should Question. Choosing Wisely: an initiative of the ABIM Foundation. September 12, 2013.
4. American Diabetes Association. Standards of Medical Care in Diabetes – 2014. Diabetes Care Volume 37, Supplement 1, January 2014, S14-S80.

THE DIABETIC PATIENT WITH DETERIORATING CONTROL

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INTRODUCTION

Often diabetic patients will present with deteriorating glycemic control over time as a result of a number of factors. Developing a consistent, team-based approach that includes lifestyle management and medication adjustments, when necessary, can help the patient regain control of their diabetes.

CASE STUDY

- 63 y.o. male
- Past medical history: Type 2 DM diagnosed 4 years ago, well controlled with HBA1c between 6.5-6.9 over the past 4 years. Also hyperlipidemia, obesity, hypertension
- Recently developed progressive back pain, missed work due to symptoms.
- Medications: atorvastatin 20 mg daily, metformin 100mg bid, sitagliptin 100mg daily, and Lisinopril 20mg daily. Had epidural injection for back pain approximately 6 weeks ago.
- Pertinent social history: non-smoker; had been walking on treadmill several days per week until about 6 months ago, when his back pain seemed to worsen.
- Most recent data: body mass index (BMI) 31, HGBA1C 9.2, LDL 135, creatinine 1.1.
- Issue: For a patient with deteriorating glycemic control, what interventions can assist in regaining control of diabetes?

BACKGROUND

When a previously well controlled diabetic patient presents with deteriorating glycemic control, it is

important to identify factors contributing to the condition and develop a plan with the patient to address those factors in order to regain control of diabetes. Often it is a combination of factors, including medical and psychosocial, that leads to deteriorating control.

Diet and Physical Activity: Many patients can point to a specific event or change that contributes to their deteriorating glycemic control. This could be a change in diet caused by a new job, or decreased physical activity as the result of an injury, illness, or other change. Having a detailed discussion with the patient about diet, including food choices and portion sizes, regular meals, and between-meal snacking is helpful in diagnosing the cause of worsened control. If a change in physical activity is contributing to worsened control, developing a new care plan through motivational interviewing may help the patient gradually return to a healthier lifestyle, one through which glycemic control can be facilitated.

Medication Adherence and Compliance: Having a frank conversation with patients about their use of glucose monitoring and medications can point to causes for deteriorating control. Many patients are never trained to check their own fingersticks, and empowering them to do so can lead to improved control. Patients may be taking their medications incorrectly, such as remaining on lower doses rather than an increased dose, or taking medications only when they feel their sugar is elevated. The impact of other medications, including corticosteroids, and other medical conditions should also be considered in the patient with worsening control. Many patients are reluctant to tell their physician when financial con-

straints prohibit them from filling prescriptions, but discussing this issue with a patient within a caring, trusting relationship can facilitate improved care.

Medication Advancement: Often patients who have been stable for some time will begin to have deteriorating control. When no obvious cause is found, advancing medication management is often necessary. Using a simple algorithm can be helpful in deciding next steps¹. Advancing from metformin monotherapy to dual therapy with another agent, to three-drug combination therapy every 3-4 months based on the HBA1c and the patient's home fingersticks, along with self-management counselling, can prevent worsening diabetes. Many factors, including cost, weight gain, and side effects should be considered in choosing which medications to add for the patient.

However, when the patient is symptomatic from hyperglycemia, or has a markedly elevated blood glucose levels or HBA1c, beginning insulin therapy should be encouraged ^{1,2}. While there is no optimal method, a convenient strategy is to begin with once-daily basal insulin injections. Depending on both the patient's and the physician's comfort, beginning either with a standard starting amount, such as 10 units, or a weight-based dose, such as 0.1-0.2 units/kg/day is reasonable³. Most patients can then be taught to increase their own insulin dose every few days as long as their AM fasting glucose remains above goal and the patient does not experience any symptoms of hypoglycemia. For example, a patient can be instructed to increase their basal insulin by 3 units every 3 days as long as their fasting glucose remains above 130. As the patient's fasting glucose approaches the target, adding mealtime insulin based on prandial glucose readings can help the patient reach target HBA1c and improve overall glycemic control. During this titration, frequent contact with the patient by physicians and trained office staff can help reinforce education and encourage self-management skills.

