Evaluating Observed vs. Expected Mortality Rates in US Dialysis Patients Amid Secular Declines

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Introduction

The revision to the label for erythropoiesis stimulating agents (ESA) in 2011 was aimed at reducing high Hb levels with the added benefit of reducing the potential risks of mortality and cardiovascular events.

ESA use, dose and Hb levels have fallen substantially in US dialysis patients since the 2011 ESA label and reimbursement policy changes. Effects on mortality and CV events in dialysis patients, however, have not been carefully evaluated.

To perform this evaluation, one must take into account the secular change in these outcomes and to facilitate such an analysis, the expected rate of these major events must be predicted and compared against observed rates.

We modeled secular trends of mortality 2005-2009 in US dialysis patients and calculated the expected mortality rate of 2010, then compared the 2010 observed with expected.

Results

In total, 1,014,970 patients were included; most patients contributed data to multiple years. The number of patients increased over years from 252,276 in 2005 to 278,713 in 2010; and compared against observed rates.

The mean age of patients was nearly constant, but the percentage of men, black and other racial groups as diabetic patients increased over time to 2010.

The overall mortality rate of these major events must be predicted and to account the secular trends of mortality rates from 2005 to 2010 were calculated and the expected with observed.

Discussion

Using the 2005-2009 data, we were able to accurately predict the 2010 mortality rate in dialysis patients by taking into account the temporal trend.

Our study sets the groundwork for future work where we will examine the deviations of observed 2011/2012 mortality and other rates, from expected rates based on complete 2005-2010 data.

Limitations

Only the quadratic and piece-wise linear functions were evaluated in this analysis. Other functional forms may need to be explored.

The observed/expected comparison was done for only one year (2010); additional years comparing observed with expected may be important.

References