

Australian standards of care and treatment guidelines for transgender and gender diverse children and adolescents

Michelle M Telfer¹, Michelle A Tollit^{1,2}, Carmen C Pace^{1,2}, Ken C Pang^{1,2}

Being transgender or gender diverse is now largely viewed as part of the natural spectrum of human diversity. It is, however, frequently accompanied by gender dysphoria, the distress that arises from incongruence between a person's gender identity and their sex assigned at birth. It is well recognised that transgender and gender diverse (TGD) individuals are at increased risk of harm because of discrimination, social exclusion, bullying, physical assault and even homicide.¹⁻⁴ Serious psychiatric comorbidity is seen in Australian TGD children and adolescents with 79.7% reporting ever self-harming and 48.1% ever attempting suicide in a recent Australian study.⁵

With increasing visibility and social acceptance of gender diversity in Australia, more TGD children and adolescents are presenting to community and specialist health care services.⁶ It has been estimated that about 1.2% of Australian adolescents identify as transgender,⁷ and it is therefore likely that referrals to health care professionals will continue to rise in the foreseeable future.

In response to the sharp rise in demand for medical services for TGD children and adolescents, multidisciplinary services have been created and expanded throughout Australia. Given this rapid change, there is a clear need for the development of clinical guidelines to assist in the provision of optimal and consistent care, improve access and equity to such care, and facilitate research.

Although international treatment guidelines currently exist,^{8,9} there are particular challenges in providing TGD health care in Australia. These include cultural and linguistic diversity, and vast geographical distances creating barriers to treatment access for people living in rural and regional locations. On this basis, new Australian standards of care and treatment guidelines have been developed.

The terminology relating to TGD children and adolescents is rapidly evolving. A list of some current, frequently used terms is provided in the **Box**.

Methods

The Australian standards of care and treatment guidelines (the statement) are based primarily on clinician consensus, along with previously published standards of care,⁸ treatment guidelines and position statements,⁹⁻¹⁵ and data from a limited number of non-randomised clinical studies and observational studies.¹⁶⁻²⁷ In creating the Australian statement, we consulted all the known child and adolescent psychiatrists, paediatricians, paediatric endocrinologists and allied health specialists who work clinically in the area of transgender health across Australia. A list of contributors from the Royal Children's Hospital Gender Service team and contributing organisations and individuals from within the TGD community is provided in the Acknowledgements section of

Abstract

Introduction: The Australian standards of care and treatment guidelines aim to maximise quality care provision to transgender and gender diverse (TGD) children and adolescents across Australia, while recognising the unique circumstances of providing such care to this population. Recommendations are made based on available empirical evidence and clinician consensus, and have been developed in consultation with Australian professionals from multiple disciplines working with the TGD population, TGD support organisations, as well as TGD children and adolescents and their families.

Main recommendations: Recommendations include general principles for supporting TGD children and adolescents using an affirmative approach, separate guidelines for the care of pre-pubertal children and TGD adolescents, as well as discipline-based recommendations for mental health care, medical and surgical interventions, fertility preservation, and speech therapy.

Changes in management as a result of this statement

Statement: Although published international treatment guidelines currently exist, challenges in accessing and providing TGD health care specific to Australia have not been addressed to date. In response to this, these are the first guidelines to be developed for TGD children and adolescents in Australia. These guidelines also move away from treatment recommendations based on chronological age, with recommended timing of medical transition and surgical interventions dependent on the adolescent's capacity and competence to make informed decisions, duration of time on puberty suppression, coexisting mental health and medical issues, and existing family support.

the full version, which is available at <https://www.rch.org.au/adolescent-medicine/gender-service/>.

Before developing the statement, opinions were sought from clinicians nationally on key aspects of management. With this feedback, using the World Professional Association for Transgender Health standards⁸ as a general guide, an initial draft was created. A second stage of consultation involved review of the draft by TGD support organisations, TGD children, adolescents and their parents, via both written correspondence and through face-to-face group discussion. Further feedback on the draft document was sought from clinicians across Australia.

