

## Trans YP evidence and resources - looking into the effects of puberty blockers

### Key Points Summary:

**Table 1: Pubertal Suppression in adolescents with gender dysphoria – an overview. (Leibowitz, & de Vries 2016, p30)**

What is known	What is not known
<ul style="list-style-type: none"> <li>• Prospective data on psychological outcomes into early adulthood indicates that it is a successful intervention when provided at ages typically above 12 years old (de Vries et al., 2014)</li> <li>• Preliminary research with prospective data on bone development indicates some potential reduction in bone mass density (Klink et al., 2015)</li> <li>• Pubertal suppression when later followed by cross-gender hormone administration promotes the development of an appearance more consistent with the other gender (Coleman et al., 2011, Hembree et al., 2009)</li> <li>• Data exist that correlate the degree to which gender dysphoric young adults physically appear as the opposite gender to healthier psychological outcomes (Lawrence, 2003)</li> <li>• Sex hormones are thought to be trophic on brain development in areas that affect cognitive growth and affect regulation (Berenbaum, Beltz, &amp; Corley, 2015)</li> <li>• Preliminary fMRI research on the effects of pubertal suppression on brain development in gender dysphoric adolescents (when started at around age 12), indicates no detrimental effects on executive functioning in those without co-occurring neurodevelopmental disorders (Staphorsius et al., 2015)</li> <li>• Waiting for Tanner 2 pubertal stage before starting pubertal suppression is important in understanding an adolescent’s response to their changing body (Hembree et al., 2009)</li> <li>• WPATH SOC 7 specifies criteria for using pubertal suppression (Coleman et al., 2011)</li> </ul>	<ul style="list-style-type: none"> <li>• Unclear long-term effects on brain development in this population</li> <li>• Lack of consensus among gender specialists in the field regarding the ideal time to start pubertal suppression (whether to use age, degree of pubertal advancement, or both)</li> <li>• The effect of pubertal suppression on brain development in young adolescents with co-morbid neurodevelopmental disorders has not been studied (yet there is a lack of understanding of sex hormone influences on brain development and behaviour in general)</li> <li>• Lack of data suggesting the benefits of using pubertal suppression for older (more pubertally advanced) gender dysphoric adolescents when used in conjunction with cross-gender hormone therapy. Anecdotally being used in this way to lower the necessary dose of cross-gender hormones in order to achieve a feminizing or masculinizing effect</li> <li>• The relevance on the impact on bone mass density to fracture risk has not been studied</li> </ul>
Potential benefits	Potential limitations
<ul style="list-style-type: none"> <li>• May alleviate immediate psychological distress of the young adolescent with emerging secondary sexual characteristics</li> <li>• Minimizes the need for costly surgical interventions later in life, when applicable</li> <li>• Helps an individual have the long-term physical appearance of their affirmed gender identity, which often impacts the way society views them</li> </ul>	<ul style="list-style-type: none"> <li>• May lead parents and families to automatically assume that a transgender outcome is inevitable which may prevent exploration of other possibilities</li> <li>• Unclear effect on brain development and processes affecting cognitive development and affect regulation, especially in young people with co-occurring neurodevelopmental disorders</li> </ul>

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|  | <ul style="list-style-type: none"><li>• May reinforce, on a societal level, the notion that they must physically appear as the gender they feel they are when that deviates from their natal sex</li></ul> |
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### **Data limitations and lack of consensus amongst professionals**

A quick scan of the available evidence indicates a lack of consensus amongst professionals around treatment, and a lack of long-term data and evidence, following up young people who have received hormone replacement therapy, although initial results appear promising. As such there is a certain degree of caution around treating young people with puberty blocking hormones.

In a small scale study with 13 trans YP in the Netherlands to explore their views on puberty suppression, “Most adolescents stated that the lack of long-term data did not and would not stop them from wanting puberty suppression” (Vrouenraets, Lieke ; Fredriks, A ; Hannema, Sabine ; Cohen-Kettenis, Peggy ; de Vries, Martine 2016)

### **The use of puberty blockers**

Leibowitz and de Vries (2016) suggest that as part of the “affirmative” treatment model, of supporting a person to live in the gender that they are most comfortable with, there is a need for “comprehensive psychological assessment before moving forward with physical interventions.”

The World Professional Association for Transgender Health (WPATH) consider the use of puberty blockers to be a “**fully reversible intervention**”. These involve the use of GnRH analogues to suppress oestrogen or testosterone production and consequently delay the physical changes of puberty.

Two goals justify intervention with puberty suppressing hormones: (i) their use gives adolescents more time to explore their gender nonconformity and other developmental issues; and (ii) their use may facilitate transition by preventing the development of sex characteristics that are difficult or impossible to reverse if adolescents continue on to pursue sex reassignment.

