Diabetes Care Update

Leon Fogelfeld, MD – Chair, Division of Endocrinology

May 24, 2019

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Diabetes in CCH in 2019:

- Few words about diabetes in general
- Diabetes in CCH
- Special programs in diabetes
- Diabetes measures in CCH vs the world

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Understanding Diabetes

- **This means there is too much sugar in your blood. You may not have enough of a hormone called insulin.**
- **If you have Type 1 diabetes your body can no longer make insulin.**
- **If you have Type 2 diabetes your body may still make insulin, but your cells resist its effects or you cannot make enough insulin.**

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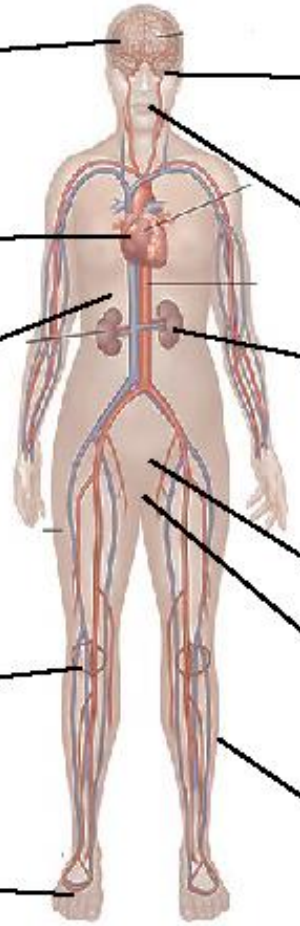
What are the Complications Associated with Diabetes?

Over time, high blood glucose damages your blood vessels, both large and small. This damage can lead to **complications** that affect the whole body. By controlling your blood glucose, blood pressure and cholesterol according to your treatment plan, you can help reduce your risk of complications.



Brain
Stroke
Memory problems

Heart
Heart attack
Blockage of arteries to heart-angina
Heart failure

Liver
Fatty Liver
Liver Failure

Legs
Blockage of circulation
Gangrene
Amputations

Nerves (Neuropathy)
Nerve damage
Pain in feet
Foot Ulcers/deformities
Amputations

Eye (Retinopathy)
Glaucoma
Cataracts
Blindness

Oral
Gum disease

Kidneys (Nephropathy)
Protein in Urine (Albuminuria)
Kidney disease/failure
Dialysis

Male reproductive
Problems with erections

Female reproductive
Vaginal dryness
Vaginal Infection

Bones
Increased Broken Bones

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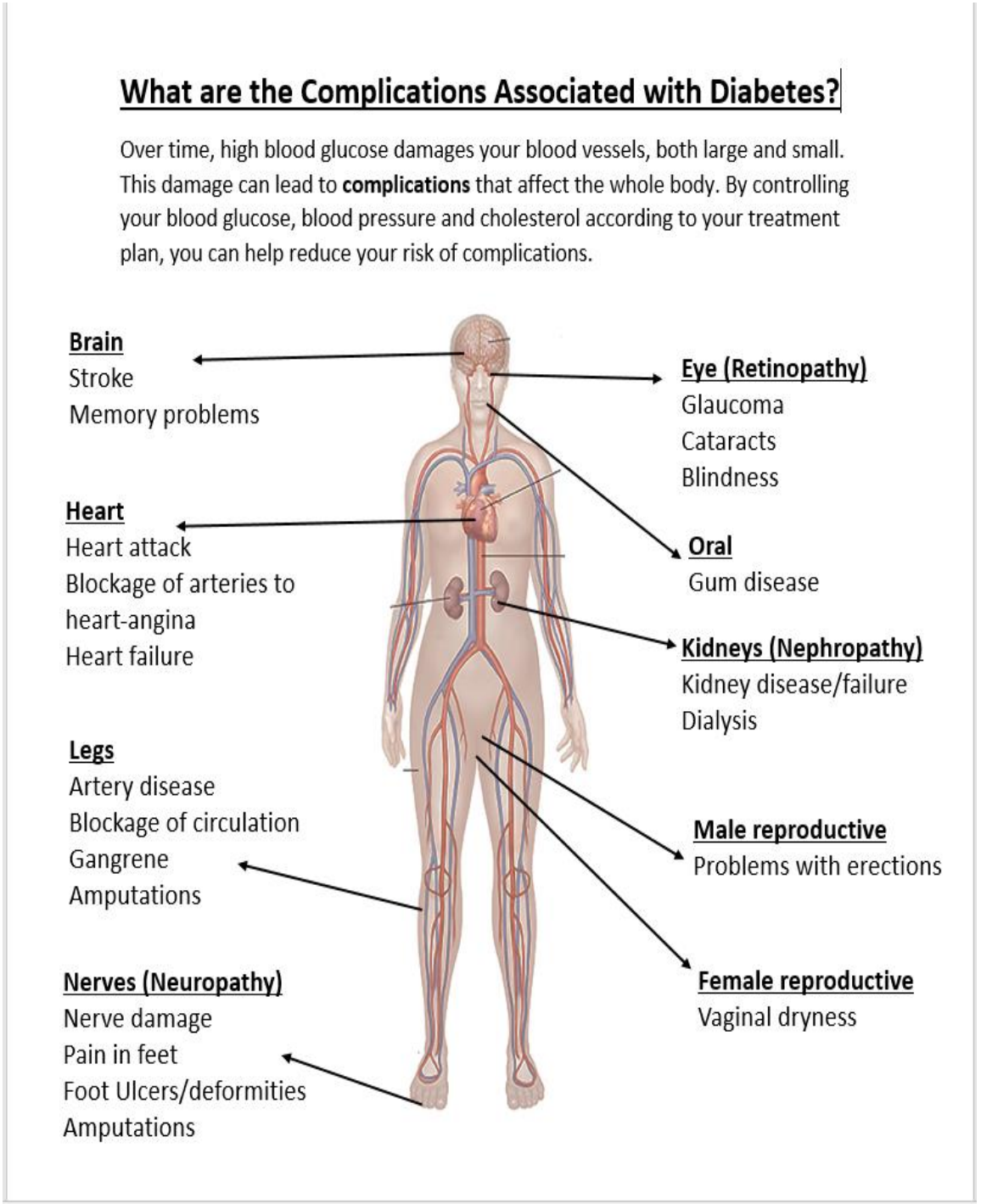