The final document has been endorsed by the Australian and New Zealand Professional Association for Transgender Health, the peak organisation in the region which actively promotes communication and collaboration among professionals of all disciplines involved in the health care, rights and wellbeing of people who identify as TGD. The recommendations provided are based primarily on expert consensus. The scarcity of high quality

Terminology

Gender identity	A person's innermost concept of self as male, female, a blend of both or neither. One's gender identity can be the same or different from their sex assigned at birth.
Gender expression	The external presentation of one's gender, as expressed through one's name, clothing, behaviour, hairstyle or voice, and which may or may not conform to socially defined behaviours and characteristics typically associated with being either masculine or feminine.
Gender diverse	A term to describe people who do not conform to their society or culture's expectations for males and females. Being transgender is one way of being gender diverse, but not all gender diverse people are transgender.
Assigned male at birth	A person who was thought to be male when born and initially raised as a boy.
Assigned female at birth	A person who was thought to be female when born and initially raised as a girl.
Trans or transgender	A term for someone whose gender identity is not congruent with their sex assigned at birth.
Cisgender	A term for someone whose gender identity aligns with their sex assigned at birth.
Trans boy/male/man	A term to describe someone who was assigned female at birth who identifies as a boy/male/man.
Trans girl/female/woman	A term to describe someone who was assigned male at birth who identifies as a girl/female/woman.
Non-binary	A term to describe someone who does not identify exclusively as male or female.
Agender	A term to describe someone who does not identify with any gender.
Brotherboy and sistergirl	Aboriginal and Torres Strait Islander people may use these terms in a number of different contexts, but they are often used to refer to trans and gender diverse people. Brotherboy typically refers to masculine-spirited people who were assigned female at birth. Sistergirl typically refers to feminine-spirited people who were assigned male at birth.
Gender dysphoria	A term that describes the distress experienced by a person due to incongruence between their gender identity and their sex assigned at birth.
Social transition	The process by which a person changes their gender expression to better match their gender identity.
Medical transition	The process by which a person changes their physical sex characteristics via hormonal intervention and/or surgery to more closely align with their gender identity.

published evidence on the topic prohibited the assessment of level (and quality) of evidence for these recommendations. Where evidence exists, it has been referenced.

Recommendations

The clinical needs of TGD children (ie, those who are in a pre-pubertal stage of development) and adolescents (ie, those in whom puberty has commenced but are not yet legally adults) are inherently different. For this reason, the guidelines include separate recommendations for these two groups; however, some general principles²⁸ also apply.

General principles for supporting transgender and gender diverse children and adolescents

Individualise care. Every child or adolescent who presents with concerns regarding their gender will have a unique clinical presentation and their own individual needs.⁸ Importantly, decision making should be driven by the child or adolescent wherever possible; this applies to options regarding not only medical intervention but also social transition.

Use respectful and affirming language. Understanding and using a person's preferred name and pronouns is vital to the provision of affirming and respectful care of TGD children and adolescents.^{15,29} Providing an environment that demonstrates inclusiveness and respect for diversity is essential, with Australian research reporting that health care environments experienced as discriminatory for TGD people are correlated with poorer mental health outcomes.^{4,30}

Avoid causing harm. Avoiding harm is an important ethical consideration for health professionals when considering different options for medical and surgical intervention, with the withholding of gender-affirming treatment potentially exacerbating distress³¹ and increasing the risk of self-harm or suicide. In the past,

psychological practices attempting to change a person's gender identity to be more aligned with their sex assigned at birth were used.³² Approaches of this nature lack efficacy,^{33,34} are considered unethical,⁸ and may cause lasting damage to an individual's social and emotional health and wellbeing.^{14,33-35}

Consider socio-cultural factors. Fear of stigma and discrimination by health professionals can be a barrier for TGD individuals in accessing health care and treatment directly related to gender dysphoria.³⁶ Additional barriers to treatment access may exist for Indigenous TGD Australians³⁷ and those belonging to religious or cultural groups whose beliefs and values may be at odds with a gender-affirming approach.

Consider legal requirements. Historically, court processes have played a significant role in determining access to hormone treatment for transgender adolescents in Australia. Following the case in the Family Court of Australia known as *Re Alex* (2004),³⁸ medical treatment for gender dysphoria was classified as a "special medical procedure" and all adolescents required court authorisation to access pubertal suppression and hormone treatment. This position was challenged before the Full Bench of the Family Court in *Re: Jamie* (2013)³⁹ and *Re: Kelvin* (2017).⁴⁰ Current law allows the adolescent's clinicians to determine their capacity to provide informed consent for treatment. Court authorisation before commencement of hormone treatment is no longer required. For adolescents who are assessed by clinicians as not being competent to provide informed consent, usual parental responsibility applies and parents or legal guardians can provide informed consent on their behalf without requiring court authorisation.

