

TRATAMIENTO DE LA DIABETES EN SITUACIONES ESPECIALES: INSUFICIENCIA RENAL AVANZADA

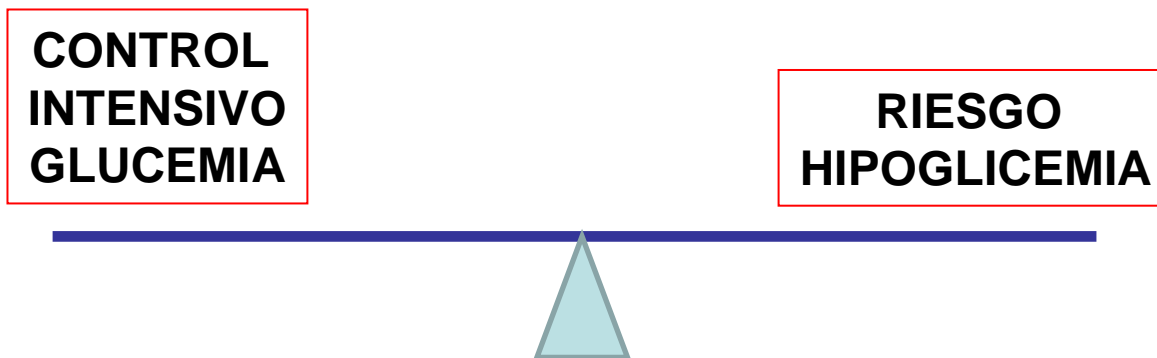
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FACTORES QUE AFECTAN EL CONTROL GLICEMICO EN LA E.R.C. AVANZADA

- ↓ Degradación Renal de Insulina.
- ↓ Gluconeogénesis renal
- Farmacocinética y Farmacodinámica de hipoglicemiantes:
 - Excreción Renal
 - Absorción, Distribución, Metabolismo
- Estado Nutricional/Estado Inflamatorio
- Resistencia a la Insulina/Defecto Secretor de Insulina

Perfil Riesgo Hipoglicemia:

- Enfermedad Renal Crónica Avanzada (IV-V)
- Edad avanzada
- Extensas Comorbilidades



FACTORES QUE AFECTAN EL CONTROL GLICEMICO EN LA E.R.C. AVANZADA: INTERPRETACION HbA1c

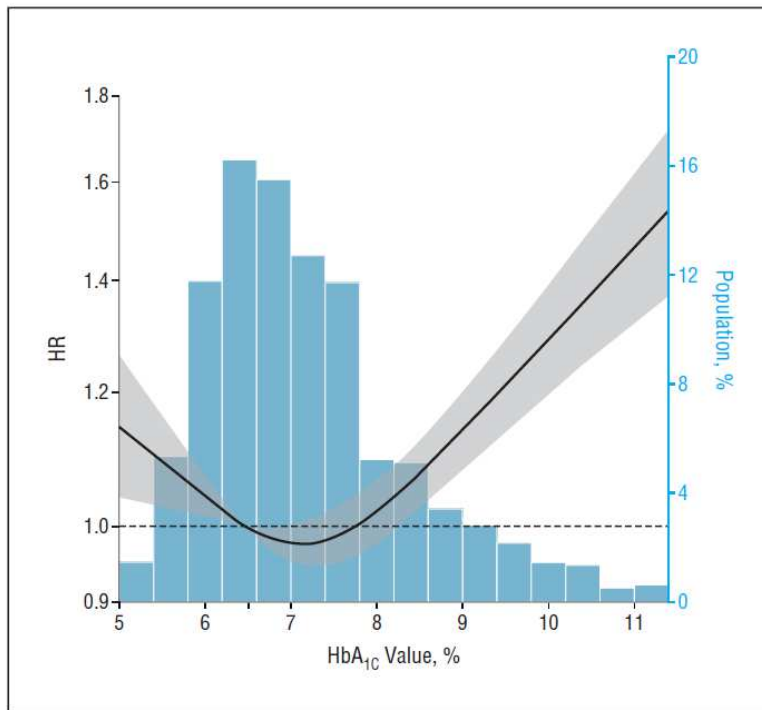
- ↓ Vm Hematíes (30-70%):
 - Menor tiempo de exposición de hematíes a la Glucosa
- Agentes Estimulantes de la Eritropoyesis:
 - ↑ N° de Hematíes inmaduros: ↓ Glicosilación
- Alternativas:
 - Albúmina Glicada
 - Fructosamina
 - 1,5-Anhydroglucitol

Association Between Glycemic Control and Adverse Outcomes in People With Diabetes Mellitus and Chronic Kidney Disease

