

# Long-term Safety and Effectiveness of Daily and Weekly Growth Hormone Treatment in Pediatric Patients : Interim results of LGS(LG Growth Study)

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## BACKGROUND

- Daily growth hormones (GH) have been used to treat growth disorders in children since 1980s in Korea.
- A weekly sustained-release GH was approved for growth hormone deficiency (GHD) in 2009 in Korea. The weekly GH is supposed to improve patient adherence and convenience to GH treatment.
- LGS has been conducted to evaluate the safety and effectiveness of daily or weekly GH treatment among patients in Korea and the third interim analysis results are presented here.

## OBJECTIVE

- To evaluate the safety and effectiveness of daily (Eutropin inj.) and weekly (EutropinPlus inj.) GH in Korean pediatric patients

## METHODS

### Study design

- A multi-center, prospective and retrospective cohort study

### Study population

- Pediatric patients aged >2 years with GHD
- Written informed consent from the patients, their parents or legal guardians

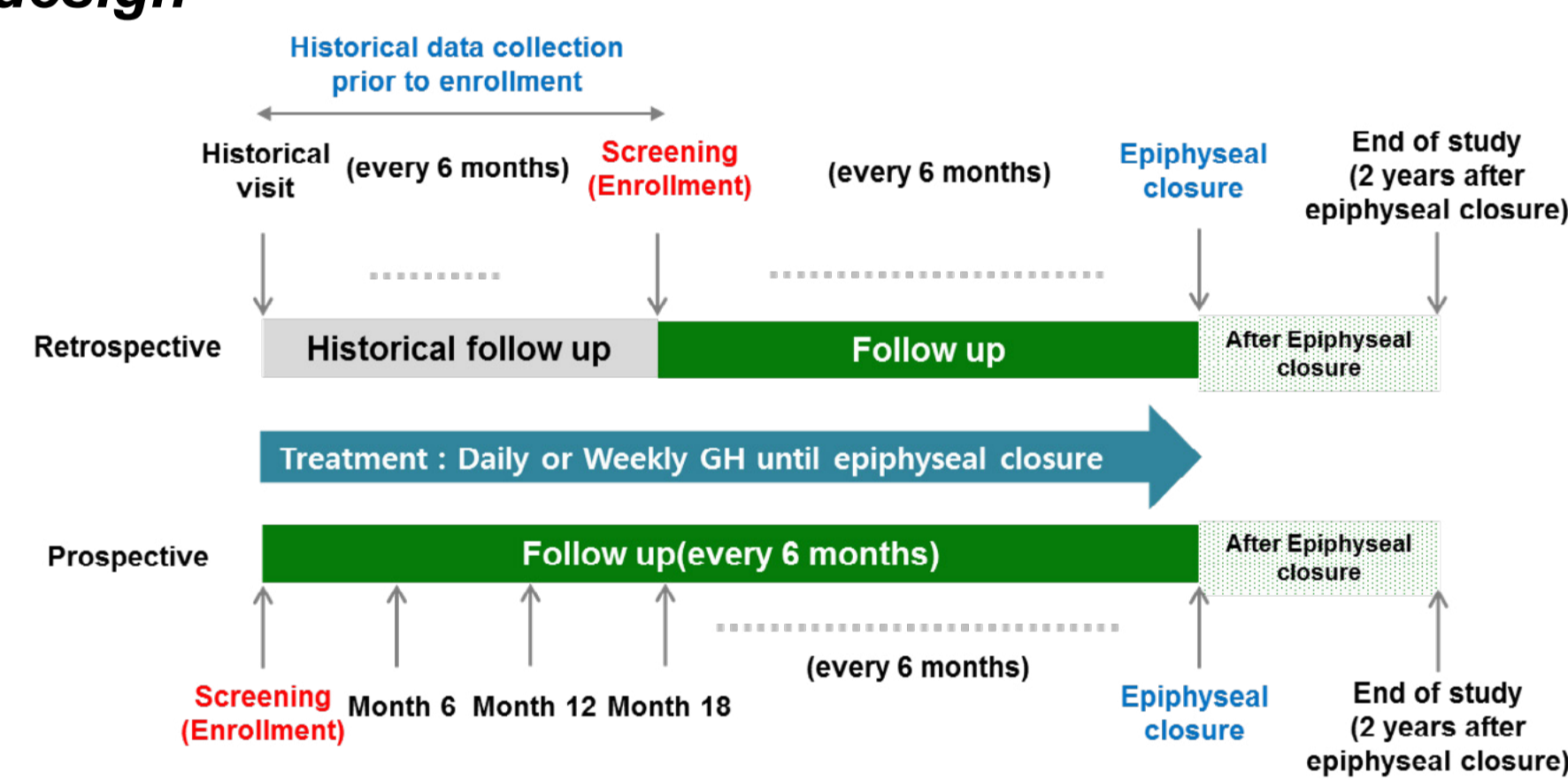
### Endpoints

- Effectiveness endpoints
  - Change in height velocity between baseline and each year
  - Change in height SDS between baseline and each year
- Safety endpoints
  - Adverse events, laboratory tests

### Statistical analysis

- The difference between groups was tested using the two sample t-test or Wilcoxon's rank sum test .
- Categorical data were tested using the Chi-square test or Fisher's exact test.

