

hemorrhage. Although the underuse of anticoagulation therapy in patients with AF had previously been demonstrated,<sup>5</sup> the data from this study indicate, first, that in Spain, there is a great deal of room for improvement in antithrombotic therapy to prevent stroke risk in patients with AF and, second, that this shortfall is independent of the risk score employed.

All in all, in Spain, therapy for the prevention of thromboembolic complications is not properly applied, and its prescription appears to be independent of the risk stratification score employed. These data lend further support for the need to raise awareness among primary care physicians in Spain of the importance of familiarity with and more extensive use of risk stratification scores and of the correct application of thromboembolic therapy.

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## Glycemic Control Using Individualized Targets Among Diabetic Patients in Spain: A Population-Based Study



### Control de la glucemia de pacientes diabéticos en España mediante objetivos individualizados: un estudio de base poblacional

#### To the Editor,

Diabetes remains a leading cause of cardiovascular disease and other disabling and life-threatening complications. Effective management strategies are therefore of obvious importance. Recent clinical trials in older patients have failed to show a benefit from intensive glucose-lowering therapy on cardiovascular disease outcomes.<sup>1,2</sup> The American Diabetes Association and the European Association for the Study of Diabetes have emphasized the need for individualized glycemic targets according to age, coexisting conditions, and time since diagnosis.<sup>3</sup> The recommendations range from a stringent glycosylated hemoglobin (HbA<sub>1c</sub>) target (<6%–6.5%) in selected patients (without overt cardiovascular disease, shorter duration of diabetes, and long life expectancy) to less stringent HbA<sub>1c</sub> goals (<7.5%–8%) in patients with a history of severe hypoglycemia, limited life-expectancy, and severe complications.<sup>3</sup>

This article is the first to report the achievement of individualized glycemic targets among diabetic patients in Spain. Additionally, we compare our results with recently reported results in the United States diabetic population.<sup>4</sup>

Spanish data were taken from the ENRICA study, whose methods have been reported elsewhere.<sup>5,6</sup> In brief, this was a

cross-sectional study conducted from 2008 through 2010 in 12 948 individuals representative of the population in Spain aged ≥18 years. To determine the achievement of glycemic targets, we limited the analyses to the 661 patients who were aware of their condition. Diabetes was defined as a 12-h fasting serum glucose ≥126 mg/dL or HbA<sub>1c</sub> ≥6.5%, or treatment with oral antidiabetic drugs or insulin.<sup>5</sup> We could not distinguish between type-1 and type-2 diabetes, but it is likely that, as in many other developed countries, most patients had type-2 diabetes. Diagnosed diabetic patients in the United States were 1444 adults, who reported having received a diagnosis of diabetes from a health professional, from the NHANES study conducted between 2007 and 2010.<sup>4</sup> In both studies, similar data collection methods and similar sampling techniques were used to ensure the representativeness of the population samples. Diabetes complications were defined as self-reported diagnosed cardiovascular disease, or retinopathy, or measured albumin:creatinine ratio ≥30 mg/dL. Spanish data did not include retinopathy, because this information was not available in the ENRICA study. All of the United States data were taken from Ali et al<sup>4</sup>, as they appear in the publication. The chi-square test was used to compare the percentage of the individualized glycemic-target between the 2 population samples. Statistical significance was set at 2-sided  $P < .05$ . The analyses were performed with EPIDAT v.3.1 statistical software.

Spanish diabetic patients were more frequently men (58.3%) with a low educational level (57.7% had not attended high school); almost half of them had been diagnosed with diabetes less than 5 years previously, and only a few (20%) received insulin therapy; while these patient had a low frequency of kidney damage (23.6%) and a reasonably good glycemic control (70.9%), only one-fifth and

**Table 1**  
Characteristics of Diagnosed Diabetic Patients in Spain and the United States

	ENRICA 2008-2010, % (n=661)	NHANES 2007-2010, % (n=1444)
<b>Age, years</b>		
18-44	7.2	13.0
45-64	37.0	46.2
≥65	55.7	40.8
Mean	64.4	59.8
<b>Women</b>	41.7	50.8
<b>Educational level</b>		
< High school	57.7	31.4
High school	24.9	23.4
University	17.4	45.3
<b>Time since diabetes diagnosis</b>		
0 to <5 years	47.1	34.1
5 to <15 years	35.8	39.4
≥15 years	17.1	26.5
<b>Treatment</b>		
Insulin	20.1	30.3
Any diabetes medication	84.8	89.0
<b>Lifestyle factors</b>		
Tobacco use	15.4	22.3
Body mass index, kg/m <sup>2</sup>		
<25	13.2	13.0
25-29.9	40.1	24.0
≥30	46.7	63.0
<b>Biological factors</b>		
HbA <sub>1c</sub>		
<7%	70.9	52.2
<8%	87.8	79.1
>9%	5.6	12.6
<b>Blood pressure &lt;130/80 mmHg</b>	21.9	51.3
<b>LDL-C&lt;100 mg/dL</b>	35.6	56.8
<b>ACR&lt;30 mg/g</b>	76.4	69.8