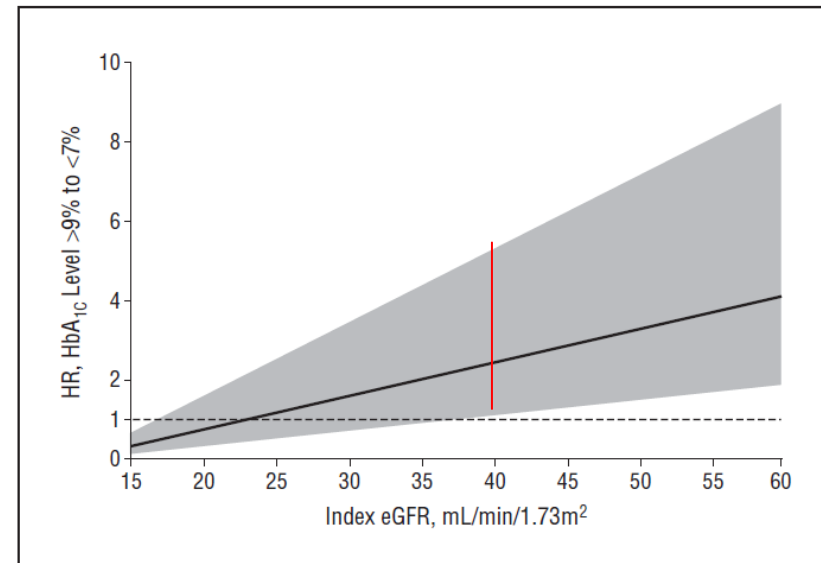
A Population-Based Cohort Study

Sabin Shurraw, MD; Brenda Hemmelgarn, MD, PhD; Meng Lin, MSc; Sumit R. Majumdar, MD, MSc; Scott Klarenbach, MD, MSc; Braden Manns, MD, MS; Aminu Bello, MD, PhD; Matthew James, MD, PhD; Tanvir Chowdhury Turin, MD, PhD; Marcello Tonelli, MD, SM; for the Alberta Kidney Disease Network
Arch Intern Med. 2011;171(21):1920-1927

Riesgo de Muerte (cualquier causa)



Riesgo de ERC Terminal

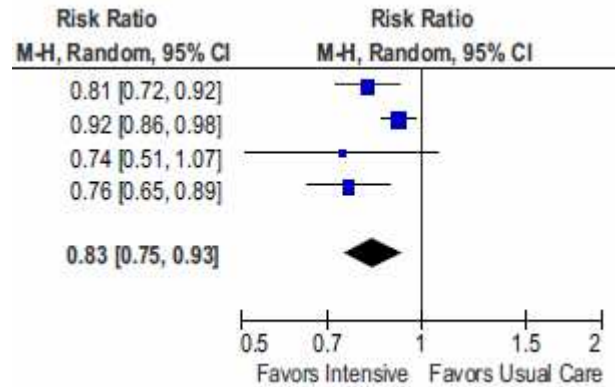


Management of Hyperglycemia, Dyslipidemia, and Albuminuria in Patients With Diabetes and CKD: A Systematic Review for a KDOQI Clinical Practice Guideline

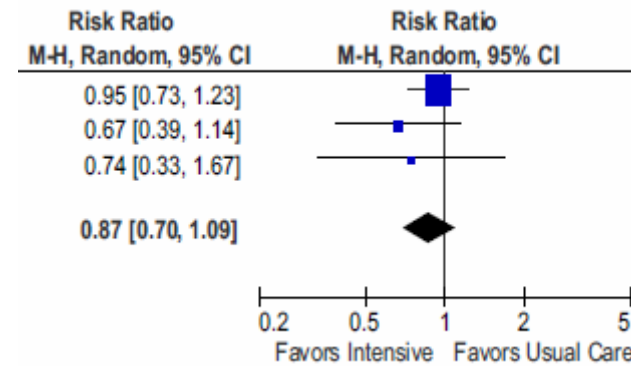
Yelena Slinin, MD, MS,^{1,2} Areef Ishani, MD, MS,^{1,2} Thomas Rector, PhD,¹
 Patrick Fitzgerald, MPH,¹ Roderick MacDonald, MS,¹ James Tacklind, BS,^{1,2}
 Indulis Rutks, BS,¹ and Timothy J. Wilt, MD, MPH^{1,2}

Am J Kidney Dis. 60(5):747-769.

