



# Meeting of the NGSP Clinical Advisory Committee Minutes

2017 ADA 76th Scientific Sessions  
San Diego, CA  
Monday June 12, 2017 2:30 – 4:30 PM

Ann Albright	CDC	Matt Petersen	ADA
Roy Beck	Jaeb Ctr for Hlth Res	Leonard Pogach	VA
Richard Bergenstal	IDC	Curt Rohlfing	NGSP
Craig Cartwright	Bio-Rad	David Sacks	NIH, NGSP
Jackie Felberg	Bio-Rad	Rick San George	Alere
Judith Fradkin	NIDDK	Jane Seley	AADE
Robin Gal	Jaeb Ctr for Hlth Res	Elizabeth Selvin	John Hopkins
Steve Hanson	NGSP	Miss Tao	Asahi-Kasei
William Herman	Univ of Michigan		
Takuji Kouzuma	Asahi-Kasei	By Phone	
Randie Little	NGSP		
Mike McPhaul	Quest	Jeffrey Colburn	DOD/VA
Gillian Parker	Alere	Elizabeth Koller	CMS

**Welcome and introduction:** A. Albright opened the meeting at 2:30 pm and welcomed everyone. Participants introduced themselves. The 2016 NGSP Clinical Advisory Committee meeting minutes were approved.

## **HbA1c/NGSP Update:** R. Little

- NGSP Certification
  1. The number of certified methods continues to increase, the number of labs has leveled off.
  2. Most certified laboratories are outside the United States and most are Level 1 labs.
  3. Certified laboratories are distributed throughout the world on six continents. There are clusters of Level 2 labs in Columbia SA and South Africa.
- Current limits
  1. NGSP Manufacturer and Level II Lab Certification Criteria: 37/40 results must be within  $\pm 6\%$  (38/40 for Level 1 Labs)
  2. CAP Survey Grading for HbA1c:  $\pm 6\%$
- 2017CAP GH5A survey data (5 samples)
  1. There has been considerable improvement in the comparability of results since 1993 when the DCCT ended, but over the last few years the improvement has been more subtle.
  2. On the 2017 GH5A survey several methods show high CVs, but these have small numbers of users. Most methods show low variability; one method with large variability is being phased out by the manufacturer.

3. Target values for the survey are based on the mean of multiple analyses by all of the NGSP SRLs except for the SRLs in Japan and China.
  4. Overall pass rates were all >95%. Individual method pass rates ranged from 68.4% to 100%.
  5. Our goal for all-method CVs is <3.5% at all HbA1c levels, CVs for the current survey were all ≤3.1%. The all-method CVs have been <3.5% for the last several surveys.
  6. All-method pass rates at the current criterion of ±6% have increased to >96%.
  7. Cumulative pass rates have increased over the years and have been >95% in the 5-10% HbA1c range for the last 4 surveys.
  8. Method-specific between-laboratory CVs ranged from 1.0% to 5.7%. 87% of laboratories are using methods with between-lab CVs ≤3.5% at all five HbA1c levels.
- New SRLs in the NGSP network
    1. ESRL#13, Zwolle, The Netherlands (Roche c513, replaced ESRL#9 Roche Integra 800)
    2. ESRL#14, Zwolle, The Netherlands (Abbott Architect c Enzymatic)
    3. ASRL#2, Shanghai, China (Variant II)
      - Shipping of Monthly monitoring samples has now been coordinated. All ASRL#2 data has been within acceptable limits.
      - Two manufacturers have now been certified by ASRL#2 (June 2017)
  - Are HbA1c Results Accurate in patients with Sickle Cell Trait?
    1. Article recently published in JAMA (Association of Sickle Cell Trait with Hemoglobin A1c in African Americans, Lacy, et al. JAMA. 2017;317:507-515).
    2. Methods:
      - Subjects from Coronary Artery Risk Development in Young Adults (CARDIA) and Jackson Heart Study (JHS)
      - HbA1c methods used were Tosoh 2.2 or G7
      - During the time of data collection, neither method showed “clinically significant interference” from HbS (SCT).
    3. Results:
      - “The mean HbA1c was 5.7% in those with SCT vs 6.0% in those without SCT despite similar mean fasting and 2-hour glucose values.”
      - “Across all categories of fasting and 2-hour glucose measures, mean HbA1c values were lower in those with vs. without SCT.”
      - “...at the same fasting or 2-hour glucose concentration, HbA1c is statistically significantly lower among participants with vs without SCT.” Mean difference was 0.30% HbA1c.
      - “These differences are based on an HbA1c method reported to have no clinically significant interference in individuals with SCT.”
      - “although the assays used in this study report no clinical significant interference in individuals with SCT, **the possibility of minor interference that could potentially explain our findings cannot be ruled out.**”
    4. Conclusions: “Among African Americans from 2 large, well-established cohorts, participants with SCT had lower levels of HbA1c at any given concentration of fasting or 2-hour glucose compared with participants without SCT. These findings suggest that HbA1c may systematically underestimate past glycemia in black patients with SCT and may require further evaluation.”
    5. The authors’ statement that the methods used did not show “clinically significant” interference from SCT in our studies (based on our arbitrary criterion of ±10%, later ±7%, relative bias at levels of 6 and 9% HbA1c) is correct. However, the methods did

