



WITNESS STATEMENT OF ASSOCIATE PROFESSOR MICHELLE TELFER

I, Associate Professor Michelle Telfer, General Paediatrician, Adolescent Medicine Physician and Head of the Department of Adolescent Medicine at The Royal Children's Hospital (**RCH**), of 50 Flemington Road, Parkville, in the State of Victoria, say as follows:

- 1 I am authorised by RCH to make this statement on its behalf.
- 2 I make this statement on the basis of my own knowledge, save where otherwise stated. Where I make statements based on information provided by others, I believe such information to be true.

BACKGROUND AND QUALIFICATIONS

Please detail your background and experience, including your qualifications.

- 3 I have the following qualifications:
 - (a) Bachelor of Medicine and Surgery (with Honours);
 - (b) Fellow of the Royal Australasian College of Physicians (FRACP); and
 - (c) Adolescent and Young Adult Subspecialist recognition by the Royal Australasian College of Physicians.
- 4 I have been an employee of RCH for approximately seven years and have undertaken a variety of roles within the RCH:
 - (a) since December 2015, I have been the Head of the Department of Adolescent Medicine;
 - (b) since August 2012, I have been the Director of the RCH Gender Service (**RCHGS**); and
 - (c) from January 2013 to December 2015, I was the Clinical Lead (Adolescent Medicine) within the Centre for Adolescent Health.
- 5 Prior to commencing at the RCH, I was a Consultant Paediatrician within the Paediatric Emergency Department at the Monash Medical Centre from April 2011 to January 2013. Attached to this statement and marked **MT-1** is a copy of my Curriculum Vitae.

Please identify any entities (other than the RCH) you are associated with or employed by.

- 6 I am currently the President of the Australian Professional Association for Trans Health (**AusPATH**) (previously known as the Australian and New Zealand Professional Association for Transgender Health). My role as President involves providing support to the network of professionals who work in the Trans and Gender Diverse (**TGD**) health field.
- 7 Prior to being elected as President in September 2018, I held roles as an Executive Member and the Vice President of AusPATH.
- 8 In addition to AusPATH, I have been involved in various other associations and committees related to my field of work:
- (a) since 2013, I have been a Member of the World Professional Association for Transgender Health;
 - (b) from 2013 to 2017, I was an Executive Member of the Australian Association for Adolescent Health;
 - (c) from 2014 to 2016, I was an Executive Member of the RCH Senior Medical Staff Association; and
 - (d) from 2013 to 2016, I was a Member of the RCH Vulnerable Children's Committee.

RCH

Overview

- 9 The RCH is a leading paediatric hospital with substantial secondary, tertiary and quaternary roles which support children and adolescents in Victoria, parts of New South Wales, Tasmania and nationally.
- 10 It provides a full range of clinical services, tertiary care and health promotion and prevention programs, and amongst the state-wide services that we lead, we are the designated state-wide major trauma centre for paediatrics in Victoria. In collaboration with campus partners the Murdoch Children's Research Institute and the University of Melbourne, the RCH also makes substantial global contributions to research, teaching and training in paediatrics.

Department of Adolescent Medicine

- 11 Within the RCH, the Department of Adolescent Medicine provides care and management to adolescents and their families via a range of specialist multidisciplinary services:

- (a) RCHGS, which aims to improve the physical and mental health and wellbeing of young people who experience gender dysphoria;
- (b) Eating Disorders Service, which provides clinical management of anorexia nervosa, atypical anorexia nervosa and other restrictive eating disorders;
- (c) Chronic Illness Peer Support, which provides structured activities for adolescents and young adults with significant chronic illness to learn from each other, broaden their experiences and gain skills;
- (d) Young People's Health Services, which provides primary care to adolescents and young adults in Melbourne who are homeless, at risk of homelessness or marginalised; and
- (e) Inpatient and outpatient medical service, which involves paediatricians specialising in the care and management of adolescents with a focus on psychosocial complexity including chronic fatigue syndrome and somatisation.

Please describe what the RCHGS is and what its aims are.

- 12 The RCHGS is the leading centre for medical and mental health care for TGD young people in Australia. The RCHGS' target group is young people who experience gender dysphoria, reside in Victoria and access the RCHGS prior to age 17 years (referred to as 'TGD young people' throughout this statement). As a Victorian state-wide service, the RCHGS is currently unable to accept interstate referrals.
- 13 The RCHGS is now one of the three largest multidisciplinary gender services for young people in the world, particularly with respect to providing evidence-based care. The team consists of clinicians from Adolescent Medicine, Psychiatry, Psychology, Nursing, Endocrinology and Gynaecology. It is supported by other RCH Departments including Speech Pathology, Andrology, Clinical Bioethics and Legal Services.
- 14 The RCHGS was awarded the Minister for Mental Health's Award at both the 2015 and 2018 Victorian Public Healthcare Awards for excellence in supporting the mental health and wellbeing of Victorians, consumer leadership and advocacy. These awards recognised RCH's support and treatment of TGD young people.
- 15 The RCHGS provides the following services:
 - (a) gender affirming support for TGD young people and their families;
 - (b) mental health assessment, support and treatment in relation to gender identity concerns and co-existing mental health conditions for all patients and families;
 - (c) medical care including medical assessment, management of general adolescent medical problems, pubertal suppression and gender affirming hormone treatment;

- (d) allied health care including speech pathology;
- (e) fertility preservation procedures including sperm storage and testicular biopsy for cryopreservation; and
- (f) transition to adult health services and general practitioners (GPs) or adult specialist services at the age of 18 years or at the completion of year 12 VCE (whichever is later).

What mental health services does the RCHGS provide? In what ways do those mental health services compliment other aspects of the RCHGS, including the physical treatment component? What roles do mental health professionals have in the assessment and ongoing care of adolescents with gender dysphoria?

- 16 The RCHGS is a fully integrated and co-ordinated multidisciplinary service which responds to the health care needs, both physical and mental, of TGD young people and their families.
- 17 Identifying as TGD is now largely viewed as part of the natural spectrum of human diversity. It may, however, be accompanied by significant gender dysphoria, which is characterised by the distress that arises from incongruence between a person's gender identity and their sex assigned at birth.
- 18 Mental health issues for TGD young people usually stem from distress caused by such issues as experienced stigma, discrimination, social exclusion and isolation, family rejection, bullying, harassment or abuse. All interventions provided by the RCHGS aim to mitigate the harm caused by such experiences through provision of multidisciplinary gender affirming care.
- 19 A common misconception is that our mental health clinicians solely provide psychiatric diagnosis and mental health care while, separately, our paediatricians provide medical treatment for medical transition. In reality, all RCHGS clinicians have a role to play in providing mental health care and maximising mental health outcomes. Across all clinical disciplines, all members of the RCHGS work towards a common goal of improving mental health outcomes for TGD young people. Attached to this statement and marked **MT-2** is a copy of the most recent RCHGS Program Logic Model.
- 20 Interventions which improve mental health outcomes for TGD young people include validation of one's gender identity, support to enable self-acceptance, family support, education, understanding and acceptance as well as social and physical interventions.
- 21 Social interventions include supporting social transition (for example, using one's preferred name and pronouns or wearing clothing including school uniforms consistent with one's gender identity). Speech therapy can also assist the young person to

express themselves and their gender identity using changes in their use of voice and communication.

