SUPPLEMENTARY METHODS

We calculated the adjusted incidence of discharge rates after vascular dementia (VaD) for men and women with and without type 2 diabetes (T2DM) per 100,000 inhabitants by age groups and overall. To do so we used the Spanish populations for each year studied according to the Spanish National Statistics Institute as reported on December 31 of each year. [1]. To stratify the population according to diabetes status we used data obtained from National Health Surveys (NHS) conducted in 2003/4, 2006/7, 2009/10 and 2011/12 and data from Di@bet.es Study.[2, 3] All these surveys allow us to have an accurate prevalence estimation of diabetes by sex and age groups.[4] Then we multiply the prevalence of diabetes for each sex- age group and year by the Spanish population that same year to obtain the people with and without diabetes.

From 2001 till 2012, Spanish NHS has been done every two or three years. We estimated a rate fitting model using linear regression with prevalences of diabetes from years 2003/4, 2006/7, 2009/10 and 2011/12 when NHS was available. Then we used this model to impute prevalences and to estimate the population suffering diabetes by sex and age groups for those years when NHS was not conducted, those are years 2005, 2008 and 2013.

Once this was done we used the direct standardization method to calculate the adjusted incidences for each diabetes status stratified by age groups and sex using the Spanish population for year 2013 as standard.

We only use standardization methods for incidences. The proportions of clinical conditions and diagnosis and therapeutic procedures are not adjusted. The values shown in the results are the observed prevalence, calculated by dividing the number of subject with these conditions or procedures by the number of observed vascular dementia admission for the year studied.

Clinical characteristics included information on overall comorbidity at the time of diagnosis, which was assessed by calculating the Charlson Comorbidity Index (CCI). [5] The index applies to 17 disease categories, the scores of which are added to obtain an overall score for each patient. We divided patients into three categories: low index, which corresponds to patients with no previously recorded disease or with one disease category; medium index, patients with two categories; and high index, patients with three or more disease categories.

To calculate the CCI we used 15 disease categories, excluding diabetes and dementia as described by Thomsen et al. [6]

Statistical analysis

A descriptive statistical analysis was performed for all continuous variables and categories by stratifying discharges for vascular dementia according to diabetes status and sex. Variables are shown as proportions, means with standard deviations or medians with interquartile ranges (LOHS). Bivariate analyses of variables according to year was using $\chi 2$ linear trend analysis (proportions), ANOVA (means) and Kruskall-Wallis test (medians), as appropriate. To assess differences between those men and women with and without T2DM, for each year and for the total sample, the statistical tests conducted for continuous variables were the T test for normal distributions and the Mann–Whitney test for non-normal distributions and categorical variables were compared using the linear Chi-square test.

In order to test the linear time trend in the incidence due to VaD, we fitted separate Poisson regression models for men and women with and without T2DM, using year of discharge, age, CCI, hypertension, atrial fibrillation, infectious complications, malnutrition, agitation, diagnostic and therapeutic procedures and readmission as independent variables. So that estimates correspond to Incidence Rate Ratio (IRR) with

their 95% confidence intervals. The inclusion of year of discharge allow us to estimate the average yearly rate of change.

For IHM, logistic regression analyses were performed for men and women with mortality as a binary outcome for those with and without diabetes and for the entire population to assess the influence of diabetes on IHM. The independent variables included in the model were those that showed a significant association in the bivariate analysis or considered relevant in the medical literature.

Statistical analyses were performed using Stata version 10.1 (Stata, College Station, Texas, USA). Statistical significance was set at $p<0.05$ (2-tailed).

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