The Problem of Adherence to Treatment in Growth Disorders

Children’s Hospital at Karolinska University Hospital

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Definition of Adherence

“...the extent to which a person’s behaviour - taking medication, following a diet, and/or executing lifestyle changes - corresponds with agreed recommendations from a healthcare provider.”

World Health Organization, 2003
Basics

• No standard for “adequate adherence”
• Not + or −
• Lower in chronic disorders and with complex dosing
• Often hard to characterize/measure
• Omissions and delays of doses most common deviations
• Effects varies with disease and drug
• Interventions give variable results
Factors Negatively Affecting Adherence in Chronic Disease

- Time taken to administer treatment
- Complexity of regimen
- Difficulty with administration
- Adverse events
- Disruption of lifestyle
- High frequency of dosing
- Injection phobia
- Unrealistic expectations of treatment
- Treatment fatigue
- Depression
- Cost of medication

Rational

• Is adherence a problem and does it influence response to growth hormone treatment?
• What is the mechanism behind poor adherence?
• Can we improve adherence and thereby get better results?
Potential of Improved Adherence

“Increasing the effectiveness of adherence interventions may have a far greater impact on the health of the population than any improvement in specific medical treatments.”

Implications of Poor Adherence

Drugs do not work if patients do not take them!

- Poor outcomes
- Increased healthcare costs
- Treatment failure
- Long-term complications

www.emro.who.int/ncd/Publications/adherence_report.pdf;
Cohen BA. Int J MS Care 2006;(suppl):32-7;
Predictors of height velocity during the first year of treatment

- Age 21%
- Dose 11%
- Height 4%
- Weight 4%

Explains only 40% of the variation!

Ranke et al, 2007
Poor Adherence to GH Treatment

Kapoor et al, 2008
75 children aged 9-15 yrs
Non-adherence in 61%

Rosenfeld and Bakker, 2008
158 adults, 326 adolescents or teens, 398 children
Non-adherence in 64-77%, highest among teens

Haervencamp et al, 2008 (review)
Non-adherence in 36 -49%

Buzzola et al, 2011
824 children 1-18 yrs
Non-adherence in 9.8%/12.5% (reported/ recorded)

Cutfield et al, 2011
172/110 children
Non-adherence in 34%/66% (reported/ rate of returned vials)
Adherence rate affects growth response

Figure 1. Height velocity standard deviation scores (HVSDS) over 6–8 months according to the level of compliance with GH treatment: High (n=30) missed ≤1 dose/week, Medium (n=51) missed >1 and <3 doses/week, and Low (n=29) missed ≥3 doses/week. Data are mean ± SEM. **p<0.01, ***p<0.001 vs High.

cutfield et al, 2011
Rational

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Most common reasons given for missed injections

n = 412 children
Forgot injection 43.7%
Device not working 18.2%
Short vacations 12.6%
Ran out of cartridges/needles 12.9%
Sick 8.5%

Buzzola et al, 2011
Lessons from Diabetes

• Poor compliance has severe immediate and long term consequences
• Multiple dosing, many decisions each day
• Monitoring: glucose meters, smart pumps, CGM
• Non-aggressive approaches
• Parental involvement
• Teenagers
The Necessity-Concerns Framework

Low Adherence

Doubts about personal NECESSITY of medication

CONCERNS About potential adverse effects

- renal dialysis (Horne, et al 2001)
- renal transplantation (Butler et al 2004)
- asthma (Horne & Weinman, 2002)
- cancer (Horne & Weinman, 1999)
- coronary heart disease (Horne & Weinman, 1999)
- hypertension (Ross et al 2004)

- HIV/Aids (Horne et al., 2007, 2001, Gonzalez et al, 2006)
- bipolar disorder (Clatworthy et al 2007)
- rheumatoid arthritis (Neame & Hammond, 2005)
- General practice – new meds (Clifford, 2008)
Rational

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Measures of Adherence

Direct methods
Direct observation
Blood sample (drug, metabolites, bio-markers; eg IGF1 and IGFBP3)

Indirect methods
Self report
Pill count, return of empty vials
Rate of prescription refills
Clinical response
Electronic monitors
The ideal method is cheap, easy to use, relevant, informative, and non-aggressive.
# History as Calendar

**Patient #1234**

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How Can We Improve Adherence?

- Identify patients at risk for poor adherence
- Identify critical time periods/situations
- Education: patient, parents, family; emphasize importance of not missing doses and establish reasonable expectations
- Establish a good communication - non-aggressive approach
- Simplify taking and monitoring GH dosing
- Target teenagers?
The Practicalities and Perceptions Approach  

Practical barriers
  ↓
  Ability

Perceptual barriers
  ↓
  Motivation

For each individual

Feedback and review
Situation Dependent Interaction between Staff and Family
Advances in diagnosis and treatment of growth disorders
10 May 2014 - Istanbul, Turkey

Improving the patient’s life through medical education
www.excemed.org