- 22 Physical interventions aiming to change physical appearance are usually referred to as medical transition and utilise various forms of pubertal suppression (using gonadotrophin releasing hormone analogues) and gender affirming hormone treatment (oestrogen or testosterone).
- 23 These interventions above are provided by mental health clinicians, nursing staff, speech pathologists, paediatricians and endocrinologists. All of these interventions change the internal experience of the TGD young person as well as their experiences within their family, school or in other social contexts, improving their mental health in the process.
- 24 The mental health clinicians within the RCHGS play a role in the assessment of the young person and their family at the time of presentation to the RCHGS as well as providing ongoing support and management of co-existing mental health concerns.
- 25 A common misconception is that mental health clinicians are primarily required to 'diagnose' gender dysphoria. Given the innately personal understanding and experience of one's own gender identity, identifying as TGD does not require the involvement of a mental health clinician. What is required for best care is an assessment of how to best maximise this young person's mental health through gaining understanding of who they are as a person and how they are supported more broadly in terms of their family, school environment, peers and wider networks.
- 26 The mental health clinicians share a role with the paediatricians and endocrinologists in determining a young person's understanding of the risks and benefits of various medical treatments, the young person's ability to make informed decisions and their capacity to provide informed consent.
- 27 With TGD young people suffering high rates of depression, anxiety and self-harm it is important to monitor mental health status over time as the young person progresses through various aspects of their transition.

CURRENT ROLES

Please describe your current roles and responsibilities.

- 28 I am currently employed at the RCH as a Paediatrician and Subspecialist Adolescent Medicine Physician, Head of the Department of Adolescent Medicine and Director of the RCHGS.

- 29 In my capacity as a Paediatrician, Adolescent Medicine Physician and the Head of Department of Adolescent Medicine, I am involved in clinical care of adolescent patients across inpatient and outpatient settings, clinical research, staff education and training and management of all departmental activities. I supervise junior medical staff and teach medical students at the RCH.
- 30 My role has enabled me to provide targeted education and training for community-based clinicians and GPs as well as engage in advocacy efforts to improve community understanding of the issues facing TGD young people. In 2017 I was able to successfully advocate for improved access to health care in the form of hormone treatment for adolescents through the Family Court of Australia (**FCA**) in a case known as *Re Kelvin* [2017] FamCAFC 258 (30 November 2017) (**Re Kelvin**). Since this decision, TGD adolescents no longer require court authorisation to access hormone treatment under the age of 18 years.
- 31 I was the lead author of the *Australian Standards of Care and Treatment Guidelines for Trans and Gender Diverse Children and Adolescents (TGD Standards of Care)* produced by the RCHGS. Since its publication by the Medical Journal of Australia in 2018 and subsequent editorial feature in The Lancet endorsing its use, the TGD Standards of Care has brought international recognition to the RCHGS. It is considered the preeminent model of care, having been adopted nationally and in a number of gender services internationally. Attached to this statement and marked **MT-3** and **MT-4** are copies of the TGD Standards of Care and The Lancet editorial respectively.

CHALLENGES

Why do TGD young people experience poorer mental health outcomes when compared to other parts of the LGBTIQ+ community and the general population?

Comparison to general population

- 32 It is well recognised that TGD young people experience higher levels of stigma, discrimination, social isolation, exclusion, marginalisation, family rejection, bullying, harassment, and abuse. In more severe scenarios, this includes physical assault, and internationally, an increased risk of homicide when openly identifying as being TGD.
- 33 Recent data from *Trans Pathways: The Mental Health Experiences and Care Pathways of Trans Young People (Trans Pathways)*, a study of the mental health of trans young people age 14-25 years living in Australia in 2017, found very high rates of being diagnosed with depression (75%), anxiety (72%), post-traumatic stress disorder (25%) or an eating disorder (23%). Further, 80% reported self-harming and 48% attempting suicide. Attached to this statement and marked **MT-5** is a copy of the Trans Pathways summary of results.

- 34 TGD young people experience this stigma from their immediate and extended family, peers, schools and the broader society. Consequently, many TGD young people express an internalised feeling of shame. Within their families, parents and siblings often struggle to accept their trans identity. Within schools, TGD young people struggle in an environment where toilets, uniforms and extra-curricular activities such as sport, are conventionally divided according to gender. All of this has a marked impact on how these young people see themselves, how they see the world as well as the way the world sees them.
- 35 Denied educational and vocational opportunities are another by-product of the stigma experienced by TGD young people. For example, bullying and social exclusion hinders TGD young people from maximising their potential at school and, in turn, affects their prospects in applying for university courses and employment. At the RCH, we see many intelligent TGD young people with high academic potential failing to complete their secondary school studies due a fear of returning to an educational environment that is very hostile towards them. Attached to this statement and marked **MT-6** is a copy of an article published by the Journal of Adolescent Health in relation to mental health outcomes and school-based victimisation.
- 36 The clinical evaluation and research project *Trans20: A longitudinal cohort study to improve the outcomes for trans youth (Trans20)* was funded by the RCH Foundation with the support of the Victorian Government. The study will eventually involve more than 600 TGD young people and their parents and aims to assess both short and long term outcomes over a period of 20 years (should the funding be sustained over this time).
- 37 Preliminary results (as at June 2019) have shown a link between experiences of bullying and mental health issues, with 17% of TGD young people who experienced bullying showed high suicide risk compared to 8% for those who did not experience bullying. Attached to this statement and marked **MT-7** is an extract of a study exploring the extent of bullying and mental health issues in patients presenting to the RCHGS based on initial data from the Trans20 study.

Comparison to LGBTIQ+ community

- 38 While societal acceptance of lesbian, gay and bisexual people has improved significantly over recent times, acceptance of TGD people remains a long way behind. Conservative social commentators using mainstream and social media platforms continue to perpetuate fear and hatred toward TGD young people. This is done by dismissing TGD experiences and identity, pathologising these experiences or denying the existence of robust scientific research which supports affirming care in improving outcomes.