Puberty suppression may continue for a few years, at which time a decision is made to either discontinue all hormone therapy or transition to a feminizing/masculinizing hormone regimen. **Pubertal suppression does not inevitably lead to social transition or to sex reassignment.**

**Early use of puberty suppressing hormones may avert negative social and emotional consequences of gender dysphoria more effectively than their later use would**

***“Neither puberty suppression nor allowing puberty to occur is a neutral act.***

On the one hand, functioning in later life can be compromised by the development of

irreversible secondary sex characteristics during puberty and by years spent experiencing intense gender dysphoria. On the other hand, there are concerns about negative physical side effects of GnRH analog use (e.g., on bone development and height). Although the very first results of this approach (as assessed for adolescents followed over 10 years) are promising (Cohen-Kettenis et al., 2011; Delemarre-van de Waal & Cohen-Kettenis, 2006), the long term effects can only be determined when the earliest treated patients reach the appropriate age.” (WPATH)

### **Puberty blocking treatment – medical concerns**

**Brain development** - brain development studied by neuroimaging methods seems not to be disturbed by puberty suppression. (Fuss, Johannes; Auer, Matthias K.; Briken, Peer, 2015)

**Bone density** – One study has shown some impact on bone density, but the impact that this is likely to have on long-term risk of fracture is unknown. A study of 34 22 year olds who had undergone puberty suppression found a significant decrease in bone mass density in transwomen (Klink et al 2014)

**The duration of treatment** – some children start puberty as early as 9, there is no empirical data available to suggest the medical safety of prolonged pubertal suppression (greater than 4 years)

### **Benefits of administering puberty blockers to YP with Gender Dysphoria (GD)**

- Improvements in mental health, behavioural and emotional problems (well-evidenced, see below)
- Giving adolescents more time to explore their gender non-conformity issues
- Preventing the development of secondary sexual characteristics (e.g. breast development in natal females, or changes in pitch of voice in natal males) reduces the need for invasive and costly surgery (e.g. mastectomy) to correct these later, if they decide to go ahead with a full transition.
- Later-cross hormone therapy is likely to be more successful at achieving the desired physical appearance if an individual has not been exposed to one’s own sex hormones
- If an adolescent undergoes pubertal suppression, then goes ahead with other more irreversible interventions later, they will more closely physically represent the gender they identify with. Passing in society as the gender one identifies with has been associated with better psychological adjustments and outcomes in adulthood (Lawrence 2003 in Leibowitz, & de Vries 2016)

### **Risks of Withholding Medical Treatment for Adolescents (WPATH p21)**

“Refusing timely medical interventions for adolescents might prolong gender dysphoria and contribute to an appearance that could provoke abuse and stigmatization. As the level of gender-related abuse is strongly associated with the

degree of psychiatric distress during adolescence (Nuttbrock et al., 2010), **withholding puberty suppression and subsequent feminizing or masculinizing hormone therapy is not a neutral option for adolescents.”**

### **The age at which puberty blockers should be administered**

It is suggested that the stage of puberty (Tanner stage II), and not the YP’s age be the determining factor in when to administer puberty blockers.

It is also noted that there might be a gap between a young person’s physical maturation and their psychological maturity, and that these both need to be taken into account – some children may hit puberty as young as 9, whilst some 16 year olds might not be emotionally mature enough to give informed consent (Steinberg, Cauffman, Woolard, Graham and Banich 2009 in Leibowitz and de Vries (2016)

If a child enters puberty early, (e.g. age 9) and a strict age limit is used (e.g. age 12) it is “possible to miss the optimal window of lifelong beneficial effects” (Leibowitz, & de Vries 2016)

A study with trans YP indicated that they felt determining an age to commence puberty suppression was a dilemma (Vrouenraets, Lieke ; Fredriks, A ; Hannema, Sabine ; Cohen-Kettenis, Peggy ; de Vries, Martine 2016)

### **Mental Health and Treatment options**

Mental Health of transgender YP (and adults) tends to be worse than for the general population -higher levels of ‘internalising’ disorders such as depression and anxiety and higher rates of Autistic Spectrum Disorders (ASD).

For some YP with GD, puberty suppression is not indicated, due to the existence of other mental health conditions (“psychiatric comorbidity”). However the World Professional Association for Transgender Health (WPATH) recommends in its Standards of Care (2012) that somatic and surgical treatments for gender dysphoria should be made available to those with medical or mental illness, with the caveat that “[the illness] must be reasonably well-controlled.”

Studies have shown **improved psychological outcomes for YP who receive puberty blockers** (and also for trans adults who receive treatment with cross-sex hormones) –

- Although the levels of psychopathology and psychiatric disorders in trans people attending services at the time of assessment are **higher** than in the cis population, **they do improve following gender-confirming medical intervention**, in many cases reaching normative values.
- A study of 70 YP given puberty blockers found behavioural and emotional problems and depressive symptoms decreased, while general functioning

improved significantly during puberty suppression. [de Vries AL](#)<sup>1</sup>, [Steensma TD](#), [Doreleijers TA](#), [Cohen-Kettenis PT](#). (2010)

- A study on anxiety, comparing the adult transgender population with non-transgender, and also trans people receiving hormone treatment compared with those not on hormone treatment found that: compared with the general population transgender people had a nearly threefold increased risk of probable anxiety disorder, and trans women on treatment with cross-sex hormones were found to have lower levels of anxiety disorder symptomatology (Bouman, Walter Pierre; Claes, Laurence; Brewin, Nicky; Crawford, John R.; Millet, Nessa; Fernandez-Aranda, Fernando; Arcelus, Jon; 2017)

Studies have also shown the **importance of peer relationships and social (in)tolerance in mediating the wellbeing of transgender young people**. A cross national study found higher levels of emotional and behavioural problems in trans YP in Canada compared to the Netherlands, and in both cases peer relationships was the strongest predictor

**Well supported social transitions can be helpful for the young person's mental wellbeing** (although a cautionary note is that those who wish to revert to their original gender can find this harder if they have already gone through a social transition, and then have to re-transition see Steensma et al. (2010).