DISCUSSION

Many factors may be contributing to this patient's deteriorating glycemic control. His back pain has led

to a decrease in his physical activity, and likely affected his obesity. A corticosteroid injection may cause a transient elevation in blood glucose, but is unlikely affecting his overall control. His inability to work may be leading both to financial hardships and mild depression, both of which can directly and indirectly affect glycemic control. For this patient, ensuring adherence to the prescribed regimen and addressing any secondary issues while promoting self-management is important. Given his elevated HBA1c, advancing to basal insulin injections with a self-titration strategy would be a reasonable next step.

SUMMARY

Deteriorating glycemic control can be the result of many factors, and it is important to maintain a patient-centered, team-based approach in addressing them. Promoting a healthy lifestyle with regular exercise and reinforcing diet education for patients with diabetes is critical. Addressing issues affecting medication adherence and compliance with a comprehensive diabetic action plan and overcoming any barriers to care can lead to improvements in health. Advancing medication management using a simple algorithm, using both home monitoring and HBA1c results, and advancing to basal insulin with or without mealtime insulin can also assist the patient in regaining control of their diabetes.

REFERENCES

1. Abridged version of the American Diabetes Association Position Statement: Standards of Medical Care in Diabetes—2016. Diabetes Care 2016;39(Suppl. 1): S1–S112. <http://clinical.diabetesjournals.org/content/diaclin/34/1/3.full.pdf>
2. Henske JA et al, Initiating and Titrating Insulin in Patients With Type 2 Diabetes. Clinical Diabetes 2009; 27(2): 72-76.
3. Inzucchi SE et al. Management of Hyperglycemia in Type 2 Diabetes: A Patient-Centered Approach. Position Statement of the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD). Diabetes Care 2012; 35:1364-79.

PATIENT-CENTERED APPROACH TO DIABETES SELF MANAGEMENT

Manette Richardson RD, CDE, LDN • ABC Diabetes Jan. 2016

CASE STUDY

- 40 y.o. male
- Pmhx; Asthma, elevated BP, HTN,Kidney stome
- New symptoms: blurry vision acute onset
- Meds: metformin, Lantus

BACKGROUND

Patient was seen by primary physician and presented with 2 and a half week history of bilateral blurring of eyes. Primary care ordered tests to assess causes. He-moglobin A1c was noted to be 10%, fasting BG 318mg/dl, TG 405 mg/dL. Pt admitted poor diet past 2 years, drank sugary soda, minimal exercise with moderate weight gain.

At the one month-follow up, pt began metformin as the first line of treatment as recommended by the National Endocrine Society.¹ In addition, he was introduced to insulin with one shot of a long acting insulin to provide basal coverage an accepted approach in the ADA’s clinical guidelines.²

In addition to an endocrine referral which resulted in medication adjustments, the patient was given a referral to Achieving Better Control (ABC) Diabetes Education 10-hour program.

Pt attended the ABC 10-hour American Diabetes Association DSME³ accredited program and at the last session, chose the following lifestyle behavior goals:

- a. regularly test his blood sugars
- b. modify meal plan to reduce weight
- c. exercise 3 days week for 60 minutes

DIABETES SELF-MANAGEMENT EDUCATION (DSME) IS A CRITICAL ELEMENT OF CARE FOR ALL PEOPLE WITH DIABETES AND THOSE AT RISK

DISCUSSION

The complexity of this newly diagnosed Type 2 DM patient warranted a collaborative approach between the PCP, endocrinologist and the DSME program. This empowered the patient to use newly acquired skills with self-management knowledge to improve his quality of life.