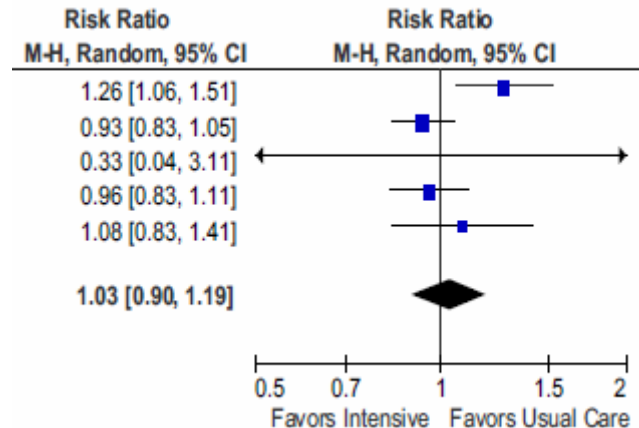
Macro y Microalbuminuria de Novo



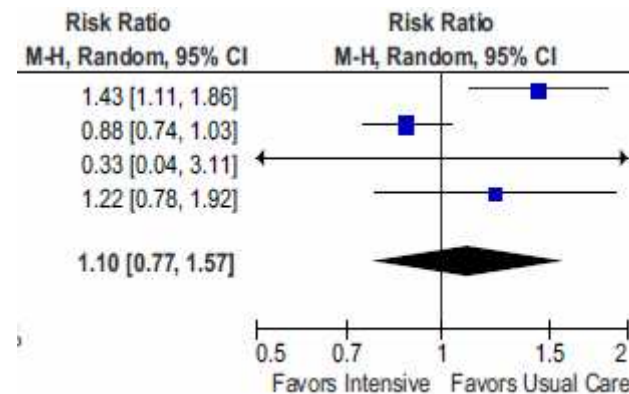
Enfermedad Renal Terminal



Mortalidad Cualquier Causa



Mortalidad Cardiovascular



HIPOGLICEMIAS INCIDENTES SEVERAS

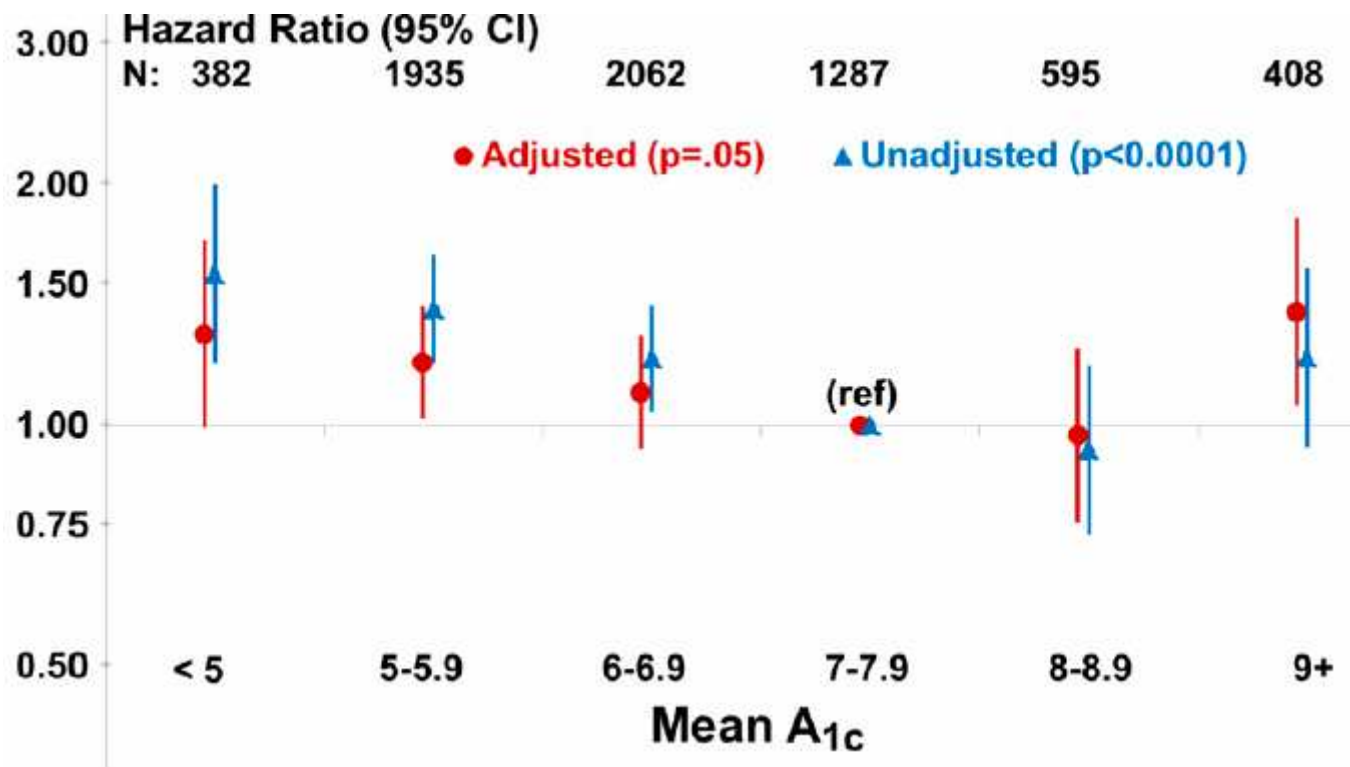
Hypoglycemia, severe*



Hemoglobin A_{1c} Levels and Mortality in the Diabetic Hemodialysis Population

Findings from the Dialysis Outcomes and Practice Patterns Study (DOPPS)