A study examining self-reported depression, anxiety, and self-worth in socially transitioned transgender children compared with 2 control groups (age and gender-matched controls and siblings of transgender children, 68 trans children age 9-14, 68 controls and 38 siblings), found that the **socially transitioned YP reported similar levels of depression and self-worth as both the control groups, and levels of depression were consistent with the national average. They reported marginally higher anxiety than the controls and the national average. "These findings are in striking contrast to previous work with gender-nonconforming children who had not socially transitioned, which found very high rates of depression and anxiety."** Durwood, Lily ; McLaughlin, Katie A. ; Olson, Kristina R (2017)

A study comparing 293 adults and 86 adolescents with GD, using the Minnesota Multiphasic Personality Inventory found that adults showed significantly more problems in the clinical range than adolescents (de Vries, Kreukels, Steensma, Doreleijers & Cohen-Kettenis 2011 in Leibowitz, & de Vries 2016). Leibowitz, & de Vries suggest that these findings "might give some evidence that early coming out and seeking care in adolescence (versus adulthood) might prevent some of the psychological burden that transgender individuals experience during their lives."

## References and Key Points Pulled from Them

### **Mental health of transgender YP/YP with Gender Dysphoria (GD)**

Journal of adolescent health [March 2015](#) Volume 56, Issue 3, Pages 274–279

Mental Health of Transgender Youth in Care at an Adolescent Urban Community Health Center: A Matched Retrospective Cohort Study

Sari L. Reisner Ralph Vettters M. Leclerc Shayne Zaslow Sarah Wolfrum Daniel Shumer Matthew J. Mimiaga

<http://www.jahonline.org/article/S1054-139X%2814%2900693-4/abstract>

They are more than twice as likely as non-trans youth to be diagnosed with depression (50.6 percent vs. 20.6 percent) or suffer from anxiety (26.7 percent vs. 10 percent).

YP with GD are more “psychologically vulnerable” than the general population. This tends to be of an internalizes nature (e.g. anxiety) rather than an externalised nature (e.g. aggression). There is variability across studies, using the total problem behaviour score on the Child Behaviour Checklist, scores ranged from 12.5% up to 84% across different studies (Ristori and Streensma 2016).

Their mental health is thought to be largely mediated through social (in)tolerance towards gender nonconformity. Studies show that gender nonconformity is often evaluated negatively by other children. Peer relations are therefore poorer for clinically referred children, and poor peer relations are associated with negative wellbeing and poor psychological functioning (Ristori and Streensma 2016). The variability in psychological functioning is likely to be related to the intensity of social intolerance faced, and psychological functioning is highly dependent on how gender non-conformity is accepted within a certain culture or environment.

A cross-national study of GD children in Canada and the Netherlands, showed a much higher prevalence of emotional and behavioural problems in the Canadian children than the Dutch. Quality of peer relationships was the strongest predictor in both countries (stronger than IQ, parental social class, marital status or ethnicity). Quality of peer relationships was lower in Canada than the Netherlands. (Ristori and Streensma 2016)

Autistic Spectrum Disorders (ASD) are present in higher levels in GD children than the general population. One study showed that ASD was present in 6.4% of gender-referred children (sample 108) compared to 0.6%-1% of ASD in the general population. (Ristori and Streensma 2016)

**Trans people's experiences of mental health and gender identity services: A UK study.** Ellis, Sonja J.; Bailey, Louis; McNeil, Jay (2015)

**Abstract:** Drawing on survey data from a UK study of trans people and mental health, the study presented here reports on the experiences of trans people in two health care settings: mental health services and gender identity clinics. An analysis of the primarily qualitative data indicates that in these settings practitioners tend to be poorly informed about trans issues and the realities of trans people's lives. **The key observations of this study are that untreated gender dysphoria (due to delays or refusals of treatment), unnecessary and intrusive questioning/tests, prejudicial attitudes by service providers, and restrictive treatment pathways, all contribute to minority stress which is detrimental to the mental health and well-being of trans people.**

Leibowitz, S & de Vries, ALC (2016) **Gender dysphoria in adolescents**  
International Review of Psychiatry 28:1 31-35

<http://www.tandfonline.com/doi/full/10.3109/09540261.2015.1124844?src=recsys>

(abstract only – received full text from library)