- show statistically significant differences and the biases were large enough to explain the differences observed between subjects with and without SCT in the current study.
6. Conclusion: The differences observed in the Lacy, et al paper between the non-SCT and SCT subjects are, in fact due to analytical interference with the 2.2+ and G7.
  7. In response:
    - o A letter to the ed. was submitted to JAMA
    - o A commentary in Practice update published on-line: <http://www.practiceupdate.com/content/sickle-cell-trait-associated-with-lower-hba1c-in-african-americans/49399/12/8/1>
  8. Recent Publications
    - o www.npr.org Feb. 7, 2017: "The HbA1c test for blood sugar, a standard assay for diabetes, may not perform as well in people with sickle cell trait, a study finds."
    - o AACC Clin Lab News, April 2017: "...the relationship of HbA1c with blood glucose levels may differ between African Americans with and without SCD/SCT. This is because sickle cells have a much shorter lifespan of only 10-20 days." "Quarterly monitoring of glycemic control using fructosamine in SCD/SCT patients will provide more reliable information than HbA1c."
    - o AACC SmartBrief, May 2, 2017: "Because sickle cell disease and sickle cell trait can interfere with traditional diabetes management, the ADA recommends fructosamine testing as an alternative to HbA1c testing."
  9. Question: Is it reasonable to recommend using fructosamine for diabetes management in African Americans or those with SCT instead of HbA1c?
  10. Another Paper: Lewis, et al. Management of Hemoglobin Variants Detected Incidentally in HbA1c Testing: A Common Problem Currently Lacking a Standard Approach. Diabetes Care 40:e8-9, 2017
    - o Vitamin D and Type 2 diabetes
    - o HbA1c by Tosoh G8 HPLC
    - o "HbS and HbC do not interfere with the assay"
  11. In Response to Lewis, et al:
    - o Letter to the Editor accepted to Diabetes Care
    - o "While the authors claim that there is no interference of these common Hb variants with the Tosoh G8 method, there is clear evidence to the contrary. Our study clearly showed a statistically and clinically significant bias in results from this method with all four common Hb variant (HbAS, AC, AD, AE)."
  12. Question: How do we get people to pay more attention to the material on the NGSP website before publishing inaccurate information about Hb variant interference?

## Discussion:

### *CAP Survey*

L. Pogach asked how many laboratories have CVs <2%. R. Little said the CAP survey CVs are between-lab by method, we do not know from the survey what the individual within-lab CVs are. D. Sacks noted that the GH5A 2016 survey incorporated a duplicate and based on these data most individual labs had CVs<2%. L. Pogach asked if there are any methods with between-lab CVs <2%, D. Sacks and R. Little responded that there are several. R. Little said the CAP summary on the NGSP web site lists the CVs for each method. J. Seley asked why some labs use methods that perform poorly, are they cheaper to run? D. Sacks and R. Little said these are mainly older instruments where the lab runs many different tests on the same instrument. In large hospitals the decision is often not made by the laboratory,

administration decides which methods will be used throughout the whole institution and the laboratory has to put the HbA1c assay on the instrument that is provided. However, manufacturers are improving assays, for example Abbott is phasing out their old Architect assay in favor of the new enzymatic assay that performs very well. D. Sacks noted that when a lab fails a CAP survey they contact the manufacturer to complain, this incentivizes manufacturers to make improvements. Many of the older methods that performed poorly are already gone. R. Little noted that this is one of the goals of tightening the CAP and NGSP certification criteria—to encourage manufacturers to replace older poorly-performing methods with better ones.