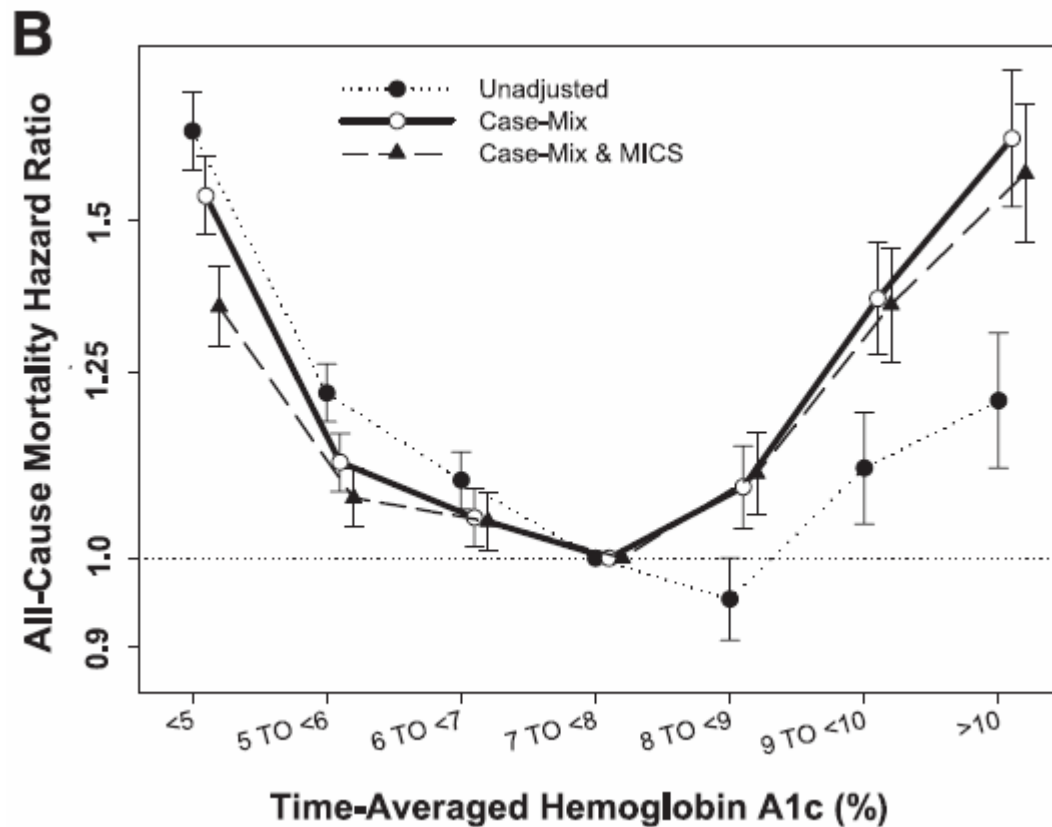
Diabetes Care 35:2527–2532, 2012

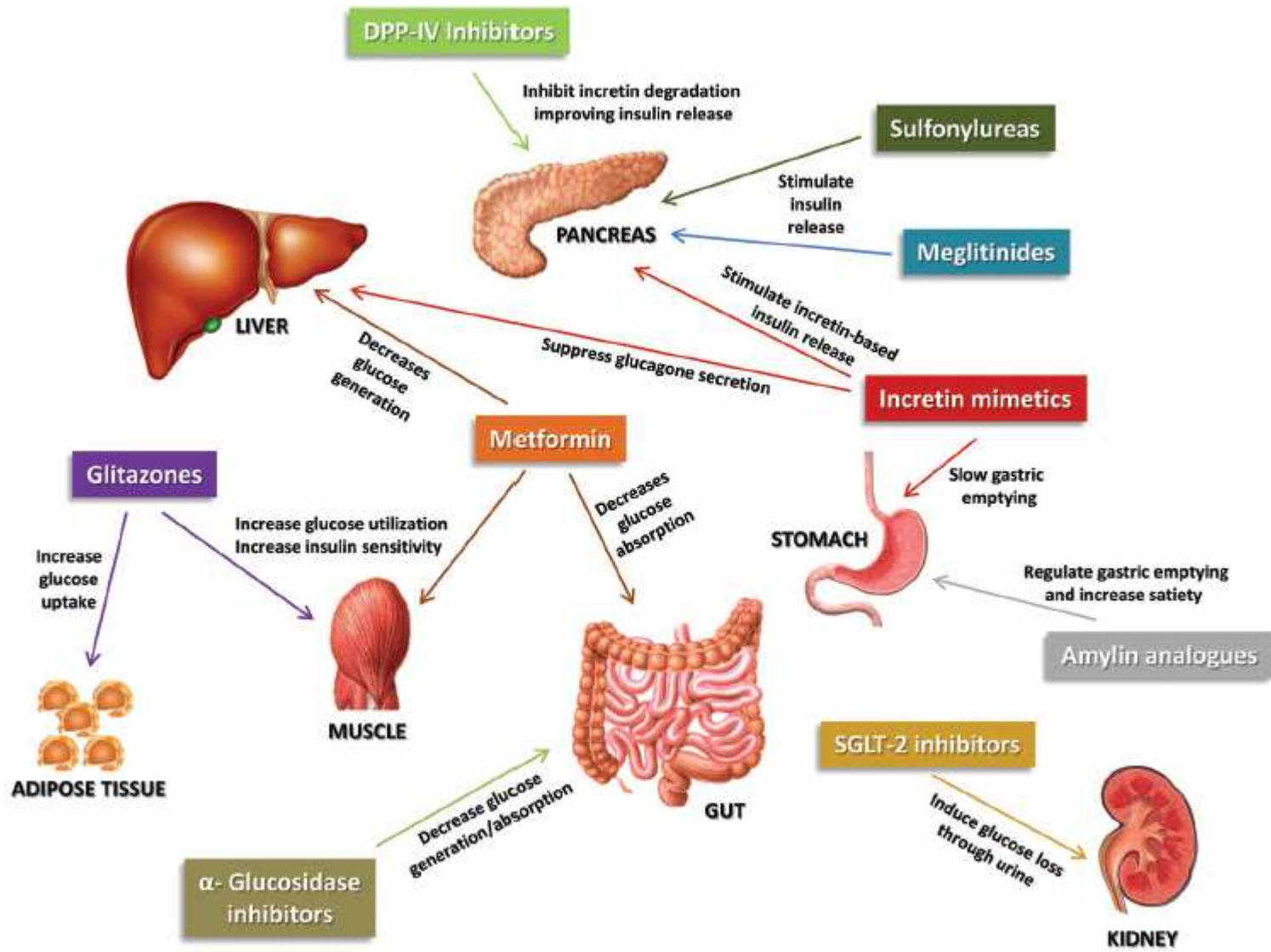


Glycemic Control and Cardiovascular Mortality in Hemodialysis Patients With Diabetes

A 6-Year Cohort Study

Joni Ricks,¹ Miklos Z. Molnar,^{1,2} Csaba