- Out of 97 referred adolescents 44.3% had a prior history of psychiatric diagnosis, 37.1% were taking psychotropic medications, and 21.6% had a history of self-injurious behaviour (Spack et al 2012)
- A study of 84 Canadian adolescents reported mood and anxiety disorders in 44% and 33% within their birth assigned female and male referrals respectively, and 10 of them had attempted suicide (Khatchadourian et al 2014)
- All 21 adolescents assessed for eligibility of treatment at an Australian clinic were reported to have symptoms of anxiety and depression.
- Of 218 (child and adolescent) referrals to a London clinic, low mood/depression occurred in 42% and self-harming in 39% (Holt et al 2014)
- A clinical sample of Finnish referrals found 64% were being treated for depression and 53% for suicidal and self-harming behaviours.
- A study of 105 Dutch Adolescent GD referrals (using the Diagnostic Interview Schedule for Children) found that the majority (67.6%) did not suffer from any psychiatric disorder. 21% had anxiety disorder, 12.4% had a mood disorder, and 11.4% had a disruptive behaviour disorder
- The authors note that using different methods of reporting - e.g. adult report using the Child Behaviour Checklist (CBCL) or the Teachers Report Form (TRF) vs. Youth Self Report (YSR) can provide different results, and suggest that young people's self report is likely to reveal lower percentages of emotional difficulties than adult report.
- One study of adolescents with GD using the CBCL found 67.1% of the 71 natal girls and 81.9% of the 83 natal boys had clinical range emotional and behavioural problems. A study at a London based gender clinic found much lower percentages using the YSR at 47% of natal girls and 49% of natal boys (n = 141)

- A cross-national study between adolescents referred to a Canadian gender identity clinic (n = 177) and a Dutch gender identity clinic (n = 139) using both the CBCL and the YSR found clinically significant behavioural and emotional problems in 55.4% (CBCL) and 40.6% (YSR) of the Amsterdam cohort and 77.5% (CBCL) and 39.9% (YSR) of the Toronto cohort.
- Another study using the Teacher Report Form (TRF) found teachers reported more emotional and behavioural problems in the clinical range in Toronto than in Amsterdam (57.1% vs. 33.3%).
- When discussing these cross-clinic differences (higher rates of emotional and behaviour problems reported in Canada than the Netherlands) Leibowitz, & de Vries note that peer victimisation is an important factor in leading to distress in LGBT youth, and that in some societies there is more peer acceptance and tolerance to gender non-conforming youth than in others.
- Autistic spectrum disorders (ASD) are reported to occur in higher than expected percentages of young people with GD compared to the rate in the general population (around 1%). 9.4% of adolescents assessed at a gender identity clinic had an ASD diagnosis (de Vries et al 2010 in Leibowitz, & de Vries 2016).
- Suicidality – in a “convenience sample” of 55 transgender adolescents recruited at a community centre nearly half reported serious suicidal thoughts and a quarter reported suicide attempts (Grossman & D’Augelli 2007 in Leibowitz, & de Vries 2016)
- A clinic chart study of adolescents referred to a gender identity clinic in London found 24% reported self-injurious behaviour, 14% had ideations to self-injure and 10% had made a suicide attempt (Skagerberg, Parkinson & Carmichael 2013 in Leibowitz, & de Vries 2016)

## **Mental health of transgender YP (&adults)/YP with Gender Dysphoria (GD) and the impact of puberty blockers (& cross-sex hormones) on mental health**

**Mental health and gender dysphoria: A review of the literature** Dhejne C.; Van Vlerken R.; Heylens G.; Arcelus J.,(Dhejne) (2016)

This review identifies 38 cross-sectional and longitudinal studies describing prevalence rates of psychiatric disorders and psychiatric outcomes, pre- and post-gender-confirming medical interventions, for people with gender dysphoria (Although many studies were methodologically weak and included people at different stages of transition within the same cohort of patients). It indicates that, although the levels of psychopathology and psychiatric disorders in trans people attending services at the time of assessment are **higher** than in the cis population, **they do improve following gender-confirming medical intervention**, in many cases reaching normative values. The main psychiatric disorders were found to be **depression** and **anxiety** disorder. Other major psychiatric disorders, such as schizophrenia and



bipolar disorder, were rare and were no more prevalent than in the general population.

### **Mental health comorbidities in children and adolescents with gender dysphoria** Janssen A (2016)

Adequate assessment and treatment of gender dysphoria often is overlooked **despite evidence that appropriate treatment of gender dysphoria leads to improvement in psychological functioning.** The World Professional Association for Transgender Health recommends in its Standards of Care (2012) that somatic and surgical treatments for gender dysphoria should be made available to those with medical or mental illness, with the caveat that "[the illness] must be reasonably well-controlled." Conclusions: Mental health practitioners should be aware of common psychiatric comorbidities in transgender youth and establish treatment recommendations that serve to stabilize the patient's psychiatric difficulties while facilitating the adolescent's development of a transgender identity and presentation.

### **Approach to children and adolescents with gender dysphoria** Lopez X.; Stewart S.; Jacobson-Dickman E (2016)

- . On the basis of strong evidence, adolescents treated with a protocol of ***pubertal suppression followed by hormone replacement therapy during adolescence and gender reassignment surgery in adulthood have improved psychological outcomes and quality of lives compared with age-matched adults from the general population.***
- A large national transgender survey revealed that 41% of adult (transgender) respondents had attempted suicide. On the basis of strong evidence, youth who are validated in their transgender identity by supportive family and social environments have much more favourable psychological outcomes.

### **Gender dysphoria in children and adolescents: A review of recent research.** (Fuss, Johannes; Auer, Matthias K.; Briken, Peer,2015)

Minors with gender dysphoria are a vulnerable population as they may face a high psychopathological burden. ***Recently published data on the long-term outcome of puberty suppression and subsequent hormonal and surgical treatment indicate that young people with gender dysphoria may benefit substantially with regard to psychosocial outcomes. Brain development studied by neuroimaging methods seems not to be disturbed by puberty suppression.***

Summary: The first reports about long-term outcome in adolescents having undergone puberty suppression have shown promising results. However, in a substantial part of gender dysphoric minors, puberty suppression is not indicated so far because of psychiatric comorbidity and long-term follow-up data from these patients are still scarce.