### *Variant Interferences*

J. Seley asked about the clinical significance cutoffs used. R. Little said that they are arbitrary,  $\pm 10\%$  relative bias at 6 and 9% HbA1c was used for the 2005 and 2008 studies, this was tightened to  $\pm 7\%$  beginning with the 2012 study. These differences observed were  $\sim 0.3\%$  HbA1c and were considered to be acceptable in terms of clinical practice, but in the case of the JAMA study the interferences are sufficient to explain the differences observed between the two groups. The authors should have gone back to the original papers to see what the actual differences were. W. Herman asked if the interferences seen with the G7 have been consistent over time, R. Little and C. Rohlfing said they have in the case of the G7. Sometimes with ion-exchange methods the degree of interference can change over time with reagent lot changes, etc., this is why we periodically re-evaluate these methods over time. L. Pogach said clinical significance depends upon the context in which the test is interpreted. There has been discussion at these meetings regarding HbA1c performance measures and overtreatment, if you are using 8% as a benchmark a difference of 0.2% could make a difference in terms of being under or over that benchmark. This can affect provider behavior, a number of surveys indicate this is the case. R. Little said the two methods used in the JAMA study were two of the most precise methods available at the time, this makes it easier to see statistically significant differences. The AACC Smartbrief suggested that the ADA recommends fructosamine as an alternative to HbA1c in patients with SCT, it turned out that this is not how the ADA recommendation is worded. M. Petersen clarified that the ADA recommends considering fructosamine as an alternative in cases where HbA1c cannot be used, e.g. shortened erythrocyte lifespan. D. Sacks said the other problem with that particular statement is they combined sickle-cell disease and SCT. R. Little said they likely assumed that red-cell lifespan is significantly shortened in the case of SCD this must also be the case for SCT. M. McPhaul asked why the ADA recommendations are being so mistranslated by the AACC. R. Little noted that she does not agree that fructosamine needs to be considered as an alternative to HbA1c in patients with SCT. L. Pogach asked what percentage of African Americans have SCT, it was noted that the article states 8-10%. W. Herman asked which assays do not show interference from SCT, R. Little and C. Rohlfing said the immunoassays and even most current ion-exchange methods do not. R. Little noted that the G8 did not show clinically significant interference until recently, Tosoh is still trying to fix it in the U.S. W. Herman asked if it would help to present the actual data on the web site as opposed to just presenting “Yes” or “No”, R. Little noted that based on his previous suggestion we now have the direction of the interference noted by arrows and there is also a link to a detailed page where references are listed. L. Pogach noted that given the issues with HbA1c in terms of individual differences, the latest VA guidelines push the notion of interpreting HbA1c results in terms of a range. This will hopefully help to avoid confirmation bias which can lead to unnecessary intensification of treatment, and can help in establishing individualized targets as now recommended by the major clinical societies. He was not sure how many patients and clinicians will understand the concept, but we need to get the idea out there. The HbA1c test is an excellent test, but as with many other things there is a range associated with it. R. Little said that Lewis et. al stated that HbS and HbC do not interfere with the G8 assay but the NGSP web site clearly states otherwise. There is a new software

