Time trends in age, growth hormone dose and height standard deviation score at treatment start (2006–2014) in short children with growth hormone deficiency, born small for gestational age and with Ullrich–Turner syndrome enrolled in NordiNet® International Outcome Study in Germany and the Czech Republic

Introduction
Early detection and timely initiation of growth hormone (GH) treatment are key to ensuring optimal clinical outcomes for children with short stature. However, diagnosis and treatment of short stature are frequently delayed and consequently clinical outcomes may be suboptimal. Furthermore, there is often an imbalance between genders with a bias towards more boys than girls being diagnosed and treated.

Aims and Objectives
To analyse time trends in baseline parameters at start of GH treatment from 2006 to 2014 in short children with GH deficiency (GHD), born small for gestational age (SGA) and Ullrich–Turner syndrome (TS) from Germany and the Czech Republic enrolled in NordiNet® International Outcome Study (IOS).

Methods
NordiNet® IOS (NCT00960128) is a non-interventional, multinational study evaluating the long-term effectiveness and safety of GH (Norditropin® somatropin; recombinant GH, Novo Nordisk A/S, Denmark) in a real-life clinical setting. Time trends in baseline data (body mass index (BMI), chronological age, GH dose, height) from paediatric patients (<18 years) enrolled in NordiNet® IOS in Germany and the Czech Republic who started treatment with GH between 2006 and 2014 were analysed using a multiple regression model including country and year. Regression plots were used to illustrate trends in the data.

Standard deviation scores (SDS) for height and for BMI were calculated using national[1,7] and World Health Organization (WHO)[8] references, respectively.

Results
This study included data for 2113 patients from Germany (GHD, n=1321 [69.6%]; SGA, n=657 [59.1%]; TS, n=135) and 581 patients from the Czech Republic (GHD, n=308 [68.5%]; SGA, n=214 [52.8%]; TS, n=59).

Age at start of treatment: in Germany a significant reduction from 2006 to 2014 in mean [SD] age (years) at treatment start was observed for children with GHD (10.0 [3.9]; 8.3 [4.1]; p=0.001) and children born SGA (7.5 [3.2]; 6.6 [2.4]; p=0.025). In the Czech Republic a significant decrease over time was observed for children with GHD (11.4 [3.6]; 9.1 [4.1]; p=0.001) only. There was no significant change in age at treatment start over time observed in either country for patients with TS (Figure 1).

Baseline GH dose: in Germany significant reductions from 2006 to 2014 in mean [SD] baseline GH dose (µg/kg) in patients with GHD (29.4 [7.4]; 26.3 [7.3]; p=0.029) and SGA (34.7 [4.4]; 30.9 [4.4]; p=0.012) were observed. In the Czech Republic a significant reduction in mean baseline GH dose over time was observed in patients with TS (45.6 [3.7]; 41.5 [3.5]; p=0.005) only (Figure 2). It is unclear whether this reduction of <10% is clinically significant.

Conclusions
Although the data described here suggest an improvement in the age of diagnosis and treatment start for patients with GHD and SGA there remains a need for increased awareness of the importance of early diagnosis and treatment start for patients with TS.

The reason for the decrease over time of the baseline GH dose in girls with TS in the Czech Republic and in children with GHD or born SGA in Germany, is unclear and thus warrants further investigation.

The improvement in the proportion of girls receiving GH therapy in the Czech Republic, such that it is comparable with that in Germany, may be a further example of raised awareness in the treatment of growth disorders in the Czech Republic over the last decade.

References

This study was sponsored by Novo Nordisk Health Care AG. NordiNet® International Outcome Study is registered at ClinicalTrials.gov NCT00960128. The authors take full responsibility for the content of the poster and are grateful to Watermeadows Medical (supported by Novo Nordisk Health Care AG) for writing assistance. Presented at the 54th European Society for Paediatric Endocrinology (BESPEL) 1-3 October 2015, Barcelona, Spain. P9-972.