### **Transgender and anxiety: A comparative study between transgender people and the general population.** Bouman, Walter Pierre; Claes, Laurence; Brewin,

Nicky; Crawford, John R.; Millet, Nessa; Fernandez-Aranda, Fernando; Arcelus, Jon; (2017)

**Abstract:** Background: Anxiety disorders pose serious public health problems. The data available on anxiety disorders in the transgender population is limited by the small numbers, the lack of a matched controlled population and the selection of a nonhomogenous group of transgender people. Aims: The aims of the study were (1) to determine anxiety symptomatology (based on the HADS) in a nontreated transgender population and to compare it to a general population sample matched by age and gender; (2) to investigate the predictive role of specific variables, including experienced gender, self-esteem, victimization, social support, interpersonal functioning, and cross-sex hormone use regarding levels of anxiety symptomatology; and (3) **to investigate differences in anxiety symptomatology between transgender people on cross-sex hormone treatment and not on hormone treatment.** Methods: A total of 913 individuals who self-identified as transgender attending a transgender health service during a 3-year period agreed to participate. For the first aim of the study, 592 transgender people not on treatment were matched by age and gender, with 3,816 people from the general population. For the second and third aim, the whole transgender population was included. Measurements: Sociodemographic variables and measures of depression and anxiety (HADS), self-esteem (RSE), victimization (ETS), social support (MSPSS), and interpersonal functioning (IIP-32). Results: **Compared with the general population transgender people had a nearly threefold increased risk of probable anxiety disorder** (all  $p < .05$ ). Low self-esteem and interpersonal functioning were found to be significant predictors of anxiety symptoms. **Trans women on treatment with cross-sex hormones were found to have lower levels of anxiety disorder symptomatology. Conclusions: Transgender people (particularly trans males) have higher levels of anxiety symptoms suggestive of possible anxiety disorders compared to the general population. The findings that self-esteem, interpersonal functioning, and hormone treatment are associated with lower levels of anxiety symptoms indicate the need for clinical interventions targeting self-esteem and interpersonal difficulties and highlight the importance of quick access to transgender health services.**

## **Mental health of trans YP who are supported to transition socially**

February 2016

**Mental Health of Transgender Children Who Are Supported in Their Identities**

Kristina R. Olson, Lily Durwood, Madeleine DeMeules, Katie A. McLaughlin

<http://pediatrics.aappublications.org/content/early/2016/02/24/peds.2015-3223>

## **Mental Health and Self-Worth in Socially Transitioned Transgender Youth**

Durwood, Lily ; McLaughlin, Katie A. ; Olson, Kristina R (2017)

**Description:** Objective Social transitions are increasingly common for transgender children. A social transition involves a child presenting to other people as a member

of the “opposite” gender in all contexts (e.g., wearing clothes and using pronouns of that gender). Little is known about the well-being of socially transitioned transgender children. This study examined self-reported depression, anxiety, and self-worth in socially transitioned transgender children compared with 2 control groups: age- and gender-matched controls and siblings of transgender children. Method: As part of a longitudinal study (TransYouth Project), children (9–14 years old) and their parents completed measurements of depression and anxiety (n = 63 transgender children, n = 63 controls, n = 38 siblings). Children (6–14 years old; n = 116 transgender children, n = 122 controls, n = 72 siblings) also reported on their self-worth. Mental health and self-worth were compared across groups. Results: ***Transgender children reported depression and self-worth that did not differ from their matched-control or sibling peers (p = .311), and they reported marginally higher anxiety (p = .076). Compared with national averages, transgender children showed typical rates of depression (p = .290) and marginally higher rates of anxiety (p = .096).*** Parents similarly reported that their transgender children experienced more anxiety than children in the control groups (p = .002) and rated their transgender children as having equivalent levels of depression (p = .728). ***Conclusion: reported depression and self-worth that did not differ from their matched-control or sibling peers (p = .311), and they reported marginally higher anxiety (p = .076). Compared with national averages, transgender children showed typical rates of depression (p = .290) and marginally higher rates of anxiety*** These findings lessen concerns from previous work that parents of socially transitioned children could be systematically underreporting mental health problems.

## Use of Puberty Blockers

### Age at which to administer puberty blockers to YP

“the stage of puberty, not the age of the child, should be the determining factor of when to begin medications to block puberty.” Rosenthal S.M., (2012) agreeing with Norman P. Spack et al and Andrea L. Roberts et al.

**The World Professional Association for Transgender Health (WPATH), Standards of Care document**, says the following in relation to adolescents:

[https://s3.amazonaws.com/amo\\_hub\\_content/Association140/files/Standards%20of%20Care%20V7%20-%202011%20WPATH%20\(2\)\(1\).pdf](https://s3.amazonaws.com/amo_hub_content/Association140/files/Standards%20of%20Care%20V7%20-%202011%20WPATH%20(2)(1).pdf)

#### Psychological intervention (p15)

- Mental health professionals should help families to have an accepting and nurturing response to the concerns of their gender dysphoric child or adolescent
- Psychotherapy should focus on reducing a child’s or adolescent’s distress related to the gender dysphoria and on ameliorating any other psychosocial difficulties

- Treatment aimed at trying to change a person's gender identity and expression to become more congruent with sex assigned at birth has been attempted in the past without success (Gelder & Marks, 1969; Greenson, 1964), particularly in the long term (Cohen-Kettenis & Kuiper, 1984; Pauly, 1965). Such treatment is no longer considered ethical.