Utilizing our Diabetes Self Management Education Questionnaire (DSME), during the initial and Follow-up visits, we ask our patients the following question:

What are the Complications of Diabetes?

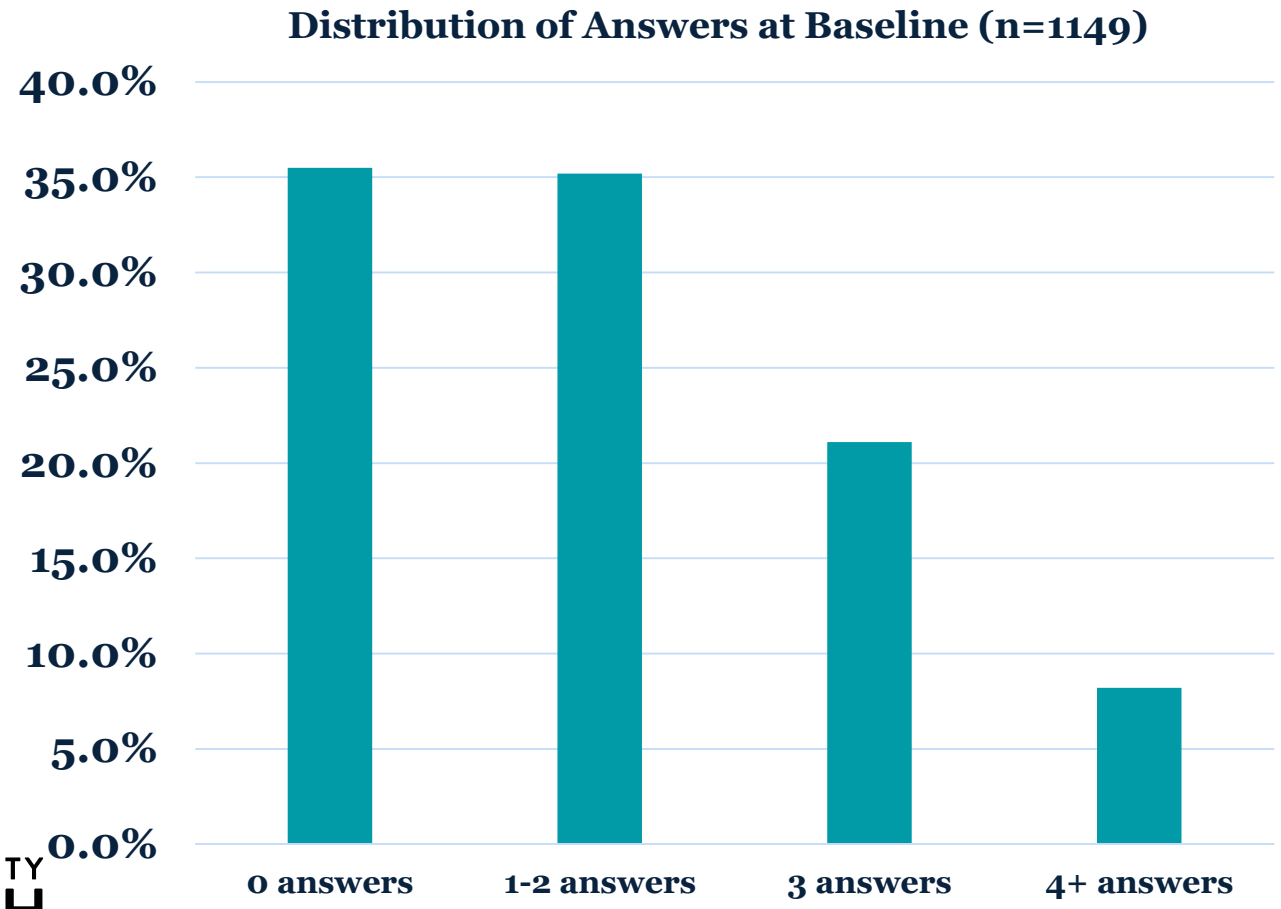
Answer Legend

1 = None-Does not know/Needs Full Instruction
2 = Lists 1-2/Needs Brief Instruction
3 = Lists 3/Instruct Missed Points
4 = Lists 4 or more/Congratulate Patient

CQI Project for 2018: Cont.