P. Kovesdy,^{3,4} Anuja Shah,⁵ Allen R. Nissenson,^{6,7} Mark Williams,⁸ and Kamyar Kalantar-Zadeh^{1,5,7,9}

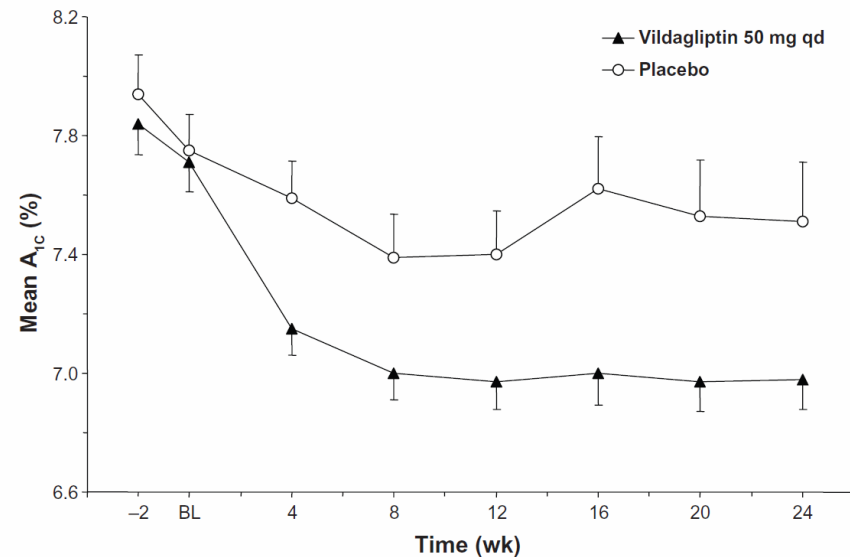




Efficacy of vildagliptin in combination with insulin in patients with type 2 diabetes and severe renal impairment