### Social Transition in early childhood (p17)

Social transitions in early childhood do occur within some families with early success. This is a controversial issue, and divergent views are held by health professionals. The current evidence base is insufficient to predict the long-term outcomes of completing a gender role transition during early childhood. Outcomes research with children who completed early social transitions would greatly inform future clinical recommendations.

### Physical Interventions for Adolescents – Puberty Blockers (p18 and 19)

WPATH consider the use of puberty blockers to be a “fully reversible intervention”.

*Fully reversible interventions.* These involve the use of GnRH analogues to suppress oestrogen or testosterone production and consequently delay the physical changes of puberty.

Adolescents may be eligible for puberty suppressing hormones as soon as pubertal changes have begun. In order for adolescents and their parents to make an informed decision about pubertal delay, it is recommended that adolescents experience the onset of puberty to at least Tanner Stage 2. Some children may arrive at this stage at very young ages (e.g., 9 years of age). Studies evaluating this approach only included children who were at least 12 years of age.

Two goals justify intervention with puberty suppressing hormones: (i) their use gives adolescents more time to explore their gender nonconformity and other developmental issues; and (ii) their use may facilitate transition by preventing the development of sex characteristics that are difficult or impossible to reverse if adolescents continue on to pursue sex reassignment.

Puberty suppression may continue for a few years, at which time a decision is made to either discontinue all hormone therapy or transition to a feminizing/masculinizing hormone regimen. **Pubertal suppression does not inevitably lead to social transition or to sex reassignment.**

#### *Criteria for puberty suppressing hormones*

In order for adolescents to receive puberty suppressing hormones, the following minimum criteria must be met:

1. The adolescent has demonstrated a long-lasting and intense pattern of gender nonconformity or gender dysphoria (whether suppressed or expressed);

2. Gender dysphoria emerged or worsened with the onset of puberty;
3. Any co-existing psychological, medical, or social problems that could interfere with treatment (e.g., that may compromise treatment adherence) have been addressed, such that the adolescent's situation and functioning are stable enough to start treatment;
4. The adolescent has given informed consent and, particularly when the adolescent has not reached the age of medical consent, the parents or other caretakers or guardians have consented to the treatment and are involved in supporting the adolescent throughout the treatment process.

#### Risks of puberty suppression (p20)

**Early use of puberty suppressing hormones may avert negative social and emotional consequences of gender dysphoria more effectively than their later use would.** Intervention in early adolescence should be managed with paediatric endocrinological advice, when available. Adolescents with male genitalia who start GnRH analogues early in puberty should be informed that this could result in insufficient penile tissue for penile inversion vaginoplasty techniques (alternative techniques, such as the use of a skin graft or colon tissue, are available).

***Neither puberty suppression nor allowing puberty to occur is a neutral act. On the one hand, functioning in later life can be compromised by the development of irreversible secondary sex characteristics during puberty and by years spent experiencing intense gender dysphoria. On the other hand, there are concerns about negative physical side effects of GnRH analog use (e.g., on bone development and height). Although the very first results of this approach (as assessed for adolescents followed over 10 years) are promising (Cohen-Kettenis et al., 2011; Delemarre-van de Waal & Cohen-Kettenis, 2006), the long term effects can only be determined when the earliest treated patients reach the appropriate age.***

#### Risks of Withholding Medical Treatment for Adolescents (p21)

“Refusing timely medical interventions for adolescents might prolong gender dysphoria and contribute to an appearance that could provoke abuse and stigmatization. As the level of gender-related abuse is strongly associated with the degree of psychiatric distress during adolescence (Nuttbrock et al., 2010), **withholding puberty suppression and subsequent feminizing or masculinizing hormone therapy is not a neutral option for adolescents.**”

#### Non-physical interventions for adolescents

Leibowitz, & de Vries (2016) refer to the following non-physical interventions listed in WPATH Standards of Care 7 to help alleviate GD in adolescents:

1. In person and online support groups or organisations that provide social support and advocacy
2. In-person and online resources for friends and family
3. Breast binding (for natal girls) or padding (for natal boys), genital tucking or penile prosthesis, or padding of the hips and buttocks
4. Changes in name and gender markers on identity documents

Interventions that might be considered in conjunction with meeting the eligibility criteria for physical interventions include: voice and communication therapy, to help develop verbal and non-verbal skills that facilitate comfort with their gender identity, and hair removal through laser treatment, electrolysis or waxing for natal boys.

### **Risks of puberty blockers on bone density**

[Clin Endocrinol Metab.](#) 2015 Feb;100(2):E270-5. doi: 10.1210/jc.2014-2439. Epub 2014 Nov 26.

Bone mass in young adulthood following gonadotropin-releasing hormone analog treatment and cross-sex hormone treatment in adolescents with gender dysphoria.

[Klink D1](#), [Caris M](#), [Heijboer A](#), [van Trotsenburg M](#), [Rotteveel J](#).