Supporting transgender and gender diverse children (before onset of puberty)

Psychological support. Supporting TGD children requires a developmentally appropriate and gender-affirming approach. A

non-judgemental, safe and supportive environment for children and their parents or caregivers will allow optimal outcomes from care provision.

While most TGD children and their families may benefit from psychological support, the level of support depends on the clinical and psycho-social circumstances present. TGD children with good health and wellbeing who are supported by gender-affirming family and educational environments may not require psychological support beyond intermittent contact with a clinician such as the family's general practitioner.

There is growing evidence to suggest that for children, family support is associated with better mental health outcomes.¹⁹ Where there is a lack of family understanding or support for a child's gender diverse expression, a clinician may work with family members to help develop a common understanding of the child's experience.

When a child's medical, psychological and/or social circumstances are complicated by coexisting autism spectrum disorder, mental health problems, learning or behavioural difficulties, trauma, abuse or significantly impaired family functioning, a more intensive approach with input from a skilled mental health clinician with expertise in child cognitive and emotional development and child psychopathology, and experience in working with children with gender diversity and gender dysphoria, is required.

Social transition. Social transition involves outwardly expressing oneself in a gender role that is consistent with one's gender identity. This may include changing one's preferred name and pronouns, hairstyle, or wearing clothing that is stereotypically associated with the gender one identifies with. Social transition should be led by the child and does not need to involve an all or nothing approach. Social transition can reduce a child's distress and improve their emotional functioning.^{19,25} Evidence suggests that transgender children who have socially transitioned demonstrate rates of depression, anxiety and self-worth comparable with their cisgender peers.^{19,25} The number of children in Australia who later socially transition back to their gender assigned at birth is unknown, but anecdotally appears low.

Supporting and treating transgender and gender diverse adolescents (after onset of puberty)

Psychological support. Providing psychological care to TGD adolescents requires a comprehensive exploration of the adolescent's early developmental history, history of gender identity development and expression, emotional functioning, intellectual and educational functioning, peer and other social relationships, family functioning, and immediate and extended family support. Many adolescents experience difficulties such as family rejection, bullying, discrimination and occasionally physical assaults after disclosing their gender identity concerns to others.

TGD adolescents present with various clinical and support needs. In adolescents with insistent, persistent and consistent gender diverse expression, a supportive family, affirming educational environment and absence of coexisting psychological concerns, the adolescent and their parents or caregivers may benefit from an initial assessment followed by intermittent contact with a mental health clinician. This may be necessary when new concerns arise, or as required for planning for and implementing medical transition. Where there are coexisting mental health difficulties, more intensive input from a mental health practitioner is beneficial.

Occasionally, an adolescent may present with marked medical, psychological and/or social complexity. Such adolescents are

likely to benefit from a more intensive approach that requires the adolescent, their family and the clinician to openly explore the adolescent's sense of self in a safe and therapeutic environment.

Voice and communication training. Communication assessment, speech therapy and voice coaching by specialist speech pathologists with experience in the treatment of adolescents with gender dysphoria can assist adolescents in the development of skills which enable them to communicate in a manner consistent with their gender identity.¹²

Social transition. The principles of social transition discussed above also apply to adolescents. For older adolescents, consideration of further modification of gender expression (eg, chest binding in trans males) may be helpful in reducing dysphoria.

Fertility counselling and preservation procedures. Fertility preservation information and counselling should be available to adolescents before medical treatment. For trans males, treatment with testosterone does not necessarily cause infertility, with many documented cases of successful pregnancies occurring in those previously treated with testosterone.⁴¹ It is also important to counsel the adolescent on risks of unwanted pregnancy when taking testosterone. For trans females, there is evidence that oestrogen impairs sperm production,⁴²⁻⁴⁴ although whether these effects are permanent remains unknown.⁹ Because of this, it is recommended that adolescents who present in the latter stages of pubertal development (Tanner stage 3–5) be counselled on the benefits of storing semen for cryopreservation either through masturbation or surgical extraction.¹³ Should the adolescent not be able to produce mature sperm for cryopreservation, a testicular biopsy for tissue storage can be offered as a potential means for reproduction in the future. However, this technique is currently experimental and yet to be successful.