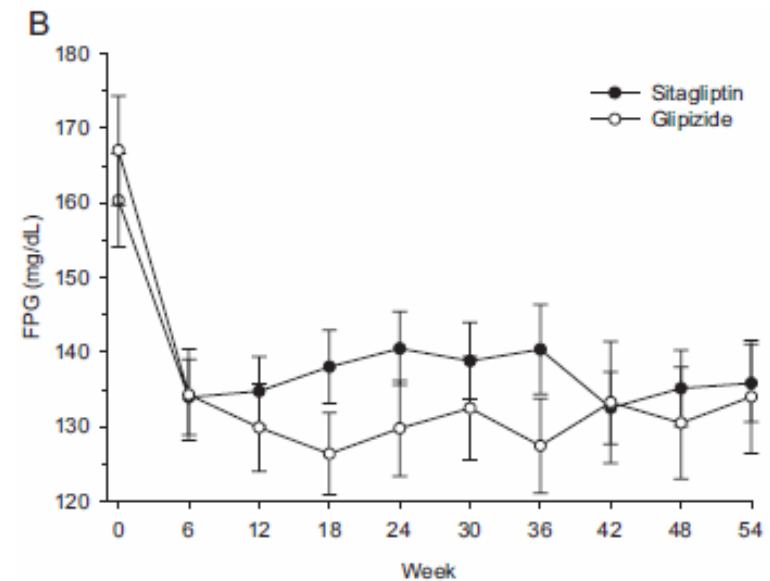
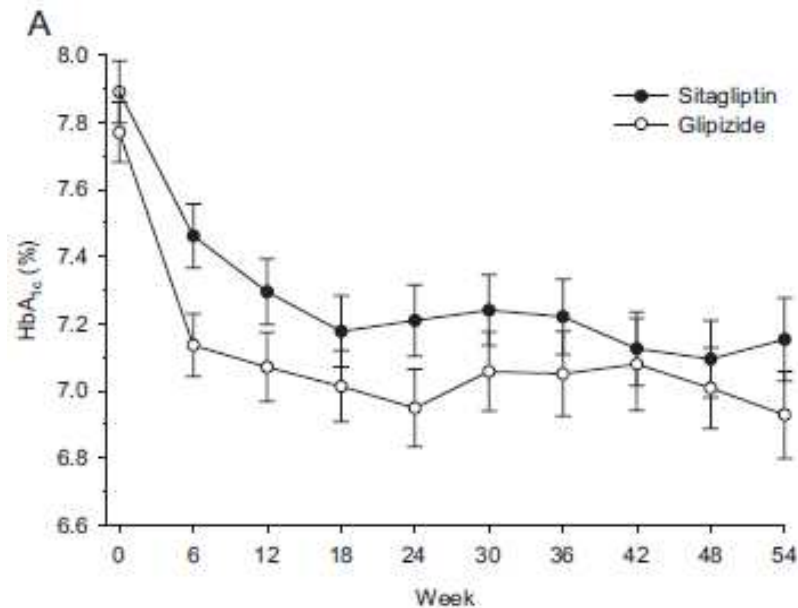
Vascular Health and Risk Management 2013;9 21–28

eGFR < 30 ml/mn



Efficacy and Safety of Sitagliptin in Patients With Type 2 Diabetes and ESRD Receiving Dialysis: A 54-Week Randomized Trial

Juan C. Arjona Ferreira, MD,¹ Dalila Corry, MD,² Carl E. Mogensen, MD,³ Lance Sloan, MD,⁴ Lei Xu, PhD,¹ Gregory T. Golm, PhD,¹ Edward J. Gonzalez, BS,¹ Michael J. Davies, PhD,¹ Keith D. Kaufman, MD,¹ and Barry J. Goldstein, MD, PhD¹
Am J Kidney Dis. 2013;61(4):579-587



CONCLUSIONES

- En la Enfermedad Renal Crónica Avanzada no diálisis (ERC IV-V) y comorbilidades debe evitarse una $HbA1c < 7\%$
- En los Enfermos en Hemodiálisis la $HbA1c$ diana debe situarse entre 7-8%
- Los fármacos no insulínicos deben utilizarse teniendo en cuenta el filtrado y sus modificaciones en el tiempo.

INSULINOTERAPIA ERC AVANZADA

- Requerimientos Basales: Insulina Acción Prolongada (Glargina) o Intermedia (NPH)
- Requerimientos Nutricionales: Acción rápida
- Hemodiálisis: Menor requerimiento el día de la sesión HD
- DP: Utilización Icodextrina

“Reevaluación y ajustes frecuentes”

Noninsulin glucose-lowering agents for the treatment of patients on dialysis

Colleen Flynn and George L. Bakris

Table 1 | Noninsulin glucose-lowering agents that can be used safely in patients with CKD on dialysis

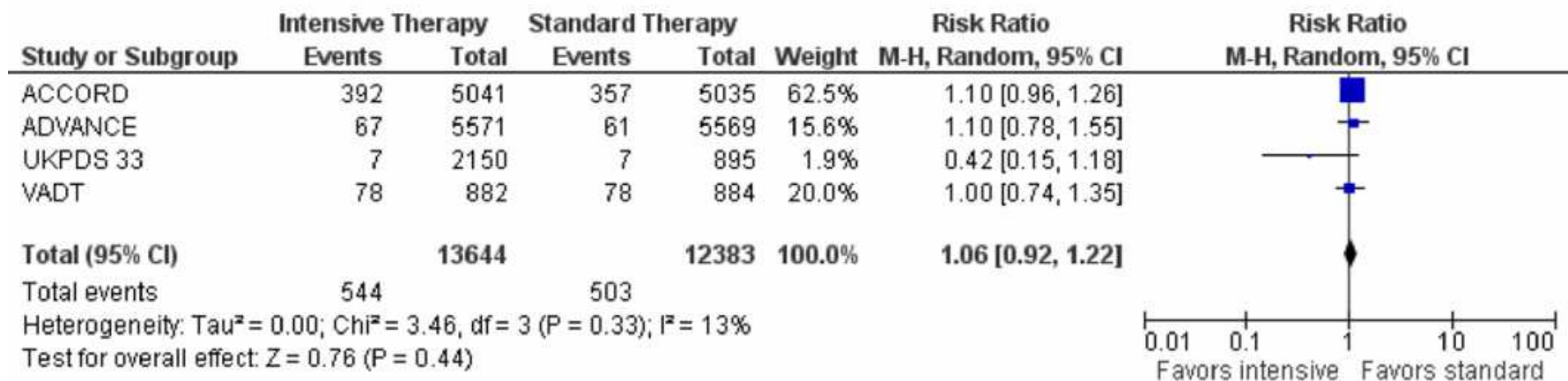
Drug class	Mild CKD (stage 2 and early stage 3, eGFR 50–80 ml/min/1.73 m ²)	Moderate CKD (stage 3a and 3b, eGFR 30–50 ml/min/1.73 m ²)	ESRD (stages 4–5d, eGFR <30 ml/min/1.73 m ²)
Sulfonylureas*			
Gliclazide	Starting dose 40mg daily, increase dose until adequate control is achieved	50mg daily	25 mg daily
Glipizide	Preferred agent because no active metabolites are excreted by the kidney No dose adjustment necessary	No dose adjustment necessary	No dose adjustment necessary
DPP4 inhibitors			
Sitagliptin	No dose adjustment necessary	50mg daily	25 mg daily
Linagliptin [‡]	No dose adjustment necessary	No dose adjustment necessary	No dose adjustment necessary
Thiazolidinediones			
Pioglitazone [§]	No dose adjustment necessary	No dose adjustment necessary	15–30 mg daily has been used safely ⁴⁵
Meglitinides			
Repaglinide	No dose adjustment necessary [¶]	No data	No clear guidelines exist
GLP-1 analogues			
Liraglutide	No dose adjustment necessary	No data	No clear guidelines exist

*Monitoring for hypoglycaemia is required. [‡]This drug has not yet been studied in patients on dialysis; however, the drug is metabolized by the liver and there is no evidence that a safety issue might exist in patients with renal impairment. [§]Should not be used in patients with heart failure. [¶]In patients with stage 1–4 CKD; dose reduction might be required in patients with stage 5 CKD. ⁴⁵ Abbreviations: CKD, chronic kidney disease; DPP4, dipeptidyl peptidase 4; eGFR, estimated glomerular filtration rate; ESRD, end-stage renal disease; GLP-1, glucagon-like peptide 1.

Role of Intensive Glucose Control in Development of Renal Endpoints in Type 2 Diabetes: Systematic Review and Meta-analysis

Steven G. Coca, DO, MS^{1,2}, Faramarz Ismail-Beigi, MD, PhD³, Nowreen Haq, MD, MPH⁴, Harlan M. Krumholz, MD, SM^{1,5,6,7}, and Chirag R. Parikh, MD, PhD^{1,2}
Arch Intern Med. 2012 May 28; 172(10): 761–769.