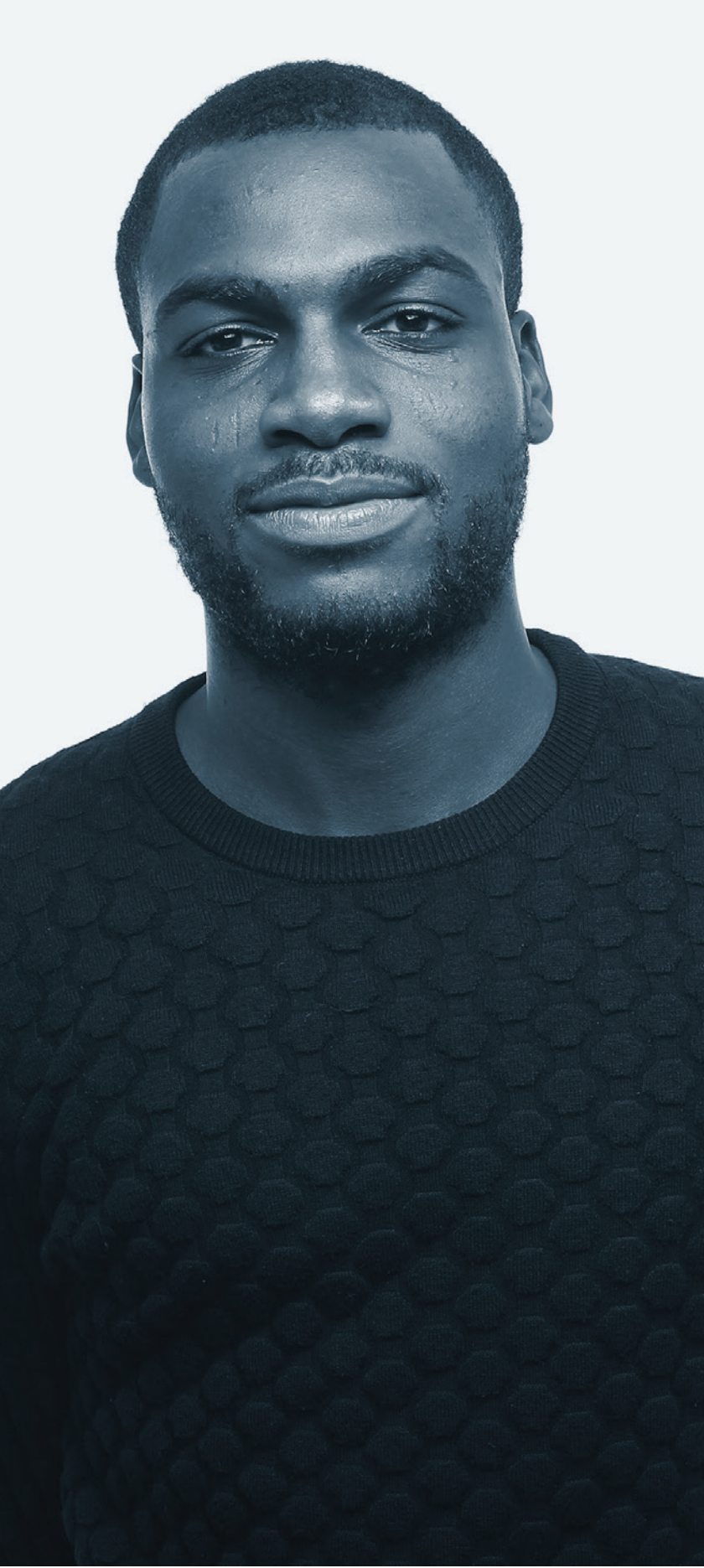
As evidenced in follow up appointment with the endocrinologist, pt had lost 23 lbs, a reduction in HgbA1c to 5.5%, he reported increasing his activity and was following a 2000 calorie meal plan, watching his carbohydrate intake and routinely testing his blood glucose.

SUMMARY

Diabetes self-management education (DSME) is a critical element of care for all people with diabetes and those at risk for developing the disease. It is necessary in order to prevent or delay the complications of diabetes and has elements related to lifestyle changes

1. Nathan DM, Buse JB,Davidson MB, Ferrannini E, Holman RR, Sherwin R,Zinman B, American Diabetes Association, European Association for Study of Diabetes : Medical management of hyperglycemia in type 2 diabetes: a consensus algorithm for the initiation and adjustment of therapy. A consensus statement of the American Diabetes Association and the European Association for the study of diabetes. Diabetes Care 32:193-203, 2009
2. Yki-Jarvinen H, Ryysy L, Nikkila K, Tulokas T, Vanamo R, Heikkila M. Comparison of bed-time insulin regimens in patients with type 2 diabetes mellitus. A randomized, controlled trial. Ann Intern Med 1999;130:389-96. (randomised trial)
3. National Standards for Diabetes Self-Management Education and Support Diabetes Care January 2014 37:Supplement 1 S144-S153:doi;10.2337/dc14-s144

* Any entity that provides diabetes self-management education (DSME) is eligible to apply for Education Program Recognition when and as long as it has demonstrated that the education program meets the National Standards for Diabetes Self-Management Education (NSDSME).