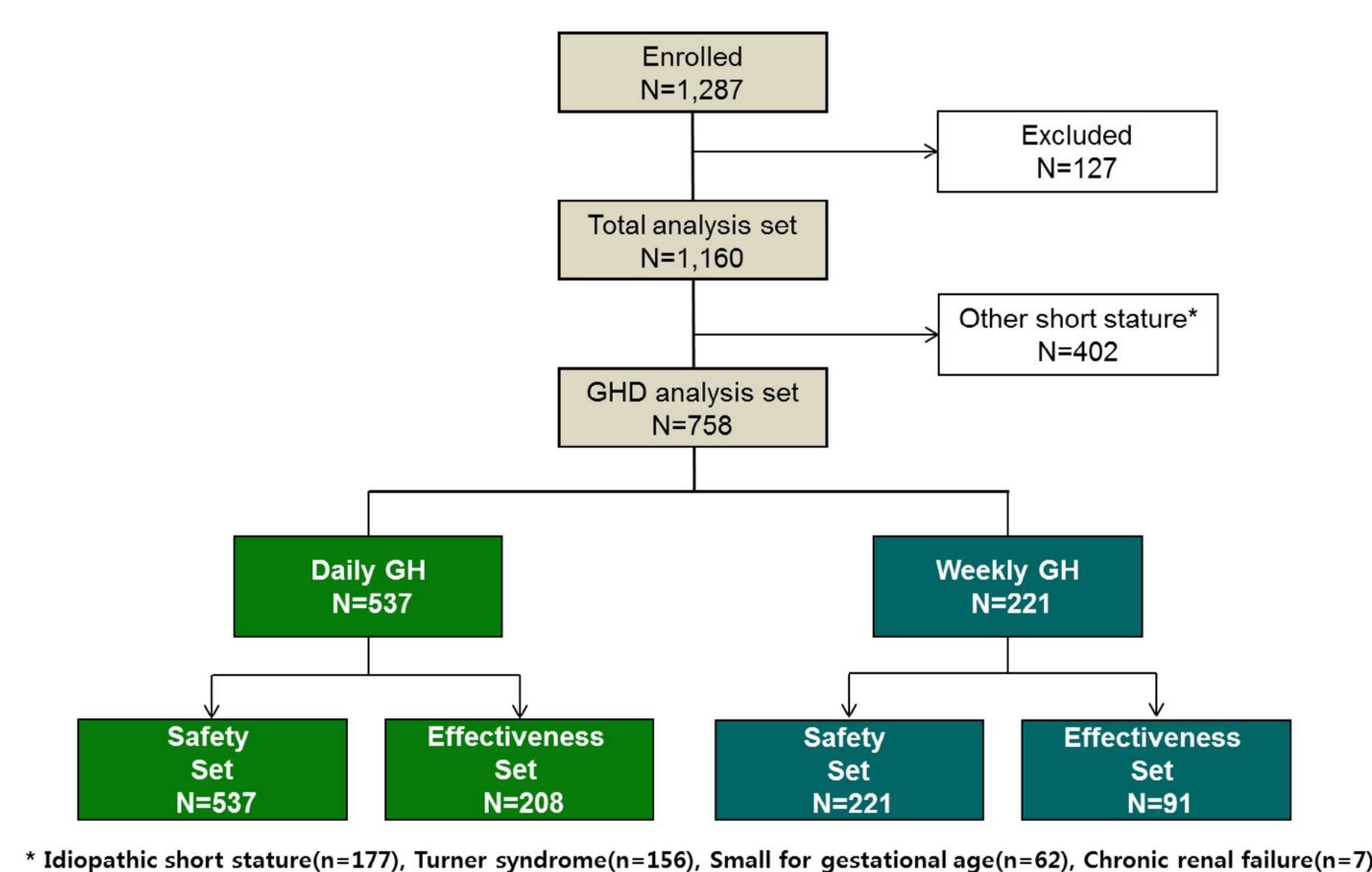
Figure 1. Study design



## RESULTS

### Subject disposition

Figure 2. Subject disposition



### Baseline characteristics

Table 1. Baseline characteristics

Treatment group (Safety set)	Daily GH (N=537)	Weekly GH (N=221)	p-value
Male, N(%)	302(56%)	133(60%)	NS <sup>b</sup>
Age, years	7.96±3.01	9.20±3.19	<0.0001 <sup>a</sup>
Bone age, years	6.31±3.16	7.65±3.23	<0.0001 <sup>a</sup>
Height, cm	115.11±15.84	120.71±16.56	<0.0001 <sup>a</sup>
Weight, kg	23.14±9.22	26.36±9.28	<0.0001 <sup>a</sup>
Height SDS	-2.41±0.79	-2.46±0.74	NS <sup>b</sup>
Weight SDS	-1.67±1.22	-1.67±1.40	NS <sup>b</sup>
BMI SDS	-0.27±1.15	-0.31±1.20	NS <sup>b</sup>

Data are mean±SD values or n(%), NS : Not significant  
a : t-test, b : chi-square test