<https://www.ncbi.nlm.nih.gov/pubmed/25427144>

Link to Tanner stages of Puberty

[http://www.childgrowthfoundation.org/CMS/FILES/Puberty\\_and\\_the\\_Tanner\\_Stages.pdf](http://www.childgrowthfoundation.org/CMS/FILES/Puberty_and_the_Tanner_Stages.pdf)

Puberty suppression in adolescents with gender identity disorder: a prospective follow-up study. [de Vries AL](#)<sup>1</sup>, [Steensma TD](#), [Doreleijers TA](#), [Cohen-Kettenis PT](#). (2010)

<https://www.ncbi.nlm.nih.gov/pubmed/20646177>

#### **Abstract**

##### **INTRODUCTION:**

Puberty suppression by means of gonadotropin-releasing hormone analogues (GnRHa) is used for young transsexuals between 12 and 16 years of age. The purpose of this intervention is to relieve the suffering caused by the development of secondary sex characteristics and to provide time to make a balanced decision regarding actual gender reassignment.

##### **AIM:**

To compare psychological functioning and gender dysphoria before and after puberty suppression in gender dysphoric adolescents.

## **METHODS:**

Of the first 70 eligible candidates who received puberty suppression between 2000 and 2008, psychological functioning and gender dysphoria were assessed twice: at T0, when attending the gender identity clinic, before the start of GnRHa; and at T1, shortly before the start of cross-sex hormone treatment.

## **MAIN OUTCOME MEASURES:**

Behavioral and emotional problems (Child Behavior Checklist and the Youth-Self Report), depressive symptoms (Beck Depression Inventory), anxiety and anger (the Spielberger Trait Anxiety and Anger Scales), general functioning (the clinician's rated Children's Global Assessment Scale), gender dysphoria (the Utrecht Gender Dysphoria Scale), and body satisfaction (the Body Image Scale) were assessed.

## **RESULTS:**

Behavioral and emotional problems and depressive symptoms decreased, while general functioning improved significantly during puberty suppression. Feelings of anxiety and anger did not change between T0 and T1. While changes over time were equal for both sexes, compared with natal males, natal females were older when they started puberty suppression and showed more problem behavior at both T0 and T1. Gender dysphoria and body satisfaction did not change between T0 and T1. No adolescent withdrew from puberty suppression, and all started cross-sex hormone treatment, the first step of actual gender reassignment.

## **CONCLUSION:**

Puberty suppression may be considered a valuable contribution in the clinical management of gender dysphoria in adolescents.

<http://www.healio.com/pediatrics/journals/pedann/2014-6-43-6/%7Bbd70b796-b7bf-402d-98d7-f5ebf8c9e362%7D/the-peripubertal-gender-dysphoric-child-puberty-suppression-and-treatment-paradigms>

The Peripubertal Gender-Dysphoric Child: Puberty Suppression and Treatment Paradigms

Johanna Olson, MD; Robert Garofalo, MD, MPH

Pediatric Annals

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## **Impact of Blocking Puberty**

There are very limited published data outlining the impact of GnRH agonist use in gender-nonconforming youth. Early results from the first 70 gender-dysphoric youth undergoing puberty suppression with GnRH agonists showed a decrease in behavioral and emotional problems, as well as a decrease in depressive symptoms.

Improved general functioning for these youth was also reported.<sup>15</sup> Important to note is that gender dysphoria was not improved with the use of GnRH agonists. This is likely because GnRH agonists simply suspend the progress of the “incorrect” puberty, they do not induce the development of desired secondary sex characteristics as do cross-sex hormones. A study examining the physiologic impact of puberty suppression with GnRH agonists reported that the first 21 patients undergoing this treatment had adequate suppression of their pituitary gonadal axis and no progression of their endogenous puberty. While on GnRH agonists, bone density remained in the same range for patients experiencing suppression. Compared with age-matched peers, bone density z-scores went down while patients were being suppressed.<sup>5</sup> Of note is that to date, there has been only one report of a single youth who started puberty suppression and did not continue on to use cross-sex hormones for gender transition.<sup>12</sup>

## Conclusion

Medical care for gender dysphoria and transgender youth has changed rapidly during the past few years. The ability to suppress unwanted puberty has changed the trajectory of patients’ lives, making possible a nearly seamless phenotypic gender transition. Puberty blockers afford youth the opportunity to undergo a single, correct pubertal process and avoid many of the surgical interventions previously necessary for assimilation into an authentic gender role. Pediatricians, endocrinologists, family physicians, and other providers of general medicine are fully equipped to advocate for, prescribe, and monitor GnRH agonists. This essentially reversible intervention is simple and has the capacity to improve health outcomes and save lives.

De Vries AL, Steensma TD, Doreleijers TA, Cohen-Kettenis PT. Puberty suppression in adolescents with gender identity disorder: a prospective follow-up study. *J Sex Med.* 2011;8(8):2276–2283. doi:10.1111/j.1743-6109.2010.01943.x [\[CrossRef\]](#)

<http://onlinelibrary.wiley.com/doi/10.1111/j.1743-6109.2010.01943.x/full>

## Methods

Of the first 70 eligible candidates who received puberty suppression between 2000 and 2008, psychological functioning and gender dysphoria were assessed twice: at T0, when attending the gender identity clinic, before the start of GnRH; and at T1, shortly before the start of cross-sex hormone treatment.