version that is now being used in Europe that does not show interference from the common variants including HbS, but it has not yet been approved for use in the U.S. M. McPhaul said one problem with the ADA guidance is that it is a bit nebulous. They state that other tests may be considered if there is suspicion that the HbA1c result might not be accurate, is there some hematologic indicator such as RDW that can act as a surrogate to indicate the need to investigate further? W. Herman said the clinical practice guidelines group has been somewhat hampered by the levels of evidence designations, i.e. if the evidence level is “A” then do this, while if the level is “C” or “D” consider doing this. If there is evidence that something like RDW is useful this should be communicated to the guidelines committee, but data would be needed. L. Pogach said that the ADA guidelines now state that factors that might influence the HbA1c result for individual patients such as potential assay interferences should be considered. However, the average clinician is unlikely to consider this, we need to increase awareness of these factors. J. Seley suggested that short-term CGM might be considered as an alternative to estimate glycemic control in cases where there is a known or suspected interference with HbA1c. The current guideline only gives the clinician one alternative, fructosamine. R. Little said the question is how to identify patients that may have a condition that causes interference with HbA1c, right now it is simply clinical judgement. L. Pogach said most patients will not go on CGM, it is not widely available and it is burdensome and costly for patients, we would not recommend this at the VA. W. Herman said you would have to define acceptable limits in terms of how well the CGM would be expected to match the HbA1c result. Would two weeks of CGM necessarily be expected to match a HbA1c result which reflects glucose over several months? It is a good idea and it might be an option in some individual cases, but tolerance limits would need to be defined. J. Colburn noted that at DOD/VA the computers are encrypted which often makes downloading of CGM data impossible. E. Koller said there is quite a bit of variability in the quality of CGM sensors, CGM generally works well within the normal range but there is quite a bit of variability outside of that.

**Is there a Racial Difference in the Mean Continuous Glucose Monitoring Glucose in Relation to the HbA1c?:** R. Beck, R. Bergenstal

- Study Chair: Richard Bergenstal, Coordinating Center Director: Robin Gal
- Type 1 diabetes exchange
  1. >30,000 patients
  2. Collect standard care data
  3. African Americans had higher HbA1c levels across all age groups, overall mean 9.2% versus 8.1%
- Study Objective: Determine whether a racial difference exists in the association of mean glucose with HbA1c between non-Hispanic African Americans and non-Hispanic Whites with T1D.
- Study has just been published online: Ann Intern Med. 2017 Jun 13. doi: 10.7326/M16-2596.
- 10 centers that are part of the T1 diabetes exchange, 5 which primarily see pediatric patients and 5 which primarily see adults.
- Eligibility Criteria
  1. Clinical diagnosis of T1D, duration  $\geq$  2 yrs
  2. Age  $\geq$  8 yrs
  3. Non-Hispanic African American or non-Hispanic White (self-identified race)
  4. Most recent HbA1c 6.0-12.0%
  5. Stable insulin regimen for 2 mos
  6. Exclusions: pregnant, hemoglobinopathy, anemia, recent transfusion, GFR <60 ml/min
- Study Methods

1. 104 African American and 104 White participants
  2. Age range 8 to 72 yrs
  3. Central lab measurements at study entry and at 4, 8, and 12 wks of HbA1c, Fructosamine, Glycated Albumin
  4. Glucose concentrations measured over 12-wk period using Abbott Flash Glucose Monitoring System (blinded)
- Laboratory testing performed at Northwest Lipid Research Laboratories, University of Washington. Methods:
    1. HbA1c: nonporous ion exchange high performance chromatography (TOSOH Biosciences)
    2. Fructosamine: colorimetric assay (Roche/Hitachi Analyzer)
    3. Glycated albumin: bromocresol purple method using Lucica GA-L kit (Asahi Kasei Pharma)
  - Statistical Methods
    1. Least squares regression model
      - Dependent: weighted CGM mean glucose
      - Independent: HbA1c (post-CGM), race, and an interaction term
    2. Two degrees of freedom test performed for race differences in slope and intercept simultaneously
    3. Confounding assessed by stepwise selection for age, insulin dose, gender, BMI, pump use, personal CGM use and family income
    4. only age met criterion for final model ( $p < 0.10$ )
  - Means for African American and White subjects in study cohort
    1. HbA1c: 9.1% vs. 8.3%
    2. Mean CGM Glucose Concentration (weighted): 190mg/dl vs. 180 mg/dl
  - CGM/HbA1c regression lines for African American vs. Whites were statistically significantly different ( $p=0.008$ )
  - Estimated HbA1c by Race for Given Mean Glucose