Results

Baseline: Total Number of Patients



Number of Correct Answers	Percentage
0 answers	35.5%
1-2 answers	35.2%
3 answers	21.1%
4+ answers	8.2%

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ABC's of Diabetes		TARGETS	My Values	Date Due
A	**Hemoglobin A1c** *Estimates your average blood glucose level over the past 2-3 months and helps determine how well blood sugar has been in control.*	Less than 7%		Every 3 months if over 7%
	Glucose (Blood Sugar) • **Before Meals** • ***1-2 hours after the beginning of the meal***	80-130 FBG 100-180 PP		
B	**Blood Pressure** *The pressure of the blood against artery walls. High blood pressure can damage arteries and organs. Ask for your BP results!*	Less than 140/90		Every visit
C	**Cholesterol**	Total Cholesterol (<200)		"Lipid Panel" To be done Every Year
	LDL (low density lipoprotein) Lousy cholesterol *Contributes to buildup that can block blood flow through arteries ("Clogged Arteries").* Cholesterol Therapy lower LDL to prevent heart attacks and strokes.	*Cholesterol Therapy if > 39 y* LDL: Less than 100 (less than 70 if existing heart disease)	YES NO	
	HDL (high density lipoprotein) Healthy cholesterol. *Helpful to prevent buildup of bad cholesterol.*	Male: Greater than 40 Female: Greater than 50		
	Triglycerides (Blood fats) *Like LDL cholesterol this fat can contribute to blocked arteries.* *Combination of fat + sugar that is increased with high A1c*	Less than 150		Every year
Other	**Eye Exam** *To check if diabetes caused any damage to your eyes*	Every Year (County has capacity for every 2 years)	Last Exam Date:	
	Foot Exam (Always remove your shoes and socks) *check the nerves and circulation. If problems, see a foot doctor every 3 months*	Exams Due: Visual (each visit), comprehensive (twice a year DAILY at HOME by YOU	Last Exam Date:	
	Albuminuria - *small proteins in Urine, checks for kidney damage*	<30		Every Year