## Main Outcome Measures

Behavioral and emotional problems (Child Behavior Checklist and the Youth-Self Report), depressive symptoms (Beck Depression Inventory), anxiety and anger (the Spielberger Trait Anxiety and Anger Scales), general functioning (the clinician's rated Children's Global Assessment Scale), gender dysphoria (the Utrecht Gender Dysphoria Scale), and body satisfaction (the Body Image Scale) were assessed.

## Results

Behavioral and emotional problems and depressive symptoms decreased, while general functioning improved significantly during puberty suppression. Feelings of anxiety and anger did not change between T0 and T1. While changes over time were equal for both sexes, compared with natal males, natal females were older when they started puberty suppression



and showed more problem behavior at both T0 and T1. Gender dysphoria and body satisfaction did not change between T0 and T1. No adolescent withdrew from puberty suppression, and all started cross-sex hormone treatment, the first step of actual gender reassignment.

Delemarre-van de Waal HA, Cohen-Kettenis PT. Clinical management of gender identity disorder in adolescents: a protocol on psychological and paediatric endocrinology aspects. *Eur J Endocrinol.* 2006;155(suppl 1):S131–S137. doi:10.1530/eje.1.02231

[http://www.eje-online.org/content/155/suppl\\_1/S131.short](http://www.eje-online.org/content/155/suppl_1/S131.short)

## The views of YP with GD on the use of puberty blockers

**Perceptions of Sex, Gender, and Puberty Suppression: A Qualitative Analysis of Transgender Youth** (Vrouenraets, Lieke ; Fredriks, A ; Hannema, Sabine ; Cohen-Kettenis, Peggy ; de Vries, Martine 2016)

**Description:** International guidelines recommend the use of Gonadotropin-Releasing Hormone (GnRH) agonists in adolescents with gender dysphoria (GD) to suppress puberty. ***Little is known about the way gender dysphoric adolescents themselves think about this early medical intervention.*** The purpose of the present study was (1) to explicate the considerations of gender dysphoric adolescents in the Netherlands concerning the use of puberty suppression; (2) to explore whether the considerations of gender dysphoric adolescents differ from those of professionals working in treatment teams, and if so in what sense. This was a qualitative study designed to identify considerations of gender dysphoric adolescents regarding early treatment. All

13 adolescents, except for one, were treated with puberty suppression; five adolescents were trans girls and eight were trans boys. Their ages ranged between 13 and 18 years, with an average age of 16 years and 11 months, and a median age of 17 years and 4 months. Subsequently, the considerations of the adolescents were compared with views of clinicians treating youth with GD. From the interviews with the gender dysphoric adolescents, three themes emerged: (1) the difficulty of determining what is an appropriate lower age limit for starting puberty suppression. Most adolescents found it difficult to define an appropriate age limit and saw it as a dilemma; (2) the lack of data on the long-term effects of puberty suppression. ***Most adolescents stated that the lack of long-term data did not and would not stop them from wanting puberty suppression;*** (3) the role of the social context, for which there were two subthemes: (a) increased media-attention, on television, and on the Internet; (b) an imposed stereotype. Some adolescents were positive about the role of the social context, but others raised doubts about it. Compared to clinicians, adolescents were often more cautious in their treatment views. It is important to give voice to gender dysphoric adolescents when discussing the use of puberty suppression in GD. Otherwise, professionals might act based on assumptions about adolescents' opinions instead of their actual considerations. We encourage gathering more qualitative research data from gender dysphoric adolescents in other countries.

## **Transgender youth: Current concepts (Rosenthal S.M., 2016)**

In many countries throughout the world, increasing numbers of gender nonconforming/transgender youth are seeking medical services to enable the development of physical characteristics consistent with their experienced gender. Such medical services include use of agents to block endogenous puberty at Tanner stage II with subsequent use of cross-sex hormones, and are based on longitudinal studies demonstrating that those individuals who were first identified as gender dysphoric in early or middle childhood and continue to meet the mental health criteria for being transgender at early puberty are likely to be transgender as adults.

Blocking Puberty in transgender youth

<http://endocrinenews.endocrine.org/blocking-puberty-in-transgender-youth/>

Although the treatments are considered safe, they are not risk-free. Most transgenders become infertile as a result of **the hormonal switching medications**. Estrogens diminish sperm production in males, and testosterone's cessation of menses can cause polycystic ovaries in women; these changes usually lead to infertility. Some late-pubertal male patients have opted for sperm banking, but equivalent options for women are limited. Egg freezing is an arduous and expensive procedure requiring ovarian hyperstimulation with HCG, akin to women undergoing in vitro fertilization, and not as likely to be successful, especially if the ovaries are immature when GnRH-suppressed. - See more at:

<http://endocrinenews.endocrine.org/blocking-puberty-in-transgender-youth/#sthash.jiVkJ1m.dpuf>

Blocking Puberty in transgender youth

<http://endocrinenews.endocrine.org/blocking-puberty-in-transgender-youth/>

In transgender youth, puberty blockers are used to suppress the endogenous pubertal changes that quite often worsen the individual's gender dysphoria. In addition, by not being exposed to one's own sex hormones, cross hormone therapy is even more effective at achieving the desired physical appearance in gender transition.