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## Short stature and its treatment in Turner and Noonan syndromes.

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### Abstract

**PURPOSE OF REVIEW:** We review recent developments in the approach to the treatment of short stature in patients with Turner and Noonan syndromes.

**RECENT FINDINGS:** Turner syndrome and Noonan syndrome are clinically defined conditions associated with short stature. The Food and Drug Administration (FDA) approved treatment with recombinant human growth hormone (hGH) for patients with Turner syndrome in 1996 and for those with Noonan syndrome in 2007. Studies have shown that early appropriate use of hGH increases adult height in individuals with Turner syndrome. The combination of hGH and low-dose estrogen may also improve growth and adult height as well as possibly provide neurocognitive and behavioral benefits. Noonan syndrome is a genetically heterogeneous condition. In patients with Noonan syndrome phenotype, investigators have identified disease-associated genes (PTPN11, SOS1, RAF1, KRAS, and others). Treatment with hGH has been documented to result in short-term increases in growth velocity as well as modest gains in adult height.

**SUMMARY:** Our understanding and management of short stature in children with Turner syndrome and Noonan syndrome has greatly advanced over the years. Recent developments with focus on these two common syndromes will be reviewed.

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### Publication Types, MeSH Terms, Substances

#### Publication Types

Review

#### MeSH Terms

Adolescent

Adult

Anabolic Agents/therapeutic use\*

Body Height/genetics

Child

Child, Preschool

[Estrogens/therapeutic use\\*](#)

[Female](#)

[Growth Hormone/therapeutic use\\*](#)

[Humans](#)

[Male](#)

[Noonan Syndrome/genetics](#)

[Noonan Syndrome/therapy\\*](#)

[Phenotype](#)

[Recombinant Proteins/therapeutic use](#)

[Turner Syndrome/genetics](#)

[Turner Syndrome/therapy\\*](#)

[Young Adult](#)

## **Substances**

[Anabolic Agents](#)

[Estrogens](#)

[Recombinant Proteins](#)

[Growth Hormone](#)

## **LinkOut - more resources**

### **Full Text Sources**

[Lippincott Williams & Wilkins](#)

## **Medical**

[Anabolic Steroids - MedlinePlus Health Information](#)

[Craniofacial Abnormalities - MedlinePlus Health Information](#)

[Turner Syndrome - MedlinePlus Health Information](#)

## **Miscellaneous**

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