

DKA during diabetes therapy: Multinational comparison with 59,191 Pediatric Patients from England, Wales, the United States, Austria and Germany

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Introduction

DKA in children and adolescents with established Type 1 Diabetes (T1D) is a major problem with considerable cost to patients, families and health care systems. Many consider it as a quality of care indicator and a failure of relationship between the care provider and the family/patient. Considerable variability in rates is recognised. We analysed multicenter registry and audit data from 5 countries with similarly advanced, yet differing, health care systems.

Methods

Data for years 2011 and 2012 from the T1D-Exchange (n=13,966, United States), the National Paediatric Diabetes Audit (n=18,963, England and Wales) and the DPV initiative (n=26,262, Austria and Germany) were pooled. DKA was defined as hospitalisation with a pH<7.3. Data were analysed using multivariable logistic regression models for the whole population, and for each country separately (SAS9.4).

Results

The mean rate for DKA was 5.3% with differences amongst countries (6.2% US, 6.0% England, 4.5% Germany, 4.4% Wales, 3.3% Austria) which persisted after demographic adjustment (p<0.0001). Risk of DKA was highest in adolescents (14-18 years: 5.8%) compared to younger children (6-10 years: 3.4%; p<0.0001). DKA increased with longer duration of diabetes from 3.5% (< 2 years) to 5.8% (>5 years, p<0.0001). DKA was significantly

higher in girls compared to boys (OR=1.34 [1.24-1.44], except in Wales. DKA was more prevalent in patients with ethnic minority status (OR=1.32 [1.21-1.43]), with the highest reported from Austria (OR=3.4) and the lowest from England (OR=1.02). Overall, DKA risk was significantly lower in patients on insulin pumps (OR=0.88 [0.81-0.96], with considerable variance between nations including increased risk of DKA in Austria.

Conclusion

These multicentre data demonstrate important differences in DKA in childhood T1D across 5 nations. Benchmarking data such as these are important so countries can learn from each other to better understand where to target interventions in order to improve quality of care.