ONLINE SUPPLEMENT

Supplement to: Shah et al. Poor glycemic control is associated with more rapid kidney function decline after the onset of diabetic kidney disease.

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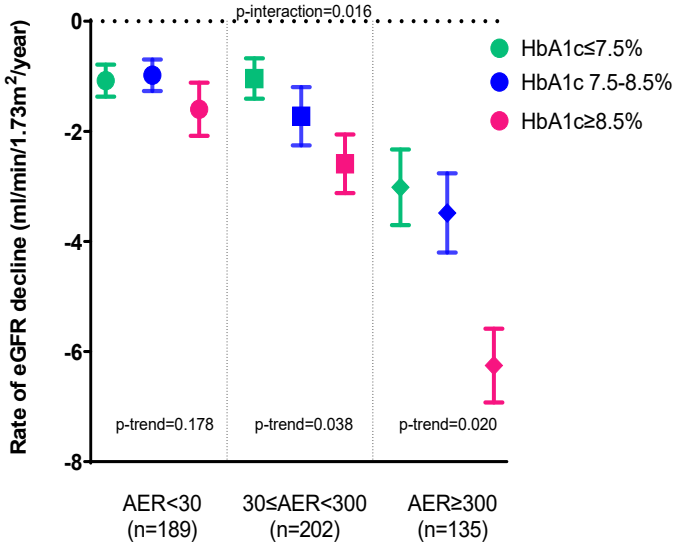
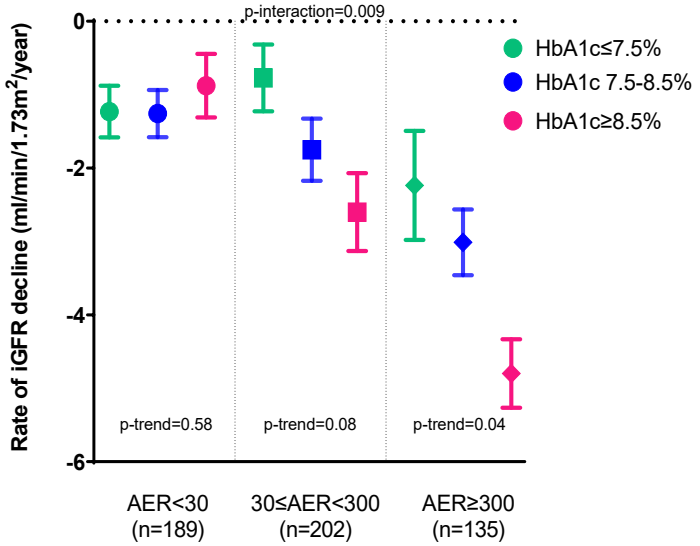
Supplementary Figure S1. Interaction of glycemic control and albuminuria on rate of GFR decline after DKD onset, multivariable adjusted analyses

Suppl. Fig.S1A. Rate of eGFR decline by AER and HbA1c strata in PERL



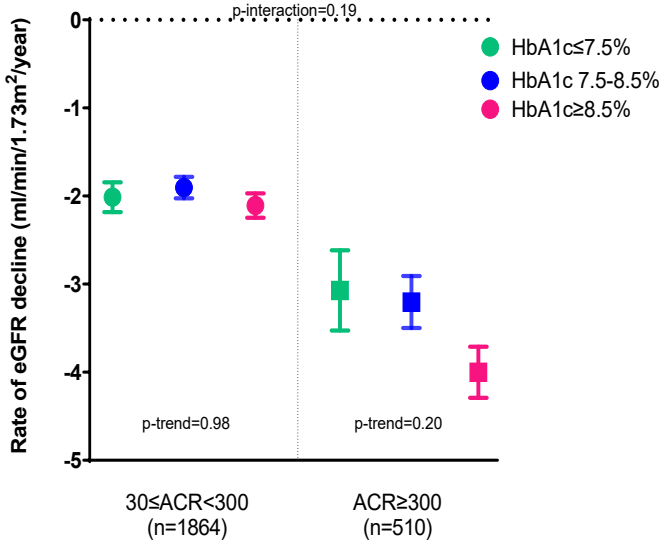
Data points represent beta estimates (±SE) from mixed-effects linear regression models