## RESULTS(Cont'd)

### Effectiveness

Figure 3. Change in Height SDS after 2 years of GH treatment

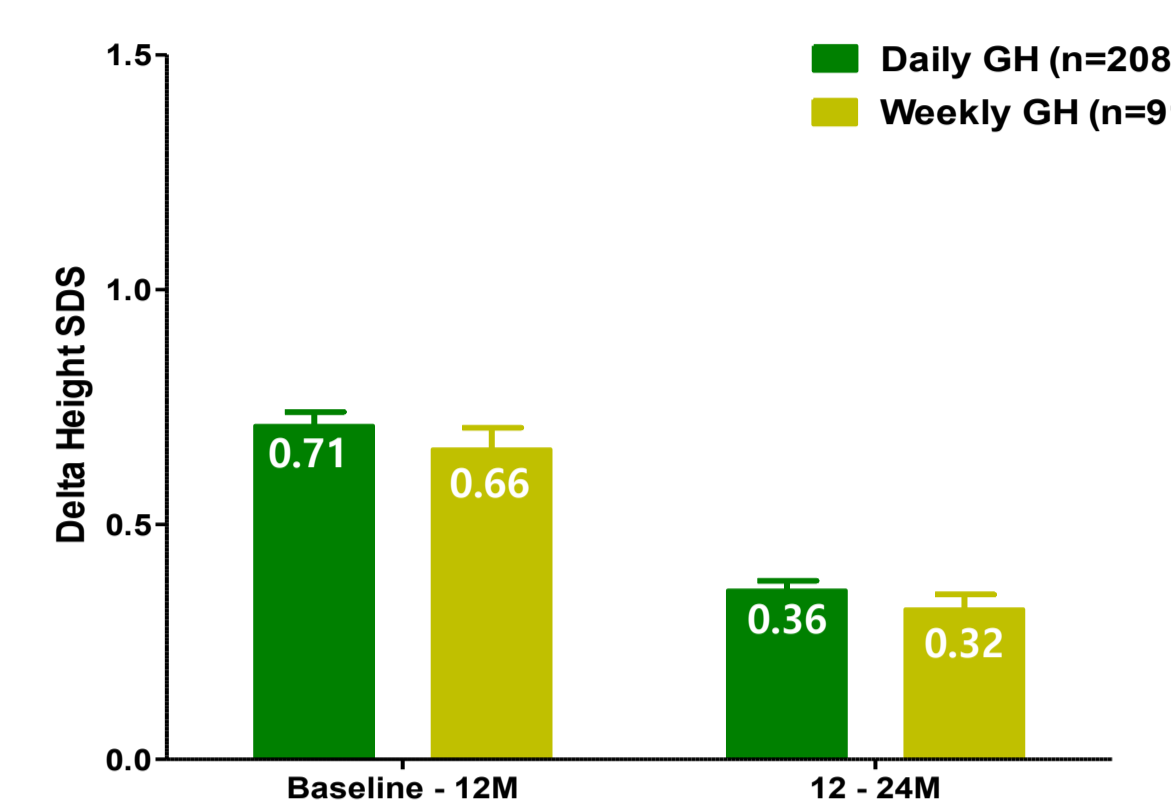