- 39 National political and religious leaders have also provided negative commentary regarding TGD young people in recent times, causing harm to the young people themselves by perpetuating shame but also impairing efforts to improve societal acceptance more broadly. Reducing the stigma and discrimination faced by TGD young people requires long-term interventions including sustained support from national political and community leaders and an ability to hold social commentators to account for the information they publish.
- 40 The outcome of the marriage equality postal survey and associated debate in Australia in 2017 was accompanied by great support for the LGBTIQ+ community, however, a great deal of discrimination and abuse was also directed towards the LGBTIQ+ community, and towards TGD children in particular. This debate reflected the progress that has been made in societal acceptance of the lesbian and gay community but also highlighted the stigma and fear that exists in relation to TGD young people, especially children.
- 41 Tactics used by groups against marriage equality during their public campaign included suggestions that laws allowing marriage equality would increase the number of children identifying as TGD and asserted that this was not only possible and likely, but was a situation that all parents should fear.
- 42 Overall, there was increased hostility and prejudice in the community directed towards TGD young people during and following the marriage equality debate. This had a manifest impact on the TGD young people seeking help from the RCH, with many describing their struggles with hurtful or discriminatory remarks.
- 43 The politicisation of TGD young people and how to care for them has been evident in other ways over Australia's recent history. The creation of the 'Safe Schools Program' in Victoria (**Safe Schools**) was seen by those working in the field as a great success and, as medical staff, we engaged with the program frequently to support our work in the RCHGS. The national expansion and subsequent dismantling of the program outside of Victoria was accompanied by social commentary based on fear of TGD young people. Rather than focusing on the goals of the project to reduce bullying, stigma and discrimination of TGD young people within schools, critics of Safe Schools argued incorrectly that broad discussion and education of sexuality and gender identity could alone influence the gender identities of others or lead to them engaging in socially unacceptable sexual behaviours. This misinformation and the fear perpetuated by the debate around Safe Schools was often reported as a cause of distress for our young TGD patients at RCH.

What do you consider are the most significant challenges facing the mental health system in providing assistance to TGD young people?

Stigma, discrimination and a lack of understanding of the issues facing TGD young people within the broader community as well as within the medical and mental health workforce

- 44 Poor societal and family acceptance of gender diversity inhibits the capacity for TGD young people to access mental health and medical services. Most young people require the support of at least one parent or carer to access a GP, psychologist or specialist gender services such as the RCHGS. For TGD young people who do not have supportive parents or carers, many are left without access to basic levels of support and mental health care in relation to their gender concerns. Family support is well known to be a positive prognostic indicator for mental health outcomes in TGD young people. As family support allows further access to mental health and medical support, this isolated group is seen as being the most vulnerable.
- 45 For those who do have a supportive parent or carer, many GPs or community-based psychologists currently lack the training or expertise to understand the experience of the TGD young person and their family and to know how to support them. Some families who access the RCHGS report having been to a number of GPs before being able to get a referral or have been actively discouraged from accessing specialist services for their TGD young person.
- 46 In the broader mental health system itself, a number of TGD young people have described being turned away from mental health services when acutely unwell with depression or suicidal ideation. On one such occasion, the young person was told that the tertiary service in their region did not feel equipped to deal with the issues associated with him being a trans male. These experiences further isolate and marginalise TGD young people and exacerbate their depression, anxiety and risk of self-harm and suicide.

Demand vs resourcing

- 47 The opportunity to develop RCHGS as an internationally leading state-wide specialist service would not have been possible without the Victorian government's investment in TGD health care since 2015. The reality is, however, that the demand for services is continuing to increase with new patient referrals to RCHGS reaching 269 in 2018 (a 250% increase from 2014). Attached to this statement and marked **MT-8** is a graph of new referrals to the RCHGS (by year) since 2003.
- 48 Costs of conducting comprehensive, multidisciplinary, integrated specialist services are high due to the complexity of care required to achieve good outcomes in TGD young people. With the ongoing increases in demand for specialist services, Victoria's mental health system does not currently provide sufficient funding and resources to meet the

treatment needs of all TGD young people and increases in funding over time are required.

- 49 Patients and families based in rural and regional areas face additional barriers to accessing care. While the RCH offers remote access through use of telehealth services, this is not feasible for all forms of care and physical presence at medical appointments are often required. Travel to the RCHGS may require the parent or carer to take days off work and distance and cost are therefore two key barriers to accessing services for TGD young people.
- 50 Development of mental health and medical services for TGD young people within rural and regional areas would enhance care provision and improve outcomes for these populations. Shared care is currently conducted with a number of clinicians in regional locations in Victoria, with Gateway Health in Wodonga being one example where successful collaboration between local paediatricians, psychiatrists and nursing staff with the RCHGS has resulted in TGD young people and families accessing care of a high standard in their local area.
- 51 Of the 269 new patient referrals in 2018, approximately two thirds were post-pubertal trans males, many of whom were requesting gender affirming surgical services in the form of chest reconstructive surgery. The RCHGS does not currently have the resources to support chest reconstructive surgery although it does have the surgical expertise to carry out this procedure. There are also no private surgical services available for TGD adolescents under the age of 18 years in Victoria, leaving them with no option but to seek chest reconstructive surgery interstate or overseas should they be unable to manage their distress until they turn 18 years of age.
- 52 Very limited gender affirming surgical care is provided through Victoria's adult public health system and only *one* surgeon is operating within the private system. Consequently, adequate surgical training opportunities to expand services to meet demand do not currently exist within Victoria.

What are the barriers to accessing mental health services experienced by TGD young people? Are barriers to access greater for TGD young people who are vulnerable due to cultural or linguistic diversity, poverty, homelessness or geographic disadvantage?

Internalised transphobia

- 53 One of the main barriers preventing TGD young people from accessing mental health services is the feeling of shame towards their own identity and the shame of not conforming to society's expectations in relation to gender and gender expression. This is referred to as *internalised transphobia* and often manifests as a result of the negative

experiences TGD people have when expressing themselves to their family, peers or broader society.

- 54 The level of support received from the families of TGD young people is a primary factor which can either exacerbate or ameliorate internalised transphobia. Familial acceptance plays a crucial role in assisting TGD young people in their journey towards accepting themselves and turning their shame into pride. TGD young people whose parents are supportive of their TGD identity often feel less shame towards their identity, achieve self-acceptance and have better mental health outcomes. Particularly problematic for some TGD young people is having one parent who is supportive of their expression of their gender identity whilst the other is not. For separated families where there is animosity or even overt hostility between the parents, this situation can be highly distressing for the TGD young person, especially when they are contemplating social and/or medical transition.

Cultural diversity

- 55 There are some cultural or religious communities which are perceived to be less accepting of TGD identities. The RCHGS has seen many TGD young people presenting with their family who are members of such communities. For some of these families, they have reportedly been rejected by, or forced to leave, their respective communities as a consequence of their choice to support and accept their child's TGD identity.