ACR, urinary albumin:creatinine ratio; HbA<sub>1c</sub>, glycosylated hemoglobin; LDL-C, low-density lipoprotein cholesterol.

\* All of United States data are from Ali et al.<sup>4</sup>

one-third achieved blood pressure and low density lipoprotein-cholesterol goals, respectively (Table 1). When individualizing glycemic targets (Table 2), only individuals over 45 years showed control rates similar to that for standard criteria (HbA<sub>1c</sub><7%). In younger individuals, the results were not consistent due to low sample sizes.

Compared with United States diabetic patients (Table 1), Spanish patients were older (mean age 64.4 vs 59.8 years), were less often smokers (15.4% vs 22.3%), were less frequently obese (46.7% vs 63.0%), and had a shorter duration of diabetes (17.1% vs 26.5% ≥15 years); these findings could be due to the traditionally lower prevalence of obesity in Spain. Although the percentages of Spanish diabetics who achieved targets for blood pressure and low density lipoprotein-cholesterol were smaller than the United States rates (21.9% vs 51.3%; and 35.6% vs 56.8%, respectively), our population showed a lower frequency of kidney damage (23.6% vs 30.2%) and better glycemic control (70.9% vs 52.2%). Both findings may be explained by the above-mentioned shorter time since diagnosis, which could also account for the lower use of insulin among Spanish diabetic patients (20.1% vs 30.3%). However, when we compared individualized glycemic targets (Table 2), the better control in Spain was only evident (*P*<.05) in patients over 45 years without diabetic complications. Further investigations are warranted to determine whether this finding was due to a shorter evolution of diabetes or simply to the small sample sizes.

In conclusion, glycemic control among Spanish diabetic patients is reasonably good when individualized targets are used. However, this should not lead to complacency since these results could be explained by a shorter duration of diabetes in our diabetic population.

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**Table 2**  
Achievement of Individualized Glycemic Targets Among Diagnosed Diabetic Patients in Spain and the United States

Age and complications status	Target HbA <sub>1c</sub> level, %	ENRICA 2008-2010 target met, % (95%CI)	NHANES 2007-2010 <sup>a</sup> target met, % (95%CI)
18-44 years without complications	≤6.5	39.5 (24.0-55.0) <sup>b</sup>	55.4 (40.9-68.9)
18-44 years with complications	≤7	50.0 (10.0-90.0) <sup>b</sup>	28.2 (15.7-45.3)
45-64 years without complications	≤7	77.6 (71.7-83.5)	59.6 (51.6-67.1) <sup>c</sup>
45-64 years with complications	≤8	80.0 (68.9-91.1)	70.9 (64.8-76.3)
≥65 years without complications	≤7	78.5 (73.5-83.5)	65.2 (57.6-72.0) <sup>c</sup>
	≤7.5	87.5 (83.5-91.5)	81.1 (76.3-85.1)
≥65 years with complications	≤8	84.3 (77.2-91.4)	84.3 (79.9-87.8)
All adults ≥18 years	≤7	74.1 (70.7-77.5)	66.6 (62.2-70.6) <sup>c</sup>
	≤7.5	82.0 (79.0-85.0)	69.1 (64.9-73.0) <sup>c</sup>

95%CI, 95% confidence interval; HbA<sub>1c</sub>, glycosylated hemoglobin.

Complications were defined as self-reported diagnosed cardiovascular disease (heart attack, coronary heart disease, or stroke) or retinopathy or measured albumin:creatinine ratio ≥30 mg/g (Spanish data did not include retinopathy, because such information was not available).

<sup>a</sup> All of the United States data are from Ali et al.<sup>4</sup>

<sup>b</sup> This estimate may be unreliable due to the sample size (n<50).

<sup>c</sup> ENRICA 2008-2010 vs NHANES 2007-2010, *P*-value <.05.

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## Wolff-Parkinson-White Syndrome: Could a Normal PJ Interval Exclude Bundle Branch Block?