THE PATIENT WITH IMPROVING HA1C BUT NOT AT GOAL

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INTRODUCTION

Many diabetics may respond favorably to education and oral agents but may fail to get their HA1c under 7.0%. This monograph will provide a brief review of common barriers to achieving glycemic targets and approaches to getting the patient to goal.

CASE STUDY

- A 53-year-old female with diabetes mellitus type 2 returns for a routine follow up visit.
- At time of diagnosis 2 years ago, her HA1c was 9.2%.
- She received diabetic education from a certified educator.
- Metformin was titrated to 1,000 mg twice a day.
- Glipizide was added and titrated to 10 mg daily.
- Her BMI is unchanged at 31.2 kg/m2, most recent HA1c 7.7%.

What are some important steps you could take to get the patient to their HA1c goal of <7.0%?

BACKGROUND

Based on data from 2003-2006 from the National Health and Nutrition Examination Survey, 57% of

American diabetics had an HA1c < 7.0%, a dramatic improvement from 1988-1994 when only 44% had HA1cs <7.0%.(1) From 1988 to 2006, the numbers of patients with HA1cs > 9.0% decreased from 23% to 13% and those with HA1cs 8.0-9.0% decreased from 17% to 10%. Still, 30% of diabetics had HA1cs between 7-9% in the 2003-2006 survey. Most primary care providers have several patients like the patient described in this case study. After an initial response to education and titration of a biguanide and sulfonylurea drug to their recommended maximums, the patient stalls out above their goal.

What are some of the reasons patients fail to get to an HA1c < 7.0%?

CLINICAL INERTIA

Clinical inertia is defined the failure to initiate or intensify therapy for a condition for which goals are well-defined and therapies and guidelines for treatment are widely available.(2) In a retrospective review of diabetic clinic patients, el-Kebbi et al determined that diabetic therapy was intensified in only 36% of 1051 visits despite providers having agreed to a therapeutic protocol.(2,3) Reasons for clinical inertia include provider over-estimation of their overall performance in diabetes care (2,4), “soft reasons” (control was improving and

dietary non-adherence), lack of training, and not having an office practice focused on attaining therapeutic goals.(2)

PATIENT FACTORS

In a random sample of 917 type 2 diabetics, Khattab et al noted that having diabetes > 7 years, not following the diet designated by dietitians, negative attitudes

towards diabetes, and barriers to medication and self-management support were significantly associated with an HA1c > 7.0%. Benoit et al in a longitudinal observational study of type 2 diabetics in an underserved population in San Diego similarly found that having diabetes for a longer period of time, being on multiple medications or insulin and younger age was associated with poorer glycemic control.(5)

REFERENCES

1. CDC - A1c Distribution - A1c Levels - Data & Trends - Diabetes DDT [Internet]. [cited 2016 Jan 15]. Available from: http://www.cdc.gov/diabetes/statistics/a1c/a1c_dist.htm
2. Phillips LS, Branch J William T., Cook CB, Doyle JP, El-Kebbi IM, Gallina DL, et al. Clinical Inertia. Ann Intern Med. 2001 Nov 6;135(9):825–34.
3. el-Kebbi IM, Ziemer DC, Musey VC, Gallina DL, Bernard AM, Phillips LS. Diabetes in urban African-Americans. IX. Provider adherence to management protocols. Diabetes Care. 1997 May;20(5):698–703.
4. Drass J, Kell S, Osborn M, Bausell B, Corcoran J, Moskowitz A, et al. Diabetes care for Medicare beneficiaries. Attitudes and behaviors of primary care physicians. Diabetes Care. 1998 Aug;21(8):1282–7.
5. Benoit SR, Fleming R, Philis-Tsimikas A, Ji M. Predictors of glycemic control among patients with Type 2 diabetes: A longitudinal study. BMC Public Health. 2005;5:36.



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