Vulnerable communities

- 56 Although the RCHGS is accessible to all Victorian young people, various community groups are under-represented. Accessing trans affirming health care in Victoria is especially difficult for TGD young people who live in regional and rural areas, have intellectual or physical disabilities, are culturally and linguistically diverse (including Aboriginal and Torres Strait Islander populations), live in out-of-home care or who are detained within the youth justice system.
- 57 One of our concerns is that the most vulnerable populations, as listed above, are less able to access services to assist with gender concerns which further increases their vulnerability. We do not know the extent of this problem or how severely at risk they may be due to a lack of available data.

OPPORTUNITIES FOR REFORM

What support is required by TGD young people and their families to ensure the best mental health outcomes?

Societal acceptance

- 58 Reducing internalised transphobia and improving family acceptance of TGD young people will require long term advances in reducing the stigma that society imposes on the TGD community more broadly. Progress will be further enabled with national political and community leaders having a better understanding of the experience of the TGD community and empathy with the difficulties they face. Reporting on TGD issues in the media will also need to change, with facts and evidenced-based material presented rather than misinformation which fuels fear and hatred.
- 59 The Victorian government's investment in TGD health care, Safe Schools, peer and family support services and continued efforts for gender affirming legal reform has assisted with improvements in societal acceptance of the TGD community in Victoria. These investments are demonstrable evidence of its support and leadership and are experienced as being empowering for the TGD community. As a result, Victoria leads Australia in its progress towards societal acceptance for all TGD people, but there is still a long way to go before equality is reached.
- 60 Conducting TGD health care within mainstream public health services is crucial. The RCH, an iconic and well-regarded institution of Victoria, has contributed to promoting societal acceptance of TGD young people through the existence of the RCHGS. The visibility of the RCHGS has played a crucial role in legitimising and normalising the experiences of TGD young people. By including gender affirming health care services within the everyday workings of the RCH, we portray the ideal that TGD young people deserve and obtain the same high level of care and support expected for all young people in Victoria with health care needs.
- 61 The increasing number of referrals received by the RCHGS is a result of improved societal acceptance of gender diversity and the increased availability of safe and effective medical and surgical interventions. It is also testament to the community's positive view of the care offered by the RCHGS.

Broader community support systems

- 62 Specialist knowledge or expertise is not a prerequisite to providing meaningful support to TGD young people within the community. Provision of highly beneficial support by GPs or community-based clinicians can be conducted utilising basic gender affirming health care skills. These may include initial acknowledgment and use by the clinician of the TGD young person's preferred name and pronouns or understanding how to suppress menstruation should this be causing distress in a trans male adolescent.
- 63 In 2016, the Single-Session Nurse-Led Assessment Clinic (**SSNac**) was introduced as the entry point to the RCHGS model of care. The SSNac comprises 90 minute, face-to-

face, single-session consultation during which a Clinical Nurse Consultant (**CNC**) meets with a young person and their primary caregiver. The CNC assesses the patient's mental health risk and provides information relevant to the patient's current needs and their plans for social and/or medical transition.

- 64 Such information may be shared by the patient with others involved in their care. For example, the CNC may provide information sheets on the topic of suppressing menstruation to be passed onto the patient's GP. While this is a very simple intervention, it enables reduction in barriers to accessing community-based care.
- 65 The introduction of SSNac has resulted in significantly shorter wait times at RCHGS, with a drop from 14 months to four months since it was introduced. Attached to this statement and marked **MT-9** is a copy of a summary of the SSNac initiative.
- 66 The Victorian government's investment in the Safe Schools and the 'Victorian Doctors in Secondary Schools' programs has also greatly assisted TGD young people across Victoria. Schools that are inclusive of LGBTIQ+ education result in a lower probability of students experiencing bullying, victimisation and adverse mental health. In summary:
 - (a) Safe Schools: In 2010, the Victorian government established Safe Schools to ensure schools are safe places and free of discrimination for all students, including LGBTIQ+ students who are at higher risks of bullying and suicide. The program has been pivotal in equipping teachers to support LGBTIQ+ students and empowering TGD young people to maximise their individual social and educational potential.
 - (b) Victorian Doctors in Secondary Schools: Commencing in 2017, the Victorian government rolled out the Doctors in Secondary Schools initiative. Through the program, GPs attend up to 100 Victorian government secondary schools up to one day a week. The program has facilitated access to medical advice and health care from GPs to those students most in need, including those in regional and rural areas. Gender affirming health care education, training and support (in addition to training in adolescent medicine more broadly) has been provided to these doctors in secondary schools through the Department of Adolescent Medicine at the RCH.

Gender affirming surgical treatment within specialist multidisciplinary gender services

- 67 The RCHGS provides comprehensive, integrated medical and mental health care support and treatment, family and school support, advice on child-led social transition, pubertal suppression, gender affirming hormone treatment and transition to adult health services. Preliminary data in the Trans20 study has shown improvements within the first year of engagement with the RCHGS with respect to measures of social transition,

mental health and quality of life. Qualitative interviews revealed that this may be due to an increased sense of agency driven by changes in outlook, confidence, validation and sense of self. Despite these benefits, further improvements in mental health outcomes are likely to be achieved with provision of publicly funded chest reconstructive surgery.

- 68 There is a significant gap in Victoria's current health care system with the absence of public funding for chest reconstruction surgery despite the high demand for this evidenced-based intervention.
- 69 The international published literature on chest reconstructive surgery in adolescents concludes that the prominence of chest dysphoria, depression and anxiety is significantly less in adolescent trans males who have undergone chest reconstructive surgery. Again, this is a key example of how medical and surgical treatment improves mental health. Attached to this statement and marked **MT-10**, **MT-11** and **MT-12** are copies of articles on this topic published by the American Academy of Pediatrics, International Journal of Transgenderism and JAMA Pediatrics respectively.
- 70 Amongst the proportion of trans males who have undergone chest reconstructive surgery, satisfaction with surgical outcomes is high. The largest study ever undertaken on treatment regret, involving a cohort of 6793 TGD patients receiving care between 1972 and 2015 in a gender identity clinic in Amsterdam, shows the regret rate amongst TGD people is 0.4-0.6%. Of those who did have treatment regret, this was often not due to a change in their gender identity, but due to negative experiences occurring as a result of transition such as family rejection or becoming unemployed as a consequence of workplace discrimination.
- 71 With all decisions regarding medical and surgical intervention, the clinicians must weigh the risks and benefits of intervening with those of not intervening. In TGD health care, deciding to "do nothing" is not a neutral decision, as not providing interventions can result in severe mental health consequences such as depression, anxiety, self-harm and suicide.
- 72 For clinicians who prescribe testosterone treatment to adolescent trans males we see the mental health benefits for them within weeks to months of the masculinising physical changes becoming apparent. For these young trans males, the ongoing presence of their breasts causes them distress and exposes them to increased risk of stigma and discrimination in society. Access to surgical services would reduce their distress and allow trans males to complete their transitions with consequential improvement to their mental health.