Puberty suppression (stage 1 treatment). Puberty suppression is indicated when an adolescent with gender dysphoria⁴⁵ experiences significant distress with the onset or progression of pubertal development. It involves use of gonadotrophin-releasing hormone agonists which suppress the endogenous oestrogen and testosterone responsible for induction of secondary sexual characteristics^{46,47} and is most effectively used when commenced in the early stages of puberty. Puberty suppression is reversible in its effects⁹ and typically relieves distress for trans adolescents by halting progression of physical changes such as breast growth and menstruation in trans males and voice deepening and facial hair development in trans females. Other physical changes such as linear growth and weight gain continue while on these medications,²⁶ and the adolescent is given time to develop emotionally and cognitively before making decisions on gender-affirming hormone use that have some irreversible effects.

The main concern with use of puberty suppression from early puberty is its impact on bone mineral density owing to the absence of the effect of oestrogen or testosterone on bone mineralisation.^{23,27} Regular monitoring of bone mineral density during stage 1 treatment is recommended.⁹

Gender-affirming hormone treatment using oestrogen and testosterone (stage 2 treatment). Oestrogen and testosterone are used to either feminise or masculinise a person's appearance by inducing the onset of secondary sexual characteristics of the desired gender.^{9,23} Some of the effects of these medications are irreversible, while others have a degree of expected reversibility that is likely, unlikely or unknown.

The ideal time for commencement of stage 2 treatment in trans adolescents depends on the individual seeking treatment and their

unique circumstances. Empirical evidence to provide objective recommendations for the appropriate age for introduction of stage 2 treatment is lacking, with previous guidelines using age-informed cut-offs based on clinician consensus and the age of consent for medical procedures in the particular jurisdiction.

Informed consent for stage 2 treatment must be obtained from the adolescent and ideally, but not necessarily, from parents, carers or guardians. Adolescents vary in the age at which they become competent to make decisions that have complex risk–benefit ratios,⁴⁸ as is the case with gender-affirming hormone treatment that is partially irreversible. This is an important consideration, with a thorough assessment of competence being a central part of mental health and paediatric assessments. In addition to ensuring that the adolescent is competent to make an informed decision, the timing of commencement of stage 2 treatment also depends on the nature of the history and presentation of the person's gender dysphoria, duration of time on puberty suppression for those on stage 1 treatment, comorbid mental health and medical issues, and existing family support.

Surgical interventions for TGD adolescents. Chest reconstructive surgery (top surgery) may be appropriate in the care of trans males during adolescence.⁴⁹ In alignment with the recommendations of World Professional Association for Transgender Health,⁸ chest reconstructive surgery is performed across the world in countries where the age of majority for medical procedures is 16 years.⁵⁰

Given the irreversible nature of gender-affirming surgical procedures, the decision to undertake chest reconstructive surgery during adolescence requires a thorough assessment by professionals experienced in working with trans adolescents and an individualised approach. A decision as to whether the surgery is in the adolescent's best interest should be made jointly, with

consensus reached between the adolescent, their guardians and the clinicians involved in their care.

Genital surgery performed before the age of 18 years remains relatively uncommon internationally. Decisions regarding an adolescent's best interest and ability to consent for genital surgery are complex, partly due to the greater risks associated with such major surgery, as well as the impacts on the adolescent's long term sexual function and reproductive potential. Given this, delaying genital surgery until adulthood is advised.

Conclusion

The standards of care and treatment guidelines provide guidance for health care providers working with TGD children and adolescents in Australia. Increasing evidence demonstrates that with supportive, gender-affirming care¹⁶ during childhood and adolescence, harms can be ameliorated and mental health and wellbeing outcomes can be significantly improved.^{17–19} It is hoped that this statement contributes to this overall goal by increasing accessibility of quality service provision. As noted above, the recommendations in this document draw on clinician consensus, standards of care,⁸ treatment guidelines and position statements,^{9–15} and limited data from non-randomised clinical and observational studies.^{16–27} It is clear that further research is warranted across all domains of care for TGD children and adolescents, the findings of which are likely to influence future recommendations.

Competing interests: No relevant disclosures.

Provenance: Not commissioned; externally peer reviewed. ■

© 2018 AMPCo Pty Ltd. Produced with Elsevier B.V. All rights reserved.