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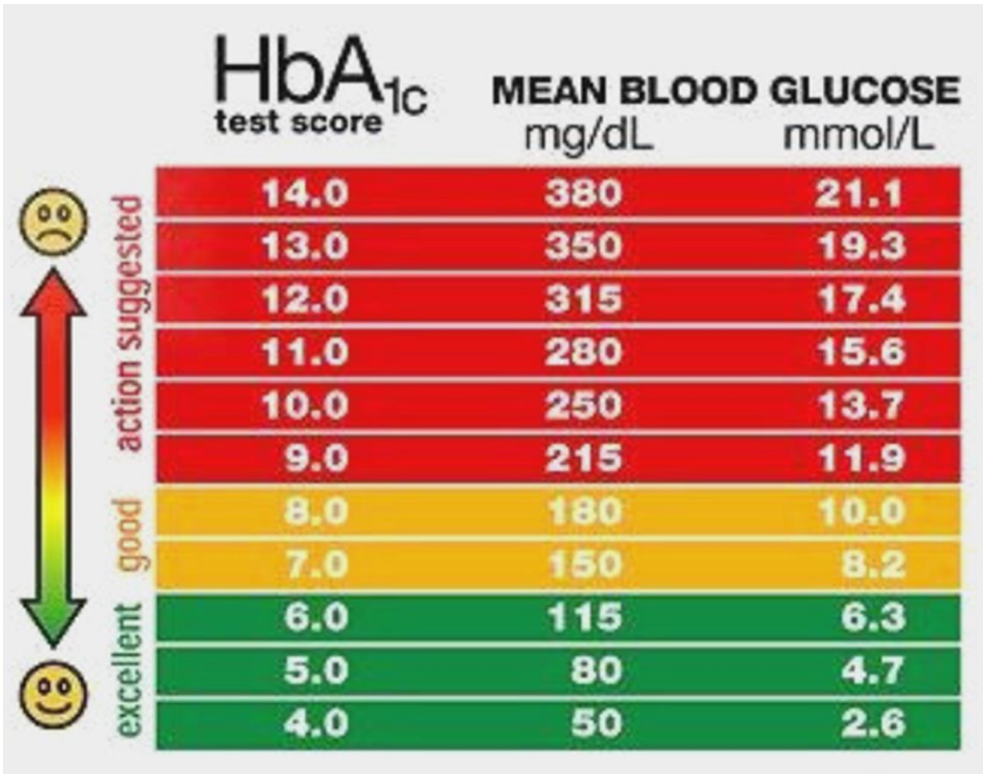
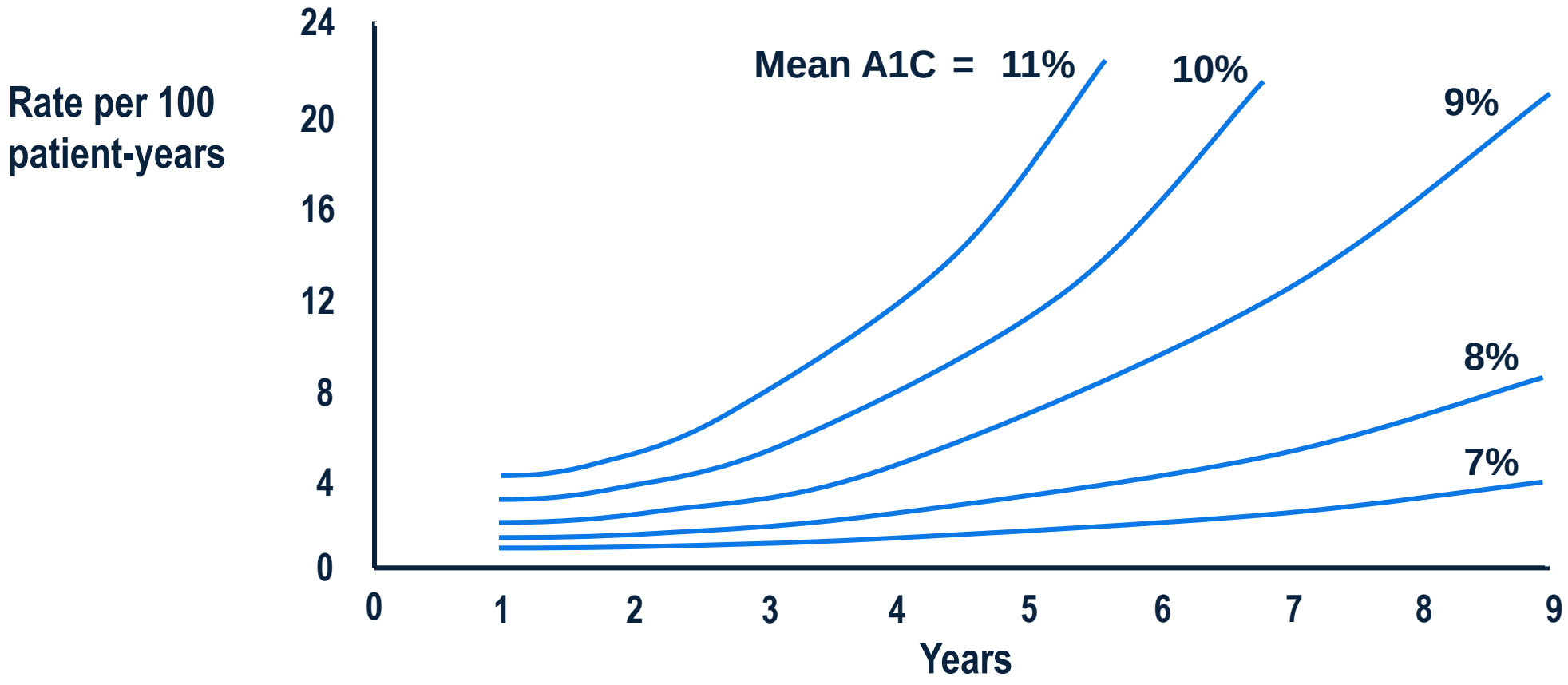


Risk of Retinopathy by Duration and A1C in Type 1 Diabetes

Results From the DCCT Conventional Therapy Group



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DCCT Research Group. *Diabetes.* 1995;44:968-983

CIDRE

BRIEF REPORT

Gain in Patients' Knowledge of Diabetes Management Targets Is Associated With Better Glycemic Control

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group" if their pretest score was >40%. We defined knowledge gainers as achievers of a posttest score of ≥80 and 100% for the low and high baseline knowledge

ABC's of Diabetes		TARGETS	My Values	Date Due
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	HDL (high density lipoprotein) Healthy cholesterol. *Helpful to prevent buildup of bad cholesterol.*	**Male: Greater than 40**		
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Other	**Eye Exam** *To check if diabetes caused any damage to your eyes*	**Every Year** (County has capacity for every 2 years)	Last Exam Date:	
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	Albuminuria - *small proteins in Urine, checks for kidney damage*	**<30**		Every Year

Table 1—*Comparison of baseline and follow-up characteristics in knowledge gainers and nongainers*

Characteristic	Knowledge gainers	Nongainers	*P*
Subjects attaining target A1C**			
Entire group	46	29	0.03
Low baseline knowledge group‖	45.5	20	0.02
High baseline knowledge group¶	46.9	37.5	0.20

Diabetes in CCH in 2019:

- Numberof diabetic patients: ~ 30,000 to 40,000 This number fluctuates in different years
- The number of Pre-Diabetes patients is twice bigger
- Many have their medical home in ACHN
- The rest are "orphan patients" using our ED and hospitals for medications and bad complications
- At any given moment, at least one third of admitted patient are diabetic
- Many patients are well controlled but about one third of our patients are poorly controlled (A1C>9%) with bad complications.