Further law reform and advocacy

- 73 The RCHGS has been pivotal in achieving legal reform and improving treatment access through its broader community and political advocacy. In 2004, the FCA defined hormone treatment for TGD adolescents as a 'special medical procedure'. This meant that even with the consent of the TGD young person, their parents and approval of the medical team involved, court authority was required before completing the medical transition to their affirmed gender identity. This situation was unique to Australia and no such legal barrier to treatment existed in any other jurisdiction in the world.
- 74 The RCHGS collaborated with academic legal experts, TGD young people and their families to form a coalition of experts to advocate for access to hormone treatment under the age of 18 years without requiring court authorisation. The development of the TGD Standards of Care by the RCHGS was initiated during this time to overcome the problem of having only international standards of care which were out-dated and not reflective of international best practice based on the scientific evidence available.
- 75 Following five years of advocacy, the decision of *Re Kelvin* meant that TGD young people could access hormone treatment under the age of 18 years without requiring the authorisation of the FCA. While this was a significant step forward in providing treatment accessibility for all TGD young people across Australia, there remains room for further law reform and advocacy.
- 76 Current legal barriers to TGD young people in Victoria include an inability to access identity documentation such as birth certificates which accurately reflect their gender identity. This has consequences for them when enrolling at a school or applying for other study or work. This can lead to their TGD identity being unintentionally and unnecessarily declared to potential employers leading to distress and potentially, educational or workplace discrimination.

POTENTIAL SOLUTIONS

What systemic changes to the mental health system would make it more responsive, suitable and inclusive of TGD youth?

Secure, long-term funding for specialist multidisciplinary, integrated gender services

- 77 Firstly, the RCHGS recognises that it was the current Victorian government's support and financial investment, commenced in 2015, which has enabled it to develop into a leading, internationally acclaimed gender service for TGD young people. The success achieved with the initial establishment of an evidence-based, multidisciplinary, integrated clinical pathway, excellent clinical outcomes and strong community engagement, has enabled further progress in developing clinical research, education and broader advocacy for the TGD community.

- 78 Long-term funding is necessary to ensure ongoing high quality, comprehensive multidisciplinary, integrated specialist services which meet the requirements of the TGD Standards of Care and the increasing patient demand over time. The role of the RCHGS is essential in leading specialist TGD health care in Victoria into the future with its proven track record and international reputation for excellent clinical outcomes, clinical research, education and advocacy for the TGD community. To date, funding has remained static over a period of 4 years despite a 250% increase in referrals since 2014. For sustainable and timely access to quality multidisciplinary care, funding increases are necessary over time. In addition, new funding will be required to incorporate chest reconstructive surgery for trans males within the RCHGS. This advancement of service provision will be necessary to maximise mental health outcomes for TGD young people in the longer term.
- 79 The role of the RCHGS could be better utilised in maximising its reach across rural and regional Victoria through shared care arrangements with GPs, specialist paediatricians and mental health clinicians based in those locations. Nursing staff trained in TGD health care would be vital in facilitating and coordinating these relationships locally as well as coordinating care with the RCHGS. This model, often referred to as a “hub and spoke model” would allow the RCHGS to support multiple regional centres with complex clinical scenarios when required. Rural and regional centres able to provide this service will allow for improved access to support and specialist medical interventions with corresponding improvements in mental health outcomes for remotely located TGD young people.
- 80 Given the politicisation of gender diversity and of TGD child and adolescent health care in particular (as seen with the Safe Schools nationally and the marriage equality debate), clinicians and the TGD community share concerns of funding sustainability with changes in governments over the longer term. Providing comprehensive, integrated multidisciplinary TGD care cannot be undertaken within current standardised medical funding mechanisms, and specified funding for TGD young people must be in place. With patient demand likely to continue to increase into the foreseeable future, the Royal Commission should recognise both the value of funding specialist multidisciplinary, integrated gender services and safeguarding this necessary and life-saving health care for TGD young people into the future.

Publicly funded surgical treatment within the RCHGS

- 81 Secondly, publicly funded gender affirming surgery, in the form of chest reconstructive surgery for trans male adolescents, would ensure that all recommended treatments as outlined in the TGD Standards of Care are available to TGD adolescents in Victoria. Resourcing this service within the public hospital setting, utilising the existing expertise within the RCHGS, is necessary and recommended. This would ensure equal access

to gender affirming surgical services in Victoria and improve mental health outcomes for this population.

- 82 As mentioned above, chest reconstruction surgery is an integral part of the transition process for trans males. The research conducted internationally demonstrates high satisfaction with surgical outcomes, low levels of regret or surgical complications and improved mental health outcomes with lowered rates of anxiety and depression. Beyond the direct benefits for TGD young people, offering these services in the public health system would provide surgical training opportunities and ensure sustainability of gender affirming surgical expertise in Victoria over the longer term.

School based mental health support across Victoria

- 83 Thirdly, as a specialist service, the RCHGS is primarily focused on assisting TGD young people seeking to transition through access to medical treatments such as puberty suppression and gender affirming hormone treatment. There is currently very limited support available to TGD young people in the community as an alternative to the services provided by the RCHGS.
- 84 Social support and gender affirming health care must reach the most vulnerable TGD young people – that is, those whose families are not supportive nor willing to assist them in accessing professional support or those who are not able to access services either due to financial, geographical or other circumstances. This could be achieved by providing school-based mental health support through the integration of mental health care into the primary and secondary school systems.
- 85 The Royal Commission should consider the potential to build on the success of the Safe Schools and the Victorian Doctors in Secondary Schools programs discussed above. Expansion of the Victorian Doctors in Secondary Schools program across all public schools in Victoria and with the addition of mental health clinicians trained in gender diverse health care, would enable provision of gender affirming, confidential, multidisciplinary mental health care within the school environment to TGD young people otherwise isolated due to socio-cultural, economic or geographical circumstances. These doctors and mental health clinicians would, of course, be well placed to assist young people's mental health concerns in other areas, with early identification of eating disorders, depression and anxiety being relevant examples.
- 86 In addition to the significant impact this would have on access to gender affirming mental health support for TGD young people, communication and coordination of care with specialist gender services would be enhanced through the co-location of school-based primary care doctors, mental health clinicians and school teaching and support staff.