Estimated HbA1c (eA1C)		
Mean Glucose (mg/dL)	African American	White
100	6.5%	6.0%
150	7.9%	7.5%
200	9.3%	8.9%
250	10.8%	10.4%
300	12.2%	11.8%

- Fructosamine and Glycated Albumin: Correlations
  1. HbA1c-Fructosamine 0.81
  2. HbA1c-Glycated Albumin 0.86
  3. Fructosamine-Glycated Albumin 0.94
- CGM/Fructosamine and CGM/GA regression lines were not statistically significantly different for African Americans vs. Whites ( $p=0.5$  and  $0.24$  respectively).
- Summary of Results
  1. 0.8% difference in mean HbA1c between Af-Ams and Whites but only 10mg/dL difference in mean glucose
  2. ~0.4% average difference in HbA1c for a given mean glucose between races

3. About half of mean HbA1c difference between races accounted for by non-glycemic factors
  4. This relationship was not seen for fructosamine or glycated albumin
- ADAG Results: Difference in African Americans

Comparison	Difference in Slope	Difference in Intercept	P-value
Caucasian v. African/African-American	3.87±1.85	23.35±12.48	0.07
Caucasian v. Hispanic	-1.80±3.12	5.89±20.51	0.81
Hispanic v. African/African-American	-2.06±3.49	17.46±22.94	0.43

- Assessing the Spread of Mean Glucose for a Given HbA1c Irrespective of Race
  1. Paper will be published in August
  2. Combined data from 3 studies
  3. 387 subjects in 3 randomized trials coordinated by the Jaeb Center for Health Research, Tampa FL
  4. Age 20 to 78 years old, 83% White
  5. 315 with T1D and 72 with T2D
  6. Mean glucose concentration measured for up to 13 wks using Dexcom G4 Platinum CGM System® (enhanced algorithm, software 505)
  7. Median amount of CGM data 66 days
  8. HbA1c measured at a central laboratory using nonporous ion exchange high performance chromatography
- Range of Mean Glucose Concentrations (95% CI) for a Measured HbA1c Level

Mean Glucose: 95% CI mg/dL		
Measured HbA1c	Current Study N=387	ADAG N= 507
6%	101-163	100-152
7%	128-190	123-185
8%	155-218	147-217
9%	182-249	170-249
10%	209-273	193-282

- Ambulatory Glucose Profiles (AGPs) of 4 Pts with HbA1c of 8.0%

	A1c	eA1c	Mean Glu mg/dL	<70	70-180	>250	CV
A	8.0%	8.4%	195	0.5%	42%	23%	33%
B	8.0%	8.4%	195	0.9%	44%	21%	36%
C	8.0%	7.0%	156	10.1%	55%	11%	46%
D	8.0%	7.3%	163	3.1%	64%	10%	41%

## Discussion:

### *Racial Differences in HbA1c, Glycemic Variability*

R. Beck noted that the higher HbA1c values at equivalent CGM levels for African American compared to White subjects observed in their study are consistent with those observed in previous studies. Also,