BMJ Open Diabetes Research & Care

Newly diagnosed type 2 diabetes in an ethnic minority population: clinical presentation and comparison to other populations

Michael Morkos,[1] Bettina Tahsin,[1] Louis Fogg,[2] Leon Fogelfeld[1]

Table 2 Diabetes complications at presentation in different studies

Study location and year of publication	Chicago 2018	South London 2015	Portland 2003	P Values
Studied years	2003–2013	2012–2013	1996–1998	
Number of patients	2280	1149	7844	
Insurance status	Underinsured	NHS	Managed care	<0.001*
Age criteria	49.0±11.3	55.7±10.9	55.4±9.4	<0.001*†
Average HbA_{1c}, %	10.0±2.9	6.6±0.3	8.2±2.2	<0.001*†
Average HbA_{1c}, mmol/mol	86±32	49±3	61±29	<0.001*†
Retinopathy	10.70%	7.86%	1.40%	<0.001*†
Nephropathy	22.20%	16.68%	5.70%	<0.001*†
Neuropathy	27.70%	6.65%	N/A	<0.001†
Microvascular complications composite	50.10%	N/A	5.90%	<0.001*†
CAD	7.60%	4.81%	11.2%	<0.001*†
CVA	1.90%	3.5%	3%	<0.001*†
PVD	4.10%	N/A	1.70%	<0.001*†
Macrovascular complications composite	13.40%	N/A	13.20%	NS

Significance of this study

What is already known about this subject?

- Patients with newly diagnosed type 2 diabetes usually harbor the disease for a few years before being diagnosed. These patients occasionally present with complications at the time of diagnosis.

What are the new findings?

- In underinsured ethnic minority patients with newly diagnosed type 2 diabetes, there is a much higher prevalence of complications when compared with insured patients with newly diagnosed type 2 diabetes.

How might these results change the focus of research or clinical practice?

- The changing landscape of health insurance in the USA may result in less coverage especially for minority populations resulting in higher risks of complications at the time of diagnosis of diabetes.

The Network Diabetes Program (NDP): Goal 1 Managing and educating complex patients with Diabetes

- 18 years in existence
- The NDP teams: (endocrinologists, APNs, PA, Diabetes Educators, Psychologists, Pharm.D).
- ADA recognized Diabetes Center on central campus and presence in many of the outpatient clinics (Oak Forest, Prieto, Robbins, Near South, Cicero, Logon, Vista).
- Special clinics:
    - Type 1 groups visits clinic
    - Insulin pump clinics
    - Multi-disciplinary clinic for patients “failing everything” (MD,CDE, Psych,SW)
    - Diabetes classes in English and Spanish
    - The Lifestyle Centers (TLC) in main campus and in Oak Forest use a hands-on approach
        - To show and teach patients to improve eating habits, grocery, cooking, eating out, exercise. Results in weight loss that enables more effective action of insulin and better diabetes control

The Network Diabetes Program (NDP): Goal 2 Empowerment of primary care providers

- **Improve diabetes management through the system**
  - through yearly updates
  - periodic publications
  - in-servicing rotations for MDs and Nurses
  - diabetes collaboratives
  - development of management guidelines on Cerner
  - for the inpatient diabetes EMR-based protocols is fully implemented. The program is supported and supervised electronically by APN-Endocrinologists teams(DQA).

Comprehensive Diabetes Care (CDC)

Assesses adults 18–75 years of age with diabetes (type 1 and type 2) who had each of the following:

- Hemoglobin A1c (HbA1c) testing.
- HbA1c poor control (>9.0%).
- HbA1c control (<8.0%).
- HbA1c control (<7.0%) for a selected population. *
- Eye exam (retinal) performed.
- Medical attention for nephropathy.
- BP control (<140/90 mm Hg).

*Additional exclusion criteria are required for this indicator, which will result in a different eligible population from all other indicators. This indicator is only reported for the commercial and Medicaid product lines.

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A1C < 8%

nsive Diabetes Care - NCQA 2019.pdf 5 / 8

HBA1C CONTROL (<8.0%)

	Commercial		Medicaid	Medicare	
Year	HMO	PPO	HMO	HMO	PPO
2017	57.6	47.9	49.4	64.4	67.2
2016	56.0	46.6	47.1	62.9	66.3

Previous Yr line HbA1c<8
55.1%
51.6%
60.4%
54.1%
55.4%
54.5%
54.2%
57.4%
48.9%
56.3%
53.4%
55.5%
49.9%
57.4%
54.6%