Summary

- 87 TGD young people are a highly vulnerable population with very poor mental health outcomes due to their experiences of stigma, discrimination, exclusion, isolation, family rejection, bullying, harassment and abuse. Strong evidence exists that with comprehensive, multidisciplinary, integrated gender affirming support and health care, harms can be ameliorated and mental health outcomes, quality of life, educational and vocational outcomes can be improved. Support and care are required across all levels of the health system, with primary care to specialist mental health, medical and surgical services all playing a necessary role.
- 88 My recommended system, as outlined above, provides best care and maximises mental health outcomes for the Victorian TGD community by embedding primary medical and mental health care within the school system. This can be achieved through expansion of the Victorian Doctors in Secondary Schools program to include mental health clinicians working with the GPs in schools.
- 89 With secure, long-term resourcing for publicly funded specialist medical, mental health and chest reconstructive surgical services via the RCHGS, coordination of care and integration across these systems can be maximised. This system will allow maximal impact of gender affirming education and training for clinicians and distribute expertise in an equitable manner, allowing access to best practice and confidential health care for all TGD young people in Victoria.

sign here ►



print name Associate Professor Michelle Telfer

date 1 July 2019



Royal Commission into
Victoria's Mental Health System

ATTACHMENT MT-1

This is the attachment marked 'MT-1' referred to in the witness statement of Associate Professor Michelle Telfer dated 1 July 2019.

Associate Professor Michelle Telfer MBBS (Hons.) FRACP

General Paediatrician. Adolescent Physician

Professional Experience

Head of Department Department of Adolescent Medicine The Royal Children's Hospital, Melbourne Victoria	December 2015 to current
Director, Royal Children's Hospital Gender Service Victorian Government Trans and Gender Diverse Expert Advisory Committee	August 2012 to current
President, Australian Professional Association for Trans Health (AusPATH) Executive Member and Vice President, AusPATH Member, World Professional Association for Transgender Health Executive Member, Australian Association for Adolescent Health Executive Member, RCH Senior Medical Staff Association Member, RCH Vulnerable Children's Committee	September 2018 to current September 2014 to 2018 October 2013 to current 2013-2017 2014-2016 2013-2016
Clinical Lead Adolescent Medicine The Centre for Adolescent Health The Royal Children's Hospital, Melbourne	January 2013 to Dec 2015
Consultant Paediatrician Monash Medical Centre, Melbourne Victoria Paediatric Emergency Department	April 2011 to January 2013
Locum Consultant Paediatrician Western Australia, Queensland, Victoria.	November 2010 to Dec 2011
General Paediatric Trainee The Royal Children's Hospital, Melbourne Victoria Monash Medical Centre Sunshine Hospital Warrnambool Base Hospital	February 2003 to June 2010
Resident Medical Officer The Alfred Hospital, Melbourne Victoria	February 2002 to Feb 2004
Intern Sir Charles Gairdner Hospital, Perth Western Australia Finalist, Sir Charles Gairdner Hospital Intern of the Year	February 2001 to Feb 2002
Board of Directors Western Australian Institute of Sport Scholarship Selection Subcommittee, Program Review Committee	January 1996 to Jan 2002

Professional Awards

2018 Royal Children's Hospital CEO Award for Excellent Clinical Outcomes: RCH Gender Service

2018 Victorian Public Healthcare Awards: The Minister for Mental Health's Award for excellence in supporting the mental health and wellbeing of Victorians: RCH Gender Service

2017 GLOBE Community Award Straight Ally of the Year

2016 Royal Children's Hospital Consumer Choice Award Finalist

2016 Victorian Public Healthcare Awards: RCH Gender Service: Finalist in LGBTI health services

2016 GLOBE Community Awards: RCH Gender Service: Finalist in A Health Community Award

2015 Victorian Public Healthcare Awards: Minister for Mental Health's Award for excellence in consumer leadership and advocacy, RCH Gender Dysphoria Service

2015 Royal Children's Hospital CEO Medal for Excellent Clinical Outcomes

2015 Royal Children's Hospital Consumer Choice Award Finalist

Publications

Michelle A. Tollit, Debi Feldman, Gabrielle McKie, and **Michelle M. Telfer**. Patient and Parent Experiences of Care at a Pediatric Gender Service. *Transgender Health*. May 2018 ahead of print <http://doi.org/10.1089/trgh.2018.0016>
Published in Volume: 3 Issue 1: December 28, 2018

Telfer M, Kelly F, Feldman D, Stone G, Robinson R, Poulakis Z. Transgender adolescents and legal reform: How improved access to healthcare was achieved through medical, legal and community collaboration. *Journal of Paediatrics and Child Health* 54 (2018) 1096–1099.

Ken C. Pang, Debi Feldman, Ralph Oertel, and **Michelle Telfer**. Molecular Karyotyping in Children and Adolescents with Gender Dysphoria. *Transgender Health*, Vol. 3, No. 1, August 2018: 147-153.

The Lancet Editorial. Gender-affirming care needed for transgender children. DOI: [https://doi.org/10.1016/S0140-6736\(18\)31429-6](https://doi.org/10.1016/S0140-6736(18)31429-6). Published 30 June 2018

Telfer MM, Pang K, Pace C, Tollit M. The Creation of the Australian Standards of Care and Treatment Guidelines for Trans and Gender Diverse Children and Adolescents. *Med J Aust* doi: 10.5694/mja17.01044 18 June 18

Eade Donna M., **Telfer Michelle M.**, and Tollit Michelle A. Implementing a Single-Session Nurse-Led Assessment Clinic into a Gender Service. *Transgender Health*. Apr 2018

Telfer MM, Pang K, Pace C, Tollit M. The Creation of the Australian Standards of Care and Treatment Guidelines for Trans and Gender Diverse Children and Adolescents. *Journal of Adolescent Health*, Vol 62, Issue 2, S49-S50.

Telfer, M.M., Tollit, M.A., Pace, C.C., & Pang, K.C. *Australian Standards of Care and Treatment Guidelines for Trans and Gender Diverse Children and Adolescents*. Melbourne: The Royal Children's Hospital; 2017

Publications (cont.)

Knight, KW, Stephensen SE, West S, Delatycki MB, Jones CA, Little MH, Patton GC, Sawyer SM, Skinner SR, **Telfer MM**, Wake M, North KN, Oberklaid F. The Kids are OK: it is discrimination not same-sex parents that harms children. Med J Aust. 2017 Nov 6;207(9):374-375

Telfer, M., Tollit, M. and Feldman, D. (2015), Transformation of health-care and legal systems for the transgender population: The need for change in Australia. Journal of Paediatrics and Child Health.

Sawyer SM, **Telfer M**, Grover SR. Adolescent Medicine. In: Gwee A, Marks M, eds. Paediatric Handbook. 8th ed. Melbourne: Blackwell Science; 2015.