there is significant inter-subject variation in the relationships between CGM measured mean glucose and HbA1c regardless of race, and individual patients with the same HbA1c levels can have very different degrees of variation in their blood glucose levels (and therefore different frequencies of hypo or hyperglycemia). We feel that CGM may be useful in determining the relationship between HbA1c and blood sugar levels in individual patients. R. Bergenstal agreed saying that HbA1c is an important test for diabetes management but we also need to look at actual blood sugar levels in order to personalize treatment. Looking at the CGM data for the four patients with HbA1c levels of 8.0%, a clinician would prescribe different insulin regimens for each of the four. W. Herman asked about use of HbA1c for diagnosis where there are no blood sugars available. R. Bergenstal said this gets back to the notion of cutpoints, if a patient's HbA1c is going up it reflects their blood sugar control is getting worse but determining cutpoints to use among individuals is more difficult. R. Beck said there is a potential for false positives if the HbA1c result used for diagnosis is borderline. L. Pogach said that the VA addressed this 7 years ago, because a diagnosis of diabetes can impact one's career in the military the VA now recommends a fasting blood sugar to confirm the diagnosis if the HbA1c is 6.5-6.9%. A diagnosis of diabetes can also impact on the ability to get insurance and premiums. Also, by not taking factors like the racial differences into account, we could effectively be discriminating against minorities. J. Colburn noted that members of the military do not receive their retirement benefit until they reach 20 years of service, if they are diagnosed with diabetes prior to serving 20 years it can end their military career and they lose their retirement. There are options where some members are able to stay in the military to serve out their time after a diagnosis of diabetes but this is not often exercised. This is why the DOD confirms a diagnosis with a fasting glucose if the HbA1c is in the low diagnostic range. J. Seley said she has heard that the 2018 ADA guidelines will be changed to recommend HbA1c as a second-level diagnostic test rather than it being considered equal to glucose, others present stated that they have not heard this. L. Pogach said that this has implications for pre-diabetes as well. Being placed in the pre-diabetes category can have legal/regulatory consequences in the military and also in terms of how many people we can place into programs that address pre-diabetes. M. McPhaul said that he and E. Selvin presented a poster at this meeting looking at data from prospective studies showing that HbA1c is at least as good as glucose in terms of diagnosis of diabetes and also flagging individuals that are at risk of developing diabetes. In some cases it might even be better. L. Pogach said there is a difference between population health models and the needs of individuals in terms of implications. A good example is PSA, at one time the recommendation was to have a discussion with the patient, then it went to PSA testing for everyone. This led to many unnecessary operations, so the task force then recommended not doing it at all which is also bad. Individuals have different preferences, we can choose to ignore certain things or pursue further testing. If the decision is to go further you are then placed in a category and have to decide what to do next. We seem to have gone from just looking at population health to mandating it for individuals, it is time we step back and pay closer attention to individual patients. A. Albright said the challenge with diabetes is that there are a large number of people with pre-diabetes and diabetes. The majority of them are being seen by clinicians that are not endocrinologists and need guidance, they may let the patient get way of control before they intervene. It depends upon what the treatment is, a structured lifestyle program does not harm and most people would benefit from it. It is a different situation in the military, but I am not aware of people being denied coverage for having pre-diabetes. The question is how we get to a place where we can move large numbers of people to better manage these conditions and avoid some of the terrible outcomes while still allowing for individualized patient/clinician decision making. L. Pogach agreed but noted that when DQIP was started 20 years ago the intent of the <8 guideline was for clinicians to use it to help know their patient populations better. We have now gotten away from the holistic approach and the guideline is now used to penalize providers. We have dumbed it down to where diabetes control is now defined as HbA1c <8