Figure 4. Change in Height SDS over 2 years of GH treatment

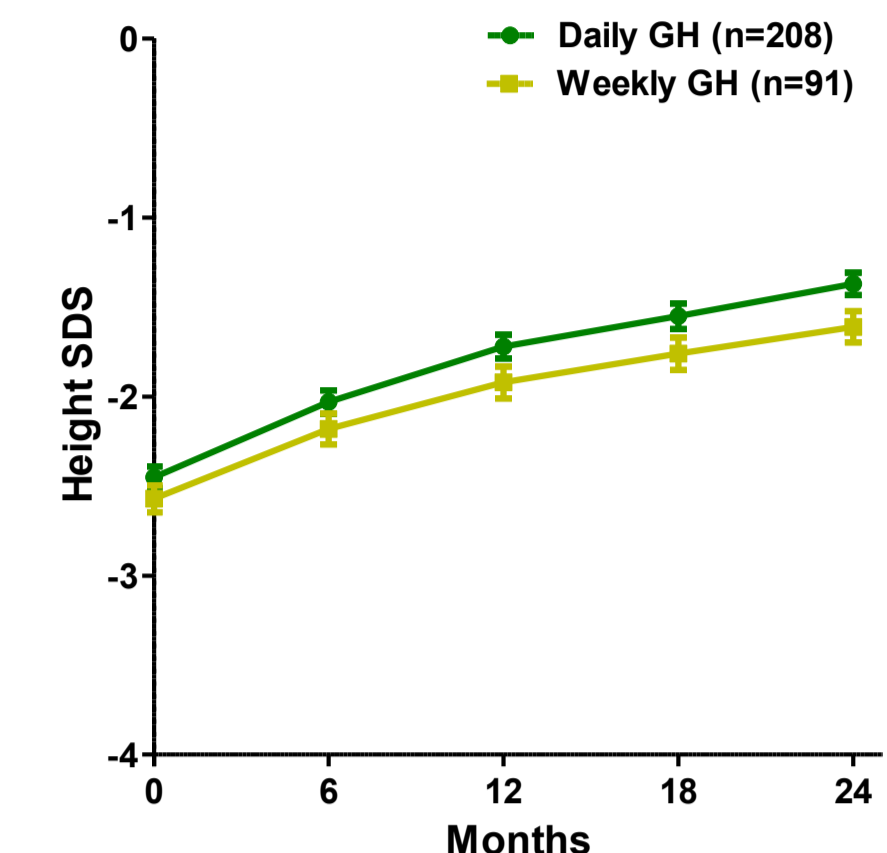


Figure 5. Height