Australian Human Rights Commission National Consultation Report. Resilient Individuals: Sexual Orientation, Gender Identity and Intersex Rights 2015 (Contributor)

International Editorial Board Member of the journal 'Transgender Health'

Media Experience

Four Corners, "Being Me" ABC (1.2 million viewers)	November 2014 to current
Australian Story, "About a Girl" ABC (1 million viewers)	
Co-host of the Conversation Hour with Jon Faine on ABC Radio 774	
ABC News Breakfast with Virginia Trioli	
Weekend Sunrise Breakfast Program Channel 7	
Radio National interview with Fran Kelly	
ABC 774 Interview on the Drive Program with Rafael Epstein	
ABC 774 Interview on the Conversation Hour with Jon Faine	
ABC Triple J radio program 'Hack'	
Interviews with The Age Newspaper including one front page story	
Interview for the Weekend Australian Magazine	
Interview for Scoop Magazine, GQ Australia, The Monthly and others	
Lateline interview with Josie Taylor on ABC1	
ABC Podcasts including "Earshot"	

Education

University of Western Australia

Bachelor of Medicine and Surgery	1994 – 2000
M.B.,B.S. Degree with Honours	
Peter Anderton Memorial Award for General Practice in Final Year	

Bachelor of Science	1993
Convocation Prize in Science	
UWA Physical Education Students Association Prize	

Presbyterian Ladies' College Perth Western Australia

Academic Achievement Prize Year 11	
Academic Achievement Prize Year 12	1992
Economics Prize Year 12	1992
Special Certificate of Distinction for Human Biology Year 12	1992

Sporting Achievements

Olympic Games Team Member, Barcelona Spain (Artistic Gymnastics)	1992
World Gymnastics Championships, Indianapolis USA	1991
Commonwealth Games, Auckland New Zealand	1990
<ul style="list-style-type: none"> Silver Medal Team Competition Bronze Medal Uneven Bars 	
Senior Pacific Alliance Championships, Manila Philippines	1990
<ul style="list-style-type: none"> Gold Medal Team Competition Silver Medal Uneven Bars 	
World Gymnastics Championships, Stuttgart Germany	1989
Australian Junior National Champion	1988
Australian Junior Gymnast of the Year	1988
Australian National Gymnastics Squad Member	1986 – 1992
Western Australian Institute of Sport Scholarship	1984 – 1992

Sporting Awards

Torch Relay Member for the 2000 Olympic Games in Sydney	2000
Channel Ten Young Achiever of the Year Award for Sport	1992
Nedlands Council Young Australian Citizen of the Year	1992
WA Coca Cola Junior Sport Star of the Year	1991
MLC Sports Foundation Achiever of the Year WA	1991
WA Coca Cola Junior Sport Star of the Year	1990
Olex Cable Junior Sports Star of the Year	1990



Royal Commission into
Victoria's Mental Health System

ATTACHMENT MT-2

This is the attachment marked 'MT-2' referred to in the witness statement of Associate Professor Michelle Telfer dated 1 July 2019.

Royal Children's Hospital Gender Service (RCHGS) Program Logic Model 2019

Vision: To be a world leader in the provision of clinical care, research and education for trans and gender diverse (TGD) children and adolescents

Gender Service (GS) Goal: To improve the physical and mental health and wellbeing outcomes for TGD children and adolescents who access the RCHGS

Target Group: TGD children and adolescents who reside in Victoria and access the RCHGS prior to their 17th birthday

Rationale:

A multidisciplinary GS that employs a comprehensive patient and family centered approach and is located within the RCH is well positioned to meet the health and wellbeing needs of TGD children and adolescents and their families.

Provision of respectful, quality early intervention will improve mental health outcomes (quality of life, reduce suicide risk) for TGD children and adolescents

Assumptions:

Families of children and / or adolescents are aware of the RCHGS via:

RCH website; Department of Adolescent Medicine intranet

Mental Health services, GPs; schools

Community services e.g. TGV

Media

Word of mouth

Objective: To provide a patient and family centered approach that entails a multidisciplinary assessment, support and treatment to children, adolescents and their families who access the RCHGS

Resources

Funding
RCH Operational Budget
Victorian Government
Specialist Grant

Clinical Services
Psychiatrists
Adolescent Physicians
Endocrinologist
Psychologists
Clinical Nurse Consultant
Gynecologist
Speech Pathologist
General Surgeons
Administration
Clinical Ethics
Legal Services

General RCH support
Pharmacy, EMR, pathology, radiology
Outpatient clinic A5, clinic D

RCH Foundation
Trans20 research

Activities

Clinical Care
Phone consultations
Information
Secondary consultation

Outpatient clinics
Under 8y clinics
SSNac
MDAC
Binder Clinic
Ongoing appointments

Education
Patients and families
Health service providers
Community groups

Advocacy
Patients and families
TGD Community
Clinical Services

Research
RCHGS program evaluation; research projects, Trans20

Outputs 1

RCHGS Clinics
<8y Mental Health Assessment
Ongoing care

Single Session Nurse led Assessment Clinic (SSNac) CNC > 8yrs
HEADSS, Triage, education, links to community

Multi-disciplinary Assessment Clinic (MDAC) >8y
Mental Health and Adolescent medicine assessment

Education
TGD patients and family on treatment options

Research
Trans 20 analysis
Clinical evaluation outcomes

Outputs 2

Diagnosis, Interventions and ongoing care
Mental health
Medical management
Fertility preservation
Puberty suppression
Gender affirming hormones
Binder education
Assessment for surgery (Chest reconstructive surgery: TBC)

Clinical Education
Patients and families
Health professionals

Transition to Adult Health Services
General Practitioners
Monash Gender Service
Mental health clinicians
Endocrinologists
Surgeons

Outputs 3

New referrals
Assessed within 4 months

Patients/families:
Understand medical options
Establish Informed consent
Proceed with medical transition; surgical care

Community clinicians
Ongoing care

Leadership
Advocacy
Teaching and training
Research output
Legal reform

Research
Journal publications
Presentations
Conferences

Outcomes / Goals

5. Improved quality of life for people who identify as TGD

4. Reduced mental health burden among TGD children and adolescents

3. Ongoing care of TGD adolescents is co-managed by community Providers

2. TGD Children and adolescents are provided a timely triage, assessment and treatment pathways

1. The RCHGS are leaders in health care provision and research for TGD children and adolescents

External factors: political climate, funding, legislation, health and healthcare systems, societal attitudes towards gender diversity



Royal Commission into
Victoria's Mental Health System

ATTACHMENT MT-3

This is the attachment marked 'MT-3' referred to in the witness statement of Associate Professor Michelle Telfer dated 1 July 2019.