2018 CCH <8.0%: 54.6%

CCH HEDIS Goal A1C < 8% 75th Percentile: 55.47%

Total ACHN

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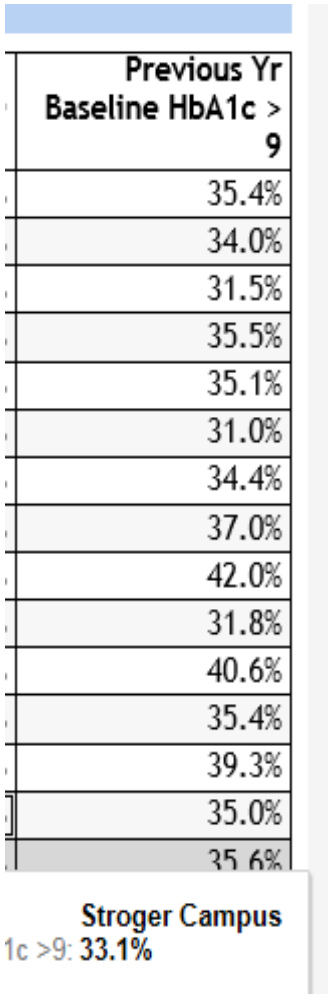
A1C > 9% Poor Control

POOR HBA1C CONTROL (>9.0%)*

	Commercial		Medicaid	Medicare	
Year	HMO	PPO	HMO	HMO	PPO
2017	31.7	41.2	40.5	25.4	22.3
2016	33.0	42.5	43.3	26.3	23.3



2018 CCH >9.0%*: 35.6%

*includes those without A1c readings in past 12 months.

Total ACHN

CCH Operational Goal: A1C >9 % Less than 30% with available A1C

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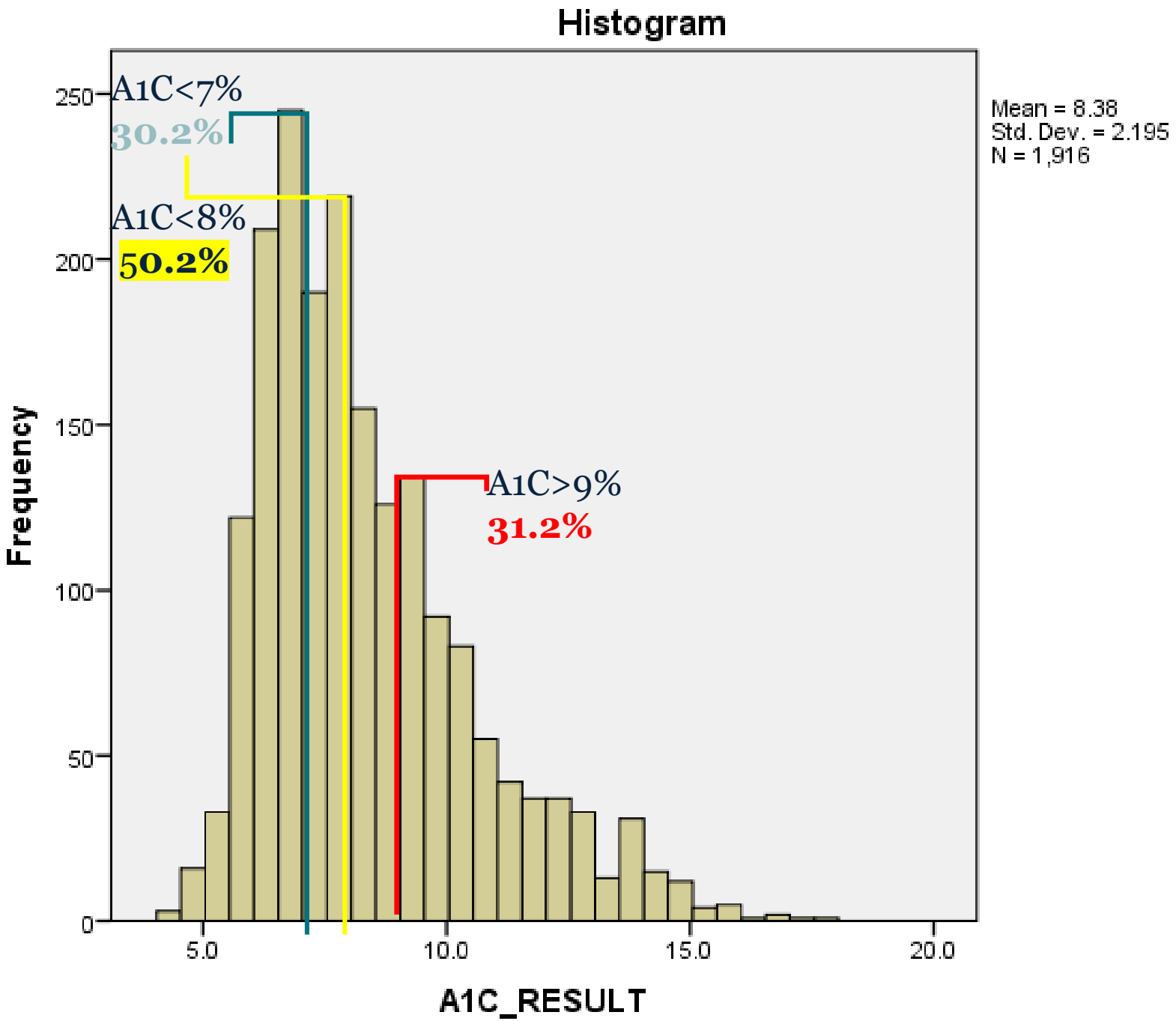
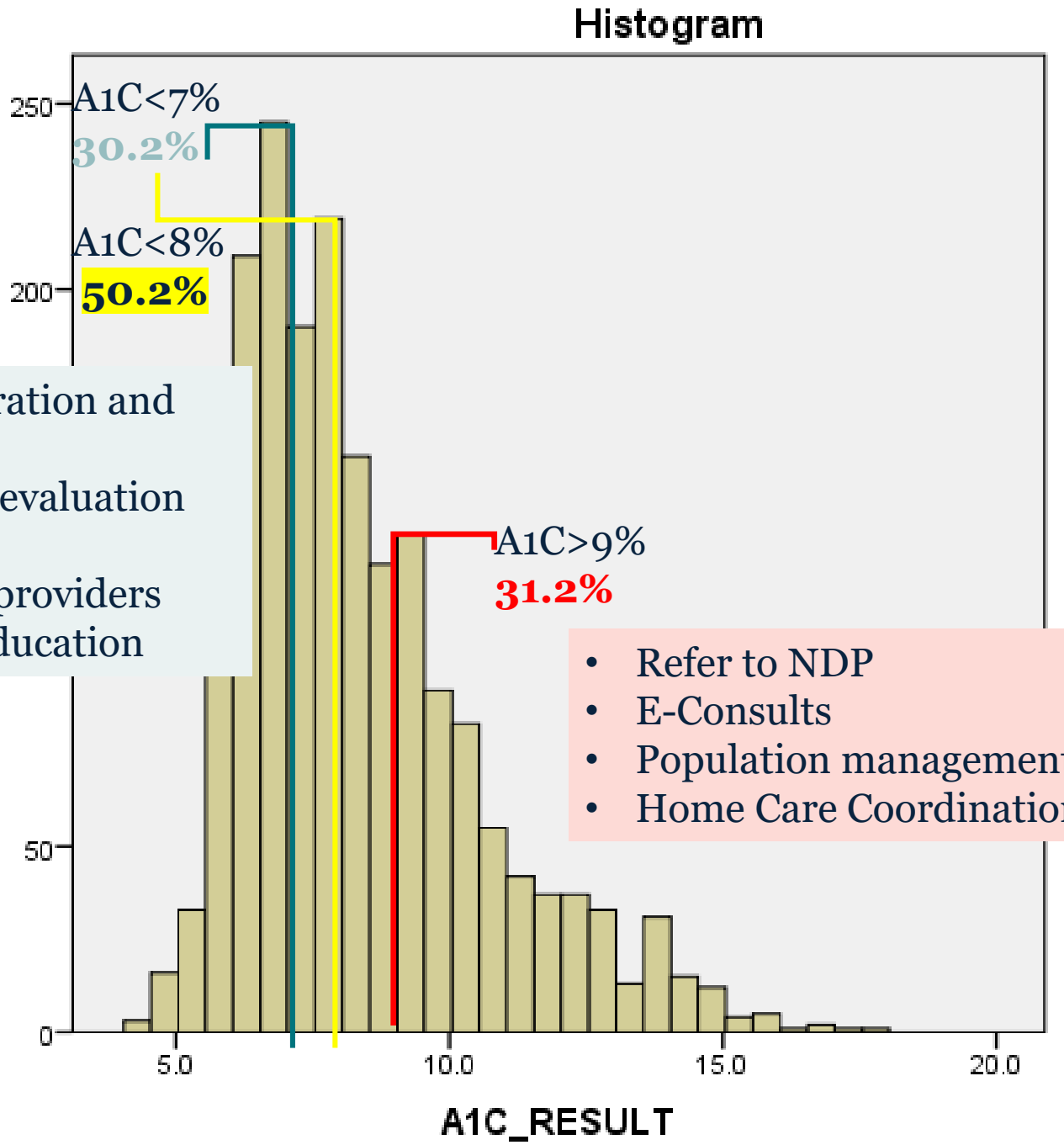

Histogram
A1C<7%
30.2%
A1C<8%
50.2%
A1C>9%
31.2%
Mean = 8.38
Std. Dev. = 2.195
N = 1,916
Frequency
250
200
150
100
50
0
5.0
10.0
15.0
20.0
A1C_RESULT

Future Goals



- Teams preparation and motivation.
- Performance evaluation and feedback
- Patients and providers continuous education

- Refer to NDP
- E-Consults
- Population management
- Home Care Coordination

Other HEDIS Measures: April 2019

Measure	ACHN Clinics	HEDIS 75 Percentile Goal
HbA1c (A1c) screening	87.6%	90.45%
Nephropathy monitoring (ACR)	86.9%	92.05%
Eye Exams (retina)	42.0%	64.23%

Thank you.