Suppl.Fig.S1B. Rate of iGFR decline by AER and HbA1c strata in PERL



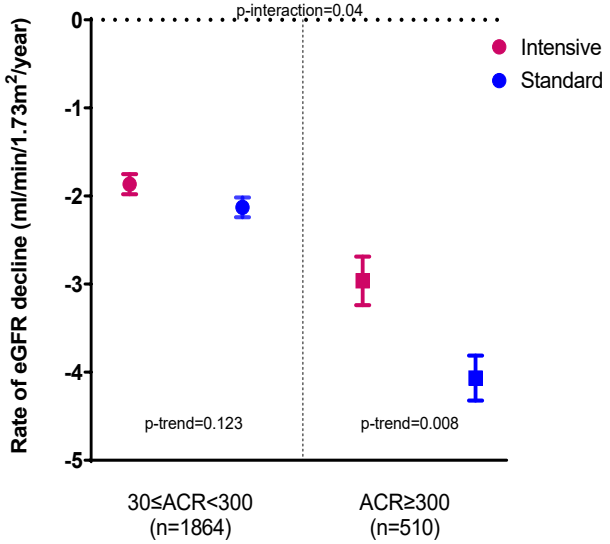
Data points represent beta estimates (±SE) from mixed-effects linear regression models

Suppl.Fig.S1C. Rate of eGFR decline by ACR and HbA1c strata in ACCORD



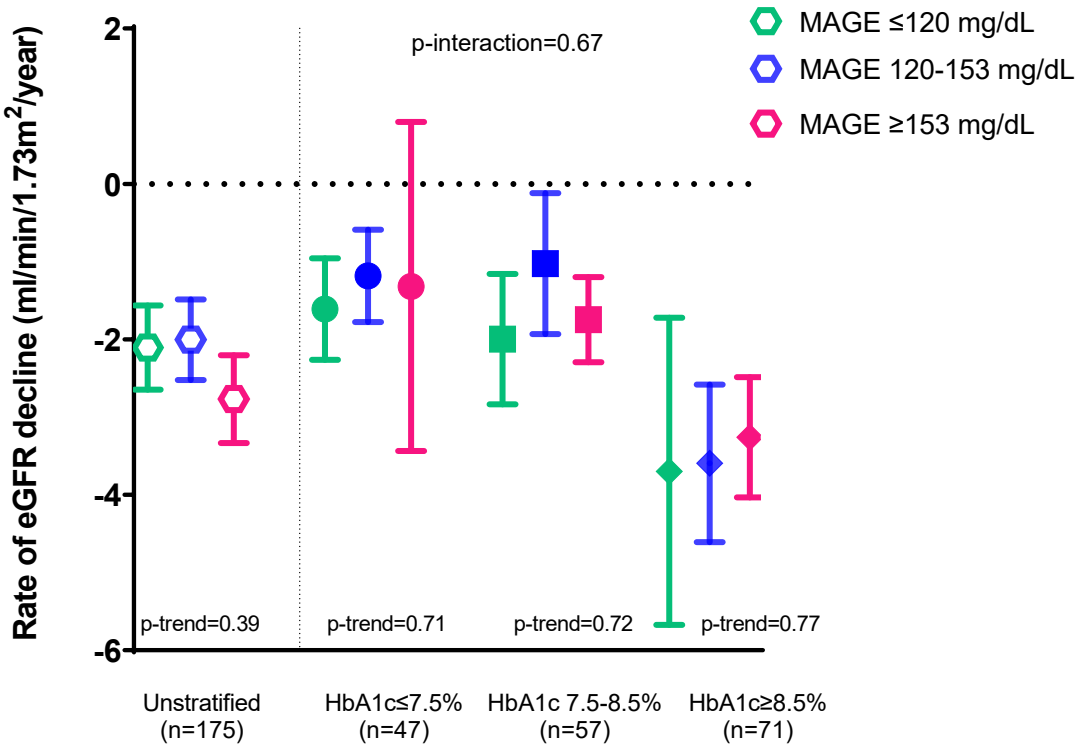
Data points represent beta estimates (±SE) from mixed-effects linear regression models

Suppl.Fig.S1D. Rate of eGFR decline by ACR and Glycemic control groups in ACCORD



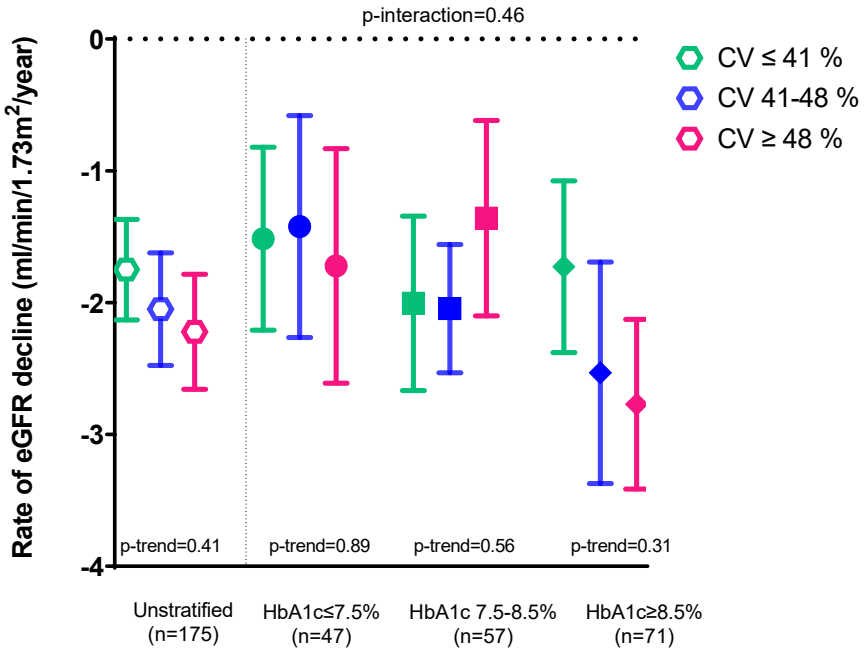
Data points represent beta estimates (±SE) from mixed-effects linear regression models