Australian Standards of Care and Treatment Guidelines

For trans and gender diverse
children and adolescents

Version 1.1

Authors

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Suggested citation

Telfer, M.M., Tollit, M.A., Pace, C.C., & Pang, K.C. *Australian Standards of Care and Treatment Guidelines for Trans and Gender Diverse Children and Adolescents Version 1.1*. Melbourne: The Royal Children's Hospital; 2018

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We would like to thank the Executive Committee of the Australian and New Zealand Professional Association for Transgender Health (ANZPATH) and clinicians across Australia and New Zealand who provided consultation and feedback on the content of the document. In particular, we would like to acknowledge Dr Fintan Harte, Mo Harte, Mr Andrew Ives, Dr Rachel Johnson, Dr Stephen Koder, Dr Ruth McNair, Dr Elizabeth Riley, Dr Jaimie Veale and Professor Sam Winter. We would also like to thank our colleagues in other specialist gender services across Australia who have contributed with their expertise and support. This includes Dr Uma Ganti, Dr Ashleigh Lin, Simone Mahfouda, Dr Julia Moore, Elizabeth Saunders, Clinical Associate Professor Aris Siafarikas, Penelope Strauss, Catherine Thomas and Hans-willem van Hall from the Gender Diversity Service, Perth Children's Hospital, Dr Jemma Anderson, Dr Helen Chesterman and Dr Georgie Swift from The Women's and Children's Hospital Adelaide, Dr Anagha Jayakar and Dr Jason Westwater from The Royal Hobart Hospital and Professor Jennifer Batch, Olivia Donaghy and Dr Stephen Stathis from Lady Cilento Children's Hospital Gender Clinic & Statewide Service, Children's Health Queensland.

Thank you to the significant contribution made from the trans and gender diverse community including Brenda Appleton and Transgender Victoria, Transcend, Parents of Gender Diverse Children, The Royal Children's Hospital Gender Service Consumer Advisory Group, Victorian AIDS Council and The Victorian Government Trans and Gender Diverse Expert Advisory Group.

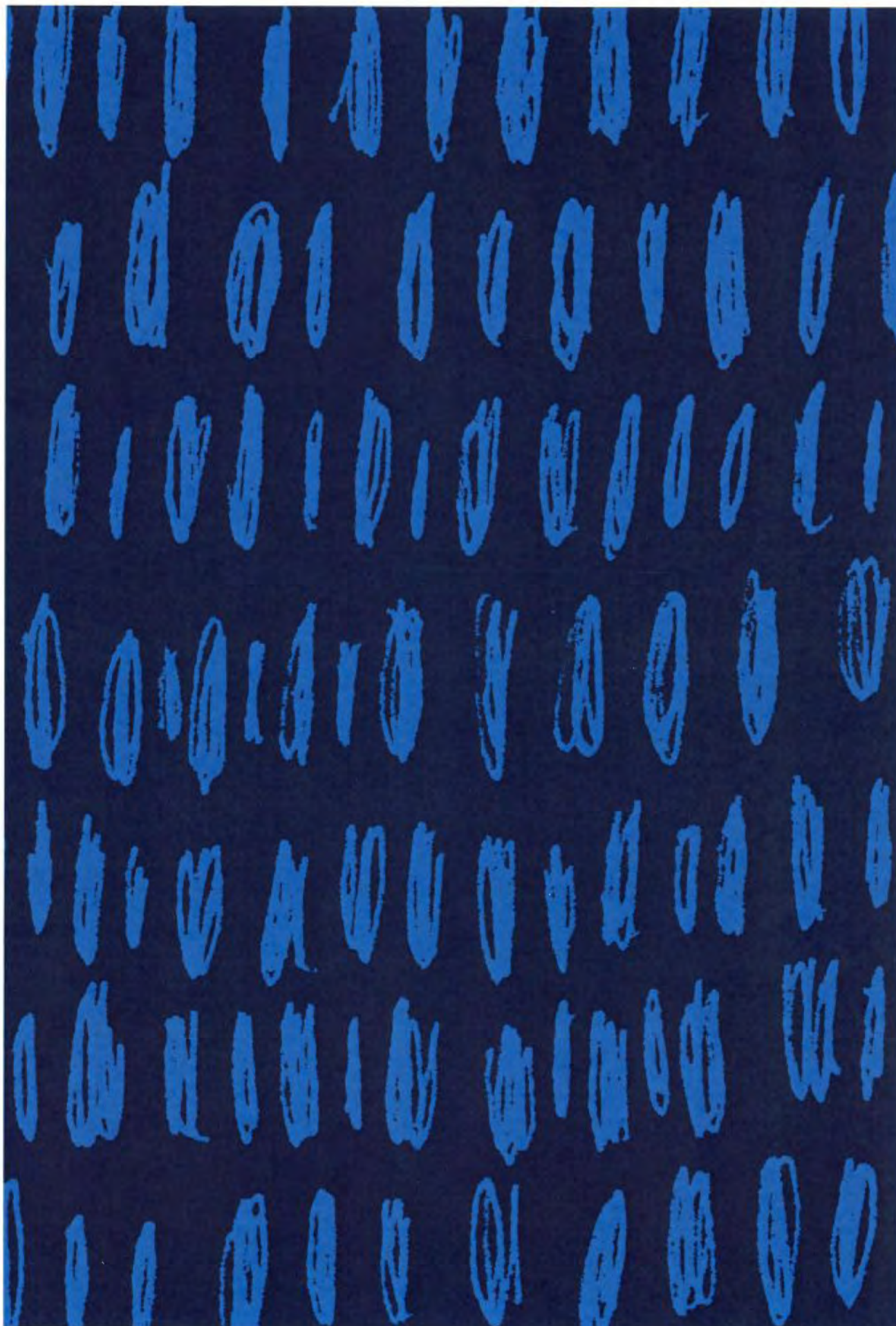
Endorsement by the Australian and New Zealand Professional Association for Transgender Health

The Executive of the Australian and New Zealand Professional Association for Transgender Health has endorsed these guidelines for use in the care of trans and gender diverse children and adolescents across the Commonwealth of Australia.



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Introduction

The Australian Standards of Care and Treatment Guidelines (ASOCTG) aim to maximise quality care provision to trans and gender diverse children and adolescents across Australia, whilst 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 professionals working with the trans and gender diverse population across Australia and New Zealand from multiple disciplines, trans and gender diverse support organisations, as well as trans children and adolescents and their families. They have been endorsed by the Australian and New Zealand Professional Association for Transgender Health (ANZPATH), the peak organisation in the region actively promoting communication and collaboration amongst professionals of all disciplines involved in the healthcare, rights and wellbeing of people who identify as trans or gender diverse.

There are potential challenges in accessing trans and gender diverse healthcare for the Australian population. This is especially the case for children and adolescents who are vulnerable due to cultural and linguistic diversity (including Aboriginal and Torres Strait Islander populations), out of home care, intellectual disability, or detention within the youth justice system. Australia's vast geographical distances create further barriers to treatment access for those living in rural and regional locations.

With increasing visibility and social acceptance of gender diversity in Australia, more children and adolescents are presenting to community and specialist healthcare services requesting support, advice and gender affirming psychological and medical treatment.¹ A large population-based study undertaken in New Zealand in 2012 estimated that approximately 1.2% of adolescents identify as transgender² and it is therefore likely that referrals to healthcare professionals will continue to rise in the foreseeable future.

Being trans or gender diverse is now largely viewed as part of the natural spