Rationale
In a previous study about severe hypoglycemic coma events (SH), among diabetes mellitus patients we saw regional variation in SH occurrence. The study design in this study is the same as in the previous study where the effect of detemir, glargine and NPH insulins on the prevalence of severe hypoglycemia was compared. SH is associated with significant adverse clinical outcomes and increased healthcare costs.1,2

Objectives
The purpose of the study was to compare the incidence of SH between 31 hospital districts in Finland.

Methods
Design: This study among type 1 (T1) and 2 (T2) diabetic patients was based on nationwide health care registers with patient level linkage (Figure 1). Population: The population comprised of 5,271 (17.6%) patients with T1 and 24,602 (82.4%) with T2. The study cohort contained insulin-naïve diabetic patients who had filled at least one prescription of long acting insulin (detemir, glargine or NPH) during follow-up in 2006-2009. (Figure 2). Each person is allocated to that hospital district where he/she was living at the time of entering in to the study cohort.

Outcome: SH was defined as a hospitalization or a secondary health care visit due to hypoglycemic coma (ICD-10: E00.00 and E10.00).

Statistical analysis: Stratified incidence rates with 95% confidence intervals (CIs) were calculated. Hazard ratios (HRs) were estimated by Cox’s proportional hazards model, adjusted for age, gender, prior and current use of other insulins and sulphonylureas, switch between insulins, history of SH, years from diagnosis, and calendar year at start of follow-up. Analyses were performed for the first, recurrent and all SHs. Here we present the results for first SH only.

Results
Altogether 3.1% patients experienced at least one SH during the follow-up. In different hospital districts the rate of first SHs for T1 varied from 5.6 (Southwest Finland) to 47.8 (Southwest Lapland). In Northern Karelia and Aland there were no recorded events. (Figure 3). For T2 the rate varied from 4.8 (North Karelia) to 50.3 (Southwest Lapland) (Figure 4). Compared to the capital area (Helsinki and Uusimaa), the risks of first SHs varied differently for T1 and T2, but were commonly higher in Southwest Lapland (T1: HR 3.46, CI 1.41-8.46; T2 : HR 1.60, CI 1.13-2.29) and lower in North Karelia (T1: no events; T2 : HR 0.275, CI 0.10-4.65).

Conclusions
We found differences between regions in the incidence of SH in both DM types. The incidence rate was high in Southwest Lapland for both T1 and T2. In Northern Karelia there were no recorded events for T1 patients, and for T2 patients the incidence rate was low compared to other Finland.

The results (not reported) for the recurrence of SH and all SH events followed similar patterns as for the first SH event.

Differences between regions may be due to differences in SH treatment practices and available resources.

Figure 1: Nationwide registers in Finland utilized as data sources.

Figure 2: Diabetes patients cohort.

Figure 3: First SH event in T1 patients: Crude rates and hazard ratios with 95 % CI.

Figure 4: First SH event in T2 patients: crude rates and hazards rates with 95 % CI.

References

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www.encepp.eu/encyclopedia/Study/3683

Contact
Fabian Hoi
fabian.hoit@epidresearch.com

Regional Assessment of Severe Hypoglycemic Coma Events in Finland
Fabian Hoi1, Pia Vattulainen1, Vassili Mushnikov1, Tero Saukkonen2, Pasi Korhonen1
1EPID Research Oy, Espoo, Finland; 2Nouvo Nordisk Fonden Oy, Espoo, Finland.