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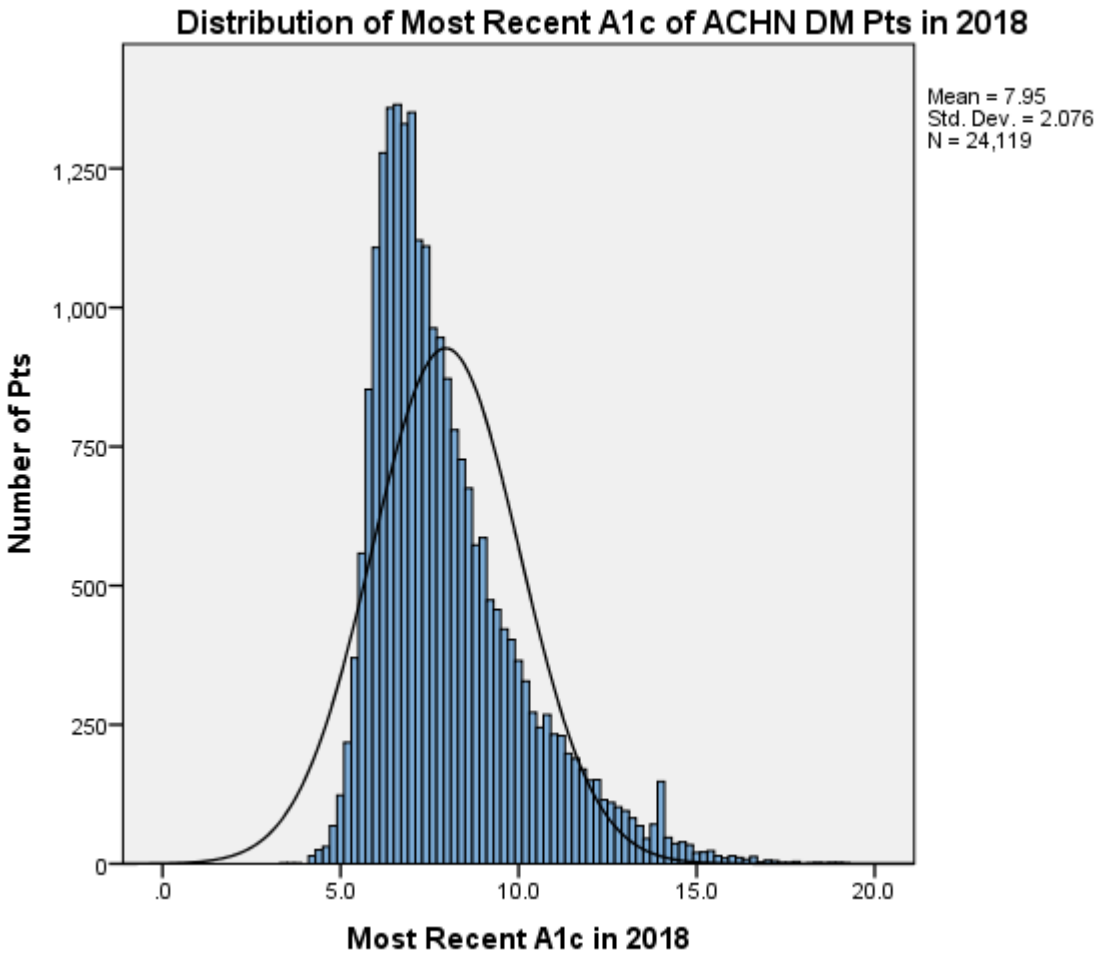
2018 Most Recent A1c



In 2018, 27,247 pts with DM visited ACHN clinics.
24,119 did have and 3,128 didn't have A1c readings within past 12 months.

Most Recent A1c of ACHN DM Pts 1/1/18-12/31/18 (n=24,119)	
Less than 7%	38.8%
Less than 8%	60.7%
Greater than 9% (without missing)	23.7%

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South Suburban Cluster Patients with Diabetes

September 2016-September 2018

Glycemic Control for Total South Suburban Patients with Diabetes

	Last A1c under 9.0%	Last A1c 9.0% and over
Total, n (%)	3583 (78.6)	977 (21.4)
Oak Forest	1848 (79.4)	479 (20.6)
Robbins	1196 (77.7)	344 (22.3)
Cottage Grove	539 (77.8)	154 (22.2)

For those with an A1c 9.0% and above

	Oak Forest (n=479)	Robbins (n=344)	Cottage Grove (n=154)
A1c, mean ± SD	10.8 ± 1.6	10.8 ± 1.5	10.8 ± 1.7
Weeks since last A1c, median (IQR)	15.0 (6.0, 42.0)	18.0 (6.0, 38.0)	11.0 (4.75, 33.3)
On Insulin, n (%)	291 (60.8)	195 (56.7)	98 (63.6)
Visited DM clinic, n (%) If visited, weeks since last DM clinic visit, median (IQR)	184 (38.3) 45.0 (13.8, 96.0)	173 (50.4) 51.0 (12.0, 85.5)	43 (27.9) 49.0 (25.0, 102.0)
Weeks since last PCP visit, median (IQR)	23.0 (9.0, 53.0)	20.0 (9.0, 45.8)	16.5 (6.0, 34.3)