regardless of blood sugars or other factors. Forty years ago we worked up a young African American for anemia needlessly because we were initially not aware that African Americans had been shown to have lower hemoglobin levels than Whites. This is why at the VA we have done away with recommended goals, we should not think in terms of all or none. Clinicians need to understand the limitations of laboratory tests. D. Sacks noted that glucose also has limitations, there is often an assumption that glucose is a perfect test and it is not. There is no standardization of glucose, values vary significantly among labs, even those that are using the same method. There is also significant intra-individual variation in fasting glucose from one day to the next, the sample is not stable after being drawn, there are a host of issues. R. Beck said CGM solves a lot of those problems, D. Sacks agreed but noted that CGM is not widely available at this time. E. Selvin said CGM data in terms of treating people with diabetes is an exciting development and can be helpful. Going back to diagnosis, HbA1c of 6.5 was chosen for its high specificity, it is a pretty conservative cutoff. There is no evidence that using 6.5 as the cutoff is leading to over-diagnosis of diabetes, only a tiny fraction of people with HbA1c  $\geq 6.5$  have normal fasting glucose. J. Fradkin agreed in terms of normal vs. diabetes, but noted that the racial differences we see with HbA1c could affect how pre-diabetes is distinguished from diabetes. E. Selvin said there is some variation with any laboratory test, HbA1c is probably more reliable and stable than most. There will always be a few outliers, HbA1c and glucose should both probably be used for diagnosis and where there is discordance there should be further investigation. W. Herman said we see a consistent bias between the races that will affect classification. E. Selvin said that what we see is a very small difference in HbA1c results between African Americans and Whites that is likely due to some hematologic abnormality that is present in both groups but more common in African Americans. If you look at the regression plots there is a lot of overlap between the two groups, if you take out the 10 or so people that are the most discordant the lines will likely match. We do not currently have the capability to accurately measure red cell lifespan and determine the nature of the hematologic abnormality. W. Herman said that the 0.4% difference observed between the populations is not trivial in terms of diagnosis. There are indeed problems with glucose, why can't glucose be standardized? R. Little said the process of standardization is difficult. We have been working on C-peptide for years, we have a paper coming out about the difficulties in terms of meeting international requirements and all of the different groups involved. L. Pogach said the racial differences are important, but his main concern is overtreatment of diabetes in terms of insulin but also other medications. There are tradeoffs associated with the use of medications, we should not always be initiating more aggressive treatment for an elderly person just because their HbA1c is 8.2, we need to think more in terms of a range. R. Little asked if this is a problem with training, L. Pogach responded that the problem is being too focused on a single number. Half of the doctors in the VA system think that maintaining HbA1c  $<7$  in elderly patients with oral agents is appropriate. J. Fradkin noted that the difference in HbA1c between the racial groups seems to be fairly constant across the range of glycemia. E. Koller said that in terms of T2 diabetes in the Medicare population, i.e. disabled people with a limited lifespan and elderly people. T2 diabetes is really not about the glucose, hyperglycemia only occurs late, it's basically metabolic derangement with a lot of elements of cardiovascular disease. Your trajectory for cardiovascular outcomes is set by age 40 or earlier, at the end of the day mitigating glucose is not going to change that outcome for the Medicare population. They will die not from a glucose event, but from cardiovascular disease. There has been a lot of discussion about HbA1c and diagnosis, you effectively can already make the diagnosis. If a person has a lipid and blood pressure problem, mitigating these problems with medications will make more difference than altering glucose. Krumholz et al. at Yale University have pointed this out, we are focusing on the wrong thing and being overly aggressive in treating hyperglycemia when it is not the major issue, especially with elderly patients that have co-morbid conditions. A. Albright noted that clinicians pay attention to blood pressure and lipids as well as glycemia when treating patients with diabetes.

## **VA/DoD Diabetes Clinical Practice Guideline (April 2017): L. Pogach**

In 2003 the VA introduced shared decision making. We make decisions based on uncertainties, tests are not perfect, we need to provide the best information possible to patients and let them make the decisions. Nurses and dieticians will have to lead this as doctors do not have time. A. Albright noted that the VA guidelines are available on the VA web site.

### **Discussion:**

R. Little asked what the implications of the racial differences in HbA1c are in terms of treatment, would anyone consider different cutoff for African Americans? W. Herman said that you have HbA1c levels but also glucose levels, the idea is that you can use glucose levels to help guide treatment rather than just relying on HbA1c. SMBG levels can be used for this, it does not have to be CGM. E. Selvin said we should not be calling this a racial difference, but rather there is something causing discordance that exists in both groups but is more frequent in African Americans as we see quite a bit of overlap between the two groups. We need to get away from the concept of race-based medicine as there is some medical condition associated with this that is not exclusive to African Americans. W. Herman said that if a patient's HbA1c is 0.5% above what would be expected based on glucose, due to race or otherwise, there is a potential to do harm when treating based on a goal of HbA1c <7%. E. Selvin agreed and added that we need to try to understand the reason for these differences, we just do not want to overgeneralize this to an entire ethnic group, this is a subset of individuals. L. Pogach agreed and said there are genetic differences between individuals as well as a variety of circumstantial and socioeconomic factors that have been shown to impact outcomes. We do not yet have a full understanding of these issues. J. Seley said she likes the idea of having glucose and HbA1c and comparing them, the problem is there is often very few glucose measurements available. Two weeks of CGM data would be useful particularly for high-risk patients where there is suspicion that the HbA1c results may not be accurate.

*A. Albright thanked everyone for their attendance, the meeting was adjourned at 4:30 PM.*

*Minutes prepared by Curt Rohlfig 07/13/2017. Modified by R. Little 7/14/2017.*