Suppl. Fig.S2. Rate of eGFR decline by MAGE and HbA1c strata in PERL



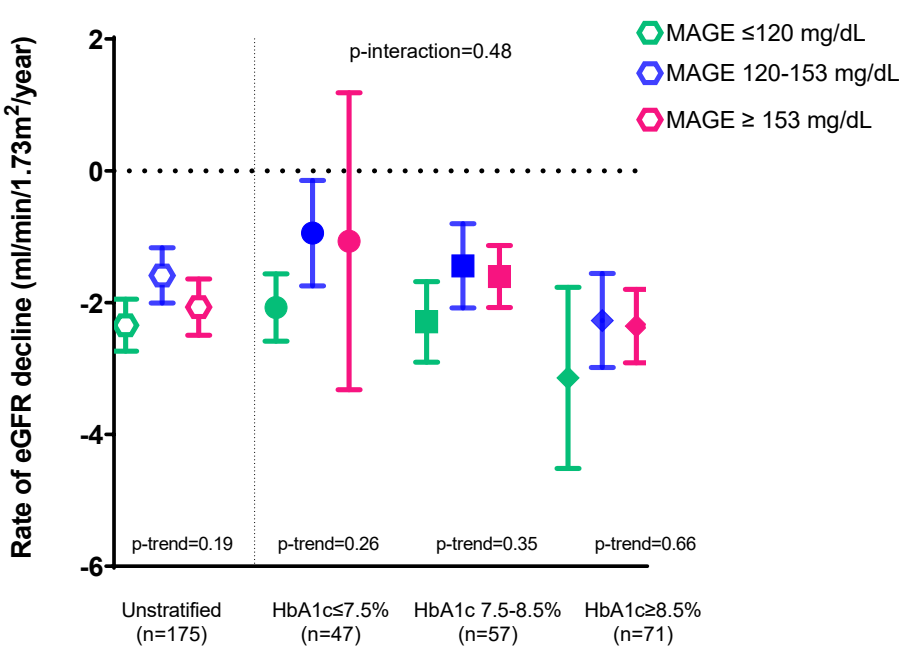
Data points represent beta estimates (±SE) from mixed-effects linear regression models

Suppl.Fig.S3A. Rate of iGFR decline by CV and HbA1c strata in PERL



Data points represent beta estimates (±SE) from mixed-effects linear regression models

Suppl.Fig.S3B. Rate of iGFR decline by MAGE and HbA1c strata in PERL



Data points represent beta estimates (±SE) from mixed-effects linear regression models

Supplementary Table S1. CGM parameter in HbA1c strata in PERL

	CV (%)		MAGE (mg/dL)	
	Mean	***Std Dev***	***Mean***	***Std Dev***
Unstratified [N=175]	45.60	8.68	144.67	43.20
HbA1c≤7.5 % [n=47]	43.55	7.32	125.98	33.95
HbA1c=7.5-8.5 % [n=57]	43.53	7.94	134.82	38.71
HbA1c≥8.5 % [n=71]	48.62	9.29	164.96	44.19

CV=Glucose Coefficient of variation; MAGE=Mean amplitude of glycemic excursions.

