
 COMMENTS AND
 RESPONSES

**Comment on:
 Holstein et al.
 Substantial Increase
 in Incidence of Severe
 Hypoglycemia
 Between 1997-
 2000 and 2007-
 2010: A German
 Longitudinal
 Population-Based
 Study. *Diabetes Care*
 2012;35:972-975**

Why Holstein et al. (1) report in their current study considerably lower incidences of severe hypoglycemic events in patients with type 1 and type 2 diabetes is not clear. The authors purport that their study is population based. There is, however, substantial doubt that ascertainment of diabetic patients with severe hypoglycemia was really complete in the region under investigation with 200,000 inhabitants in North-Rhine Westphalia, Germany. In the article, incidence of severe hypoglycemia in patients with type 1 diabetes was 11.5 in the first period and 23.4 episodes/100,000 person-years in the second period. In patients with type 2 diabetes 18.5 and 32.6 episodes/100,000 person-years were observed in both periods. Assuming for type 1 diabetes a population prevalence in Germany of 0.3%, which is a rather conservative estimate, and for type 2 diabetes a prevalence of 9% in this region of Germany (2), incidence of severe hypoglycemic episodes is calculated for type 1 diabetes to be 3.8 in the first period and 7.8 episodes/100 patient-years in the later period and for type 2 diabetes 0.2 and 0.4 episodes/100 patient-years in both periods. These figures are considerably lower than those

reported in population-based studies. In the DARTS (Diabetes Audit and Research in Tayside Scotland)/MEMO (Medicines Monitoring Unit) study from Scotland (3), 11.5 episodes/100 patient-years were observed in type 1 diabetes and 1.7 episodes/100 patient-years in type 2 diabetes (11.8 in insulin-treated type 2 diabetes and 0.9 in sulfonylurea-treated type 2 diabetes). In the Fremantle Diabetes Study from Australia (4), incidence of severe hypoglycemia in type 2 diabetes was 1.7 episodes/100 patient-years. Sämman et al. (5) found in a study with type 1 diabetic patients from Germany that incidence of severe hypoglycemia was 37 events/100 patient-years before a structured teaching course and 14 events/100 patient-years after the course. Why do Holstein et al. (1) in their current study report considerably lower incidences of severe hypoglycemic events in patients with type 1 and type 2 diabetes? The most plausible explanation for this discrepancy is an incomplete ascertainment of severe hypoglycemic events in the current study of this population. Indeed, ambulant treatments of hypoglycemia by emergency services or relatives were not considered but may represent one of the main causes of underestimated incidences.

Against this background it remains unclear whether the observed trend in hypoglycemia rates during the last years may also have been biased. Assuming a constant incidence of hypoglycemia over time, ambulant treatments may have been performed less often or less sufficiently during the second observation, which consecutively would have given rise to only a relative rather than an absolute increase of hospitalizations.

The validity of the observed trend can also be questioned by the single center experience. The region under investigation belongs to North-Rhine Westphalia, which is one of the German Federal States with the highest population and hospital densities. Unfortunately, no data are provided from surrounding hospitals to exclude changing referral behaviors for emergency patients from communities located in the boundary areas of the study region.

WOLFGANG KERNER, MD¹
 HENRY VÖLZKE, MD²

From the ¹Department of Diabetes and Metabolism, Klinikum Karlsburg, Karlsburg, Germany; and the ²Institute for Community Medicine, Ernst Moritz Arndt-University Greifswald, Greifswald, Germany.

Corresponding author: Wolfgang Kerner, kerner@drguth.de.

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