- 1 Couch M, Pitts M, Mulcare H, et al. *Tranznation: a report on the health and wellbeing of transgendered people in Australia and New Zealand*. Melbourne: Australian Research Centre in Sex, Health and Society, La Trobe University, 2007.
- 2 Giordano S. *Children with gender identity disorder: a clinical, ethical, and legal analysis*. Oxon, UK: Routledge, 2013.
- 3 Hillier L, Jones T, Monagle M, et al. *Writing Themselves in 3: the third national study on the sexual health and wellbeing of same sex attracted and gender questioning young people*. Melbourne: Australian Research Centre in Sex, Health and Society, La Trobe University, 2010.
- 4 Hyde Z, Doherty M, Tilley P, et al. *The First Australian National Trans Mental Health Study: summary of results*. Perth: Curtin University, 2014.
- 5 Strauss P, Cook A, Winter S, et al. *Trans Pathways: the mental health experiences and care pathways of trans young people. Summary of results*. Perth: Telethon Kids Institute, 2017.
- 6 Telfer M, Tollit M, Feldman D. Transformation of health-care and legal systems for the transgender population: the need for change in Australia. *J Paediatr Child Health* 2015; 51: 1051–1053.
- 7 Clark T, Lucassen M, Bullen P, et al. The health and well-being of transgender high school students: Results from the New Zealand adolescent health survey (Youth'12). *J Adolesc Health* 2014; 55: 93–99.
- 8 Coleman E, Bockting W, Botzer M, et al. Standards of care for the health of transsexual, transgender, and gender-nonconforming people, version 7. *Int J Transgend* 2012; 13: 165–232.
- 9 Hembree WC, Cohen-Kettenis PT, Gooren L, et al. Endocrine treatment of gender-dysphoric/gender-incongruent persons: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab* 2017; 102: 3869–3903.
- 10 Strang JF, Meagher H, Kenworthy L, et al. Initial clinical guidelines for co-occurring autism spectrum disorder and gender dysphoria or incongruence in adolescents. *J Clin Child Adolesc Psychol* 2018; 47: 105–115.
- 11 Bockting WO, Goldberg J. *Guidelines for transgender care*. Binghamton, NY: Haworth Medical Press, 2006.
- 12 Adler RK, Hirsch S, Mordaunt M. *Voice and communication therapy for the transgender/transsexual client: a comprehensive clinical guide*. San Diego, CA: Plural Publishing, 2012.
- 13 Finlayson C, Johnson EK, Chen D, et al. Proceedings of the working group session on fertility preservation for individuals with gender and sex diversity. *Transgend Health* 2016; 1: 99–107.
- 14 American Psychological Association. Report of the Task Force on Gender Identity and Gender Variance. Washington, DC: APA; 2009.
- 15 Burnes TR, Singh AA, Harper A, et al. American Counseling Association: competencies for counseling with transgender clients. *J LGBT Issues Couns* 2010; 4: 135–159.
- 16 Hidalgo MA, Ehrensaft D, Tishelman AC, et al. The gender affirmative model: what we know and what we aim to learn. *Hum Dev* 2013; 56: 285–290.
- 17 de Vries A, McGuire J, Steensma T, et al. Young adult psychological outcome after puberty suppression and gender reassignment. *Pediatrics* 2014; 134: 696–704.
- 18 Simons L, Schrager S, Clark L, et al. Parental support and mental health among transgender adolescents. *J Adolesc Health* 2013; 53: 791–793.
- 19 Olson K, Durwood L, DeMeules M, McLaughlin K. Mental health of transgender children who are supported in their identities. *Pediatrics* 2016; 137: e20153223.
- 20 Costa R, Dunsford M, Skagerberg E, et al. Psychological support, puberty suppression, and psychosocial functioning in adolescents with gender dysphoria. *J Sex Med* 2015; 12: 2206–2214.
- 21 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: 2276–2283.
- 22 De Vries AL, McGuire JK, Steensma TD, et al. Young adult psychological outcome after puberty suppression and gender reassignment. *Pediatrics* 2014; 134: 696–704.
- 23 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.
- 24 Tack LJ, Heyse R, Craen M, et al. Consecutive cyproterone acetate and estradiol treatment in late-pubertal transgender female adolescents. *J Sex Med* 2017; 14: 747–757.
- 25 Durwood L, McLaughlin KA, Olson KR. Mental health and self-worth in socially transitioned

Position statement summary

transgender youth. *J Am Acad Child Adolesc Psychiatry* 2017; 56: 116-123 e2.

26 Schagen SE, Cohen-Kettenis PT, Delemarre-van de Waal HA, Hannema SE. Efficacy and safety of gonadotropin-releasing hormone agonist treatment to suppress puberty in gender dysphoric adolescents. *J Sex Med* 2016; 13: 1125-1132.

27 Vlot MC, Klink DT, den Heijer M, et al. Effect of pubertal suppression and cross-sex hormone therapy on bone turnover markers and bone mineral apparent density (BMAD) in transgender adolescents. *Bone* 2016; 95: 11-19.

28 Rieger E, editor. *Abnormal psychology: leading researcher perspectives*. 4th ed. Sydney: McGraw-Hill Education, 2017.

29 Deutsch MB, Buchholz D. Electronic health records and transgender patients—practical recommendations for the collection of gender identity data. *J Gen Intern Med* 2015; 30: 843-847.

30 Riggs DW, Coleman K, Due C. Healthcare experiences of gender diverse Australians: a mixed-methods, self-report survey. *BMC Public Health* 2014; 14: 230-234.

31 Cohen-Kettenis PT, Steensma TD, de Vries AL. Treatment of adolescents with gender dysphoria in the Netherlands. *Child Adolesc Psychiatr Clin N Am* 2011; 20: 689-700.

32 Gelder MG, Marks IM. Aversion treatment in transvestism and transsexualism. In: Green R, Money J, editors. *Transsexualism and sex reassignment*. Baltimore, MD: Johns Hopkins Press, 1969.

33 Substance Abuse and Mental Health Services Administration. *Ending conversion therapy: supporting and affirming LGBTQ youth*, HHS Publication No. (SMA) 15-4928. Rockville, MD: SAMHSA, 2015.

34 American Psychological Association. Report of the American Psychological Association Task Force on appropriate therapeutic responses to sexual orientation. Washington, DC: APA; 2009.

35 Drescher J. Controversies in gender diagnoses. *LGBT Health* 2013; 1: 10-14.

36 Smith E, Jones T, Ward R, et al. From blues to rainbows: the mental health and well-being of gender diverse and transgender young people in Australia. Melbourne: Australian Research Centre in Sex, Health and Society, 2014.

37 Kerr SC. Sistergirls/brotherboys: the status of indigenous transgender Australians. *Int J Transgend* 2014; 15: 173-186.

38 Re Alex: Hormonal Treatment for Gender Identity Dysphoria [2004] FamCA 297 (13 April 2004). <http://www.austlii.edu.au/cgi-bin/viewdoc/au/cases/cth/FamCA/2004/297.html?context=1> (viewed Feb 2018).

39 Re Jamie [2013] FamCAFC 110 (31 July 2013). <http://www.austlii.edu.au/cgi-bin/viewdoc/au/cases/cth/FamCAFC/2013/110.html?context=1> (viewed Feb 2018).

40 Re Kelvin [2017] FamCAFC 258 (30 November 2017). <http://www.austlii.edu.au/cgi-bin/viewdoc/au/cases/cth/FamCAFC/2017/258.html?context=1> (viewed Feb 2018).

41 Light A, Obedin-Maliver J, Sevelius J, Kerns J. Transgender men who experienced pregnancy after female-to-male gender transitioning. *Obstet Gynecol* 2014; 124: 1120-1127.

42 Thiagaraj D, Gunasegaram R, Loganath A, et al. Histopathology of the testes from male transsexuals on oestrogen therapy. *Ann Acad Med Singapore* 1987; 16: 347-348.

43 Schulze C. Response of the human testis to long-term estrogen treatment: morphology of Sertoli cells, Leydig cells and spermatogonial stem cells. *Cell Tissue Res* 1988; 251: 31-43.

44 Lubbert H, Leo-Rossberg I, Hammerstein J. Effects of ethinyl estradiol on semen quality and various hormonal parameters in a eunodal male. *Fertil Steril* 1992; 58: 603-608.

45 American Psychiatric Association. *Diagnostic and statistical manual of mental disorders*, 5th Edition. Arlington, VA: American Psychiatric Association; 2013.

46 Kreukels BP, Cohen-Kettenis PT. Puberty suppression in gender identity disorder: the Amsterdam experience. *Nat Rev Endocrinol* 2011; 7: 466-472.

47 Mahfoud S, Moore JK, Siafarikas A, et al. Puberty suppression in transgender children and adolescents. *Lancet Diabetes Endocrinol* 2017; 5: 816-826.

48 Bird S. Consent to medical treatment: the mature minor. *Aust Fam Physician* 2011; 40: 159-160.

49 Marinkovic M, Newfield RS. Chest reconstructive surgeries in transmasculine youth: experience from one pediatric center. *Int J Transgend* 2017; 18: 376-381.

50 Milrod C, Karasic D. Age is just a number: WPATH-affiliated surgeons' experiences and attitudes toward vaginoplasty in transgender females under 18 years of age in the United States. *J Sex Med* 2017; 14: 624-634. ■