Supplementary Table 2. Relationships between baseline characteristics and CV and MAGE in PERL

Baseline Characteristic	CV (%)			MAGE (mg/dL)		
	Est	***SE***	***P***	***Est***	***SE***	***P***
Female vs. Male	1.013	1.391	0.468	-14.774	6.837	**0.032**
Age when diabetes was diagnosed	-0.056	0.059	0.347	-0.229	0.294	0.436
Age (years)	-0.120	0.060	**0.047**	-0.787	0.296	**0.009**
Diabetes Duration (years)	-0.059	0.054	0.277	-0.444	0.268	0.100
Race [¥]						
Black vs. White	2.688	1.821	0.142	21.860	8.965	**0.016**
Other vs. White	1.707	3.617	0.638	-3.937	17.797	0.825
Ethnicity						
Hispanic/Latino vs. Non-Hispanic/Non-Latino	0.738	3.364	0.827	2.335	16.756	0.889
HbA1c (%)	1.382	0.524	**0.009**	13.232	2.460	**<.0001**
HbA1c at Visit 1 (%) - tertiles						
HbA1c 7.5-8.5 % vs. HbA1c ≤7.5%	-0.027	1.648	0.987	8.846	7.858	0.262
HbA1c ≥8.5 % vs. HbA1c ≤7.5%	5.067	1.573	**0.002**	38.979	7.500	**<.0001**
BMI (kg/m^2)	-0.263	0.103	**0.012**	-0.927	0.519	0.076
Mean Diastolic Blood Pressure (mm Hg)	0.037	0.064	0.566	0.524	0.317	0.100
Mean Systolic Blood Pressure (mm Hg)	-0.044	0.043	0.307	0.033	0.212	0.876
History of hypertension	-1.240	2.350	0.599	18.675	11.614	0.110
History of smoking	-0.329	1.326	0.804	8.026	6.570	0.224
History of CVD	-4.038	1.552	**0.010**	-10.964	7.826	0.163
Uric Acid (mg/dl)	-0.389	0.465	0.404	0.367	2.318	0.875
AER (ug/min)	0.001	0.001	0.246	0.006	0.006	0.285
AER strata						
20-200 vs. <20	-0.711	1.466	0.628	9.386	7.244	0.197
≥200 vs. <20	3.252	1.740	0.063	23.890	8.598	**0.006**
eGFR (ml/min/1.73 m^2)	-0.039	0.034	0.257	0.056	0.171	0.742
iGFR (ml/min/1.73 m^2)	-0.050	0.038	0.193	-0.141	0.191	0.460
Treatment group						
Allopurinol vs. Placebo	-0.229	1.317	0.862	1.997	6.552	0.761
RASI use at baseline	-0.617	2.026	0.761	14.132	10.022	0.160
Taking HMG-CoA inhibitors	-1.326	1.412	0.349	0.572	7.077	0.936

CV=Glucose Coefficient of variation; MAGE=Mean amplitude of glycemic excursions.

Effect estimates (Est), standard errors (SE) and p-values (P) obtained from linear regression models with the CGM parameter (CV or MAGE) as the dependent variable and the clinical characteristic as the independent variable.

eGFR=estimated glomerular filtration rate from creatinine-based CKD-EPI 2009 equation; iGFR=iohexol GFR. AER=Urinary Albumin excretion rate.

ACR=Urinary albumin-creatinine ratio. CVD=Cardiovascular disease. BMI=Body mass index. RASI=Renin-angiotensin system inhibitors.

[¥]Race was self-reported; “Other” captures American Indian/ Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, More than one race, Unknown or not-reported;

Supplementary Table S3: Effects of CGM parameters on GFR slopes in PERL

	eGFR (ml/min/1.73m^2/year)						iGFR (ml/min/1.73m^2/year)					
	CV (%)			MAGE (mg/dL)			CV (%)			MAGE (mg/dL)		
Predictors (x time)	***Est***	***SE***	***P***	***Est***	***SE***	***P***	***Est***	***SE***	***P***	***Est***	***SE***	***P***
Model 1: CGM parameter + treatment group	-0.07	0.04	0.04	-0.003	0.01	0.67	-0.02	0.03	0.53	0.00	0.01	0.49
Model 2: Model 1 + baseline HbA1c	-0.06	0.04	0.12	0.01	0.01	0.46	-0.01	0.03	0.73	0.01	0.01	0.17
Model 3: Model 1 + v12to17_a1cmean	-0.07	0.04	0.05	0.001	0.01	0.88	-0.02	0.03	0.55	0.01	0.01	0.32
Model 4: Model 2 + v12to17_a1cmean	-0.06	0.04	0.13	-0.0001	0.01	0.99	-0.01	0.03	0.74	0.01	0.01	0.35

CV=Glucose Coefficient of variation; MAGE=Mean amplitude of glycemic excursions. V12to17_a1cmean= Mean HbA1c between visits 12 to 17 of the PERL trial, when CGM was captured.

eGFR=estimated GFR from creatinine-based CKD-EPI 2009 equation. iGFR=iohexol GFR

Effect estimates (Est), standard errors (SE) and p-values (P) obtained from mixed-effects linear regression models. GFR at each time-point, including baseline, was the dependent variable.

Fixed effects included the time from randomization to GFR assessment, the CGM parameter (CV or MAGE), covariate and the time x CGM/covariate interaction terms; study subjects were random effects.