### Síndrome de Wolff-Parkinson-White: ¿un intervalo PJ normal podría descartar un bloqueo de rama del haz?

#### To the Editor,

Patients with a Wolff-Parkinson-White (WPW) pattern in the electrocardiogram (ECG) show a short PR interval (<120 ms), a wide QRS complex (>100 ms) with a delta wave, and a normal PJ interval. Broad QRS complexes may simulate bundle branch block (BBB). Furthermore, premature depolarization of ventricular myocardium through an accessory pathway tends to conceal any electrocardiographic manifestation of a BBB. WPW syndrome cannot prolong the PJ interval; therefore, PJ interval prolongation plays an important role in the differential diagnosis between BBB and WPW syndrome. However, could a normal PJ interval rule out BBB in the presence of WPW syndrome?

A 28-year-old man with a 3-year history of frequent attacks of tachycardia was admitted to our hospital because of palpitations. The ECG revealed a sinus rhythm of approximately 60 beats/min, a PR interval of 0.10 s, and a QRS duration of 0.14 s (with a delta wave), with rS pattern in lead V<sub>1</sub>, suggestive of WPW syndrome type B (Fig. A). An ECG brought by the patient showed tachycardia of approximately 160 beats/min with broad QRS complexes of right bundle branch block (RBBB) morphology (Fig. B). The admission ECG demonstrated RBBB during the intermittency of preexcitation (Fig. C). Electrophysiological study and radiofrequency ablation (the accessory pathway [AP] located in tricuspid annulus 9:00) were performed. Postablation ECG showed RBBB with a PJ interval of 0.28 s (Fig. D).

The PJ interval represents the time elapsed from the beginning of the P wave to the end of the QRS complex (J for junction between QRS and T wave) in the ECG. In addition, the PJ interval is equal to the sum of the PR interval (the time interval from the onset of atrial depolarization to the onset of ventricular depolarization) and the QRS interval (the total ventricular activation time), with a normal value of less than 0.27 s. A prolonged PJ interval is mainly observed in patients with first-degree atrioventricular block (AVB) or BBB. The diagnosis of first degree AVB is usually made on the basis of a

prolonged PR interval.<sup>1</sup> Likewise, BBB is often diagnosed on the basis of the QRS morphology and duration. Consequently, the PJ interval is usually ignored in routine ECG analysis. However, the AVB or BBB is usually obscured by the antegrade conduction of AP in preexcitation syndrome. Consequently, a diagnosis of WPW coexisting with AVB or BBB cannot be made on the basis of the relationship between P waves and QRS complexes and the morphology of the QRS complex.<sup>2,3</sup> During this time, analysis of the PJ interval is more important. In WPW syndromes, the PJ interval is normal. Accordingly, PJ interval prolongation plays an important role in the differential diagnosis between BBB and WPW syndrome. Furthermore, recent studies have confirmed that PJ interval prolongation was a diagnostic clue of WPW syndrome coexisting with AVB or BBB<sup>4–6</sup>: a) the PJ interval is prolonged during sinus rhythm, and the QRS complex is BBB pattern in the presence of atrioventricular reentrant tachycardia (can rule out third-degree AVB), suggestive of WPW syndrome coexisting with BBB; b) the PJ interval is prolonged during sinus rhythm, and the narrow QRS complex (rule out BBB) is observed in the presence of reentrant tachycardia indicating WPW syndrome accompanied by first-degree AVB in the normal His-Purkinje pathway; and c) the PJ interval is prolonged during sinus rhythm, and the QRS complex is consistently full preexcitation (same as conducted sinus beat) during atrial fibrillation (reentrant tachycardia cannot be induced), suggesting WPW syndrome coexisting with third-degree AVB in the normal His-Purkinje pathway. In our case, the association of WPW syndrome type B and RBBB (with a PJ interval of 0.28 s after ablation) was proven by ambulatory ECG, electrophysiological study, and radiofrequency ablation. However, the PJ interval was only 0.24 s and the RBBB pattern was obscured in the presence of ipsilateral ventricular preexcitation. The mechanism is as follows: when the AP is on the same side as the ventricle with the blocked bundle branch, the ipsilateral ventricle is prematurely depolarized by antegrade conduction of AP, the ECG features of BBB are masked, and the total ventricular depolarization time via normal His-Purkinje pathway is reduced, which is responsible for the normal PJ interval. The findings of this article indicate that clinicians should measure the PJ interval before ablation of AP in patients with WPW syndrome. A prolonged PJ interval is often observed in the following conditions: a) when the AP is on the contralateral side to the ventricle with the blocked bundle branch; b) in those patients with AVB. When the PJ interval