A. Doubling of Serum Creatinine



ENSAYOS CLINICOS RECIENTES SOBRE EL CONTROL INTENSIVO Vs CONVENCIONAL DE LA DM TIPO 2 (cualquier función renal)

Table 3. Target and Achieved HbA_{1c} Levels in the Intensively and Conventionally Treated Groups of Three Recent Clinical Trials that Examined Different Levels of Glycemic Control in Patients with Type 2 Diabetes

Study	Intensive Treatment		Conventional Treatment	
	Target	Achieved	Target	Achieved
ADVANCE ¹⁹	<6.5%	6.5%	Unspecified	7.3%
ACCORD ²⁹	<6.0%	6.4%	7-9%	7.5%
VADT ²¹	<6.0%	6.9%	<9%	8.4%

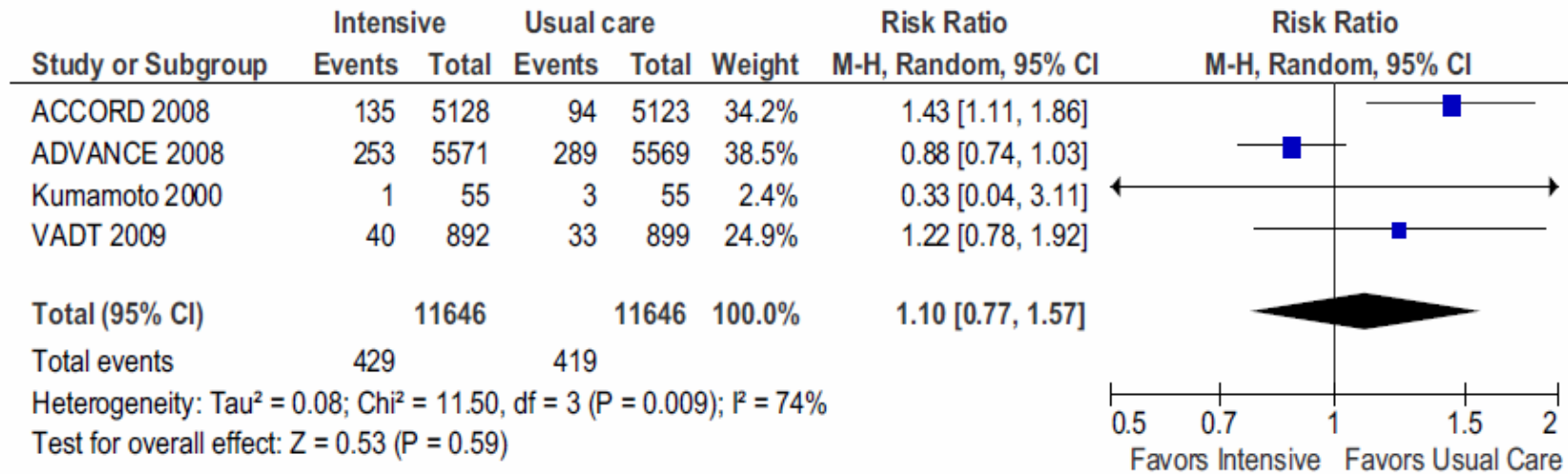
Abbreviations: ACCORD, Action to Control Cardiovascular Risk in Diabetes; ADVANCE, Action in Diabetes and Vascular Disease: Preterax and Diamicron Modified Release Controlled Evaluation; VADT, Veterans Affairs Diabetes Trial.

Management of Hyperglycemia, Dyslipidemia, and Albuminuria in Patients With Diabetes and CKD: A Systematic Review for a KDOQI Clinical Practice Guideline

Yelena Slinin, MD, MS,^{1,2} Areef Ishani, MD, MS,^{1,2} Thomas Rector, PhD,¹ Patrick Fitzgerald, MPH,¹ Roderick MacDonald, MS,¹ James Tacklind, BS,^{1,2} Indulis Rutks, BS,¹ and Timothy J. Wilt, MD, MPH^{1,2}

Am J Kidney Dis. 60(5):747-769.

Cardiovascular mortality





National Kidney
Foundation®

KDOQI

KDOQI CLINICAL PRACTICE GUIDELINE FOR DIABETES AND CKD: 2012 UPDATE

- 2.1: We recommend a target hemoglobin A_{1c} (HbA_{1c}) of ~7.0% to prevent or delay progression of the microvascular complications of diabetes, including DKD. (1A)**
- 2.2: We recommend not treating to an HbA_{1c} target of <7.0% in patients at risk of hypoglycemia. (1B)**
- 2.3: We suggest that target HbA_{1c} be extended above 7.0% in individuals with co-morbidities or limited life expectancy and risk of hypoglycemia. (2C)**