velocity after first and second years of GH treatment

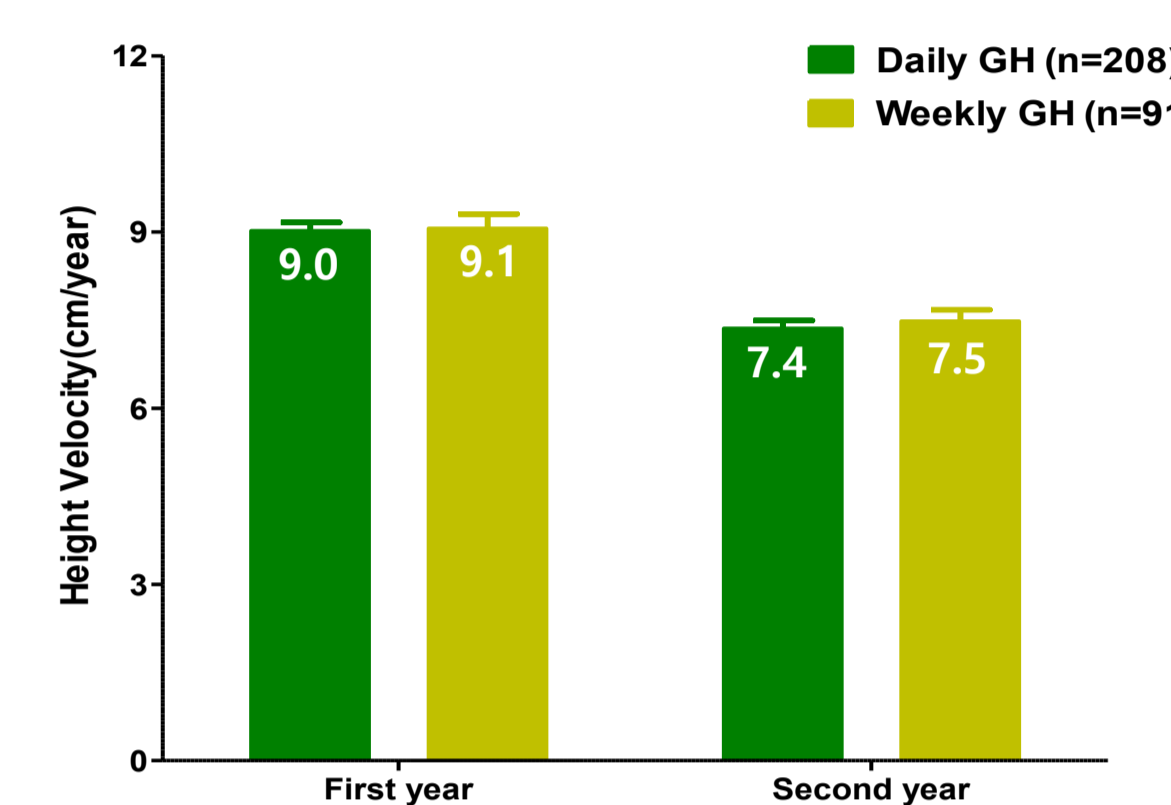
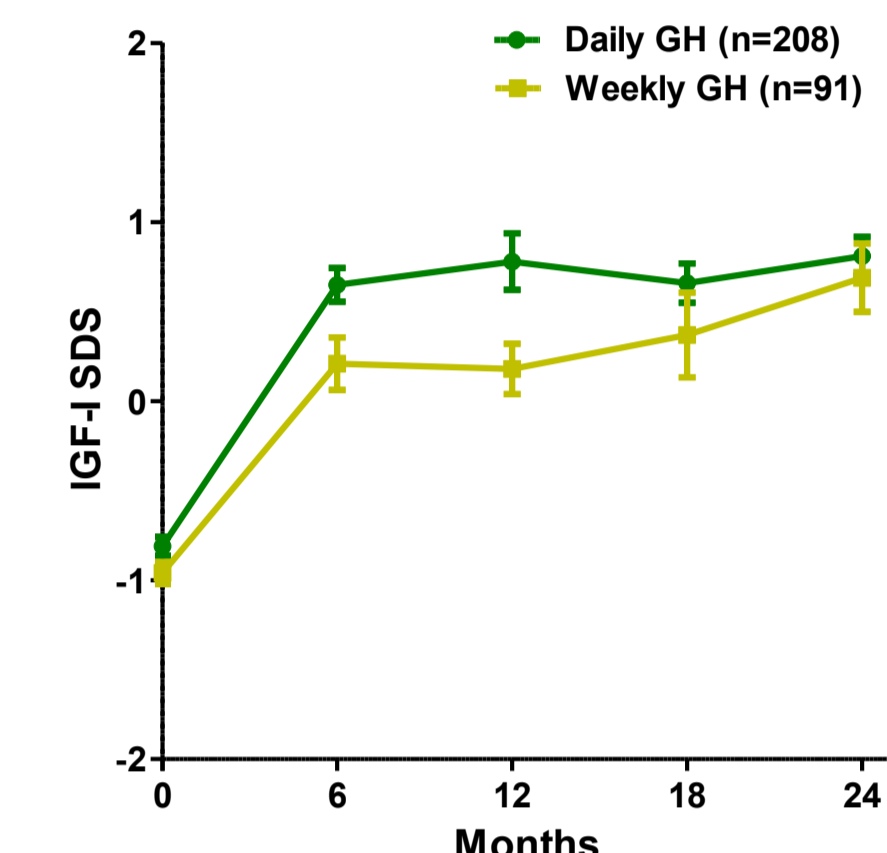


Figure 6. Change in IGF-I SDS over 2 years of GH treatment



- Height SDS and height velocity were not statistically different between daily and weekly GH.
- The pattern of change in IGF-I SDS was comparable and consistent in both groups.

### Safety

Table 2. Adverse events occurred during GH treatment

Treatment group (Safety set)	Daily GH (N=537)	Weekly GH (N=221)	P-value
	Incidence of AE [N, (%)]		
Adverse events (AE)	79 (14.7%)	21 (9.5%)	NS <sup>a</sup>
Adverse drug reactions (ADR)	17 (3.2%)	6 (2.7%)	NS <sup>a</sup>
Serious adverse events(SAE)	9 (1.7%)	2 (0.9%)	NS <sup>b</sup>
Serious adverse drug reaction (SADR)	1 (0.2%)*	0 (0.0%)	NS <sup>b</sup>

a : chi-square test, b : Fisher's exact test, \* : Neoplasm recurrence

Table 3. The 5 most commonly reported Adverse events

Treatment group (Safety set)	Daily GH (N=537)		Weekly GH (N=221)	
	Incidence of AE [N, (%)]	No. of AE (N)	Incidence of AE [N, (%)]	No. of AE (N)
Upper respiratory tract infection	16 (3.0%)	23	4 (1.8%)	5
Arthralgia	6 (1.1%)	6	1 (0.5%)	1
Headache	5 (0.9%)	6	2 (0.9%)	2
Abdominal pain	4 (0.7%)	4	2 (0.5%)	2
Diarrhea	4 (0.7%)	4	1 (0.9%)	1

- Most of reported AEs were mild to moderate.

## CONCLUSION

- Both daily and weekly GH were comparable in terms of safety and effectiveness.
- The weekly GH can be considered an alternative to improve patient adherence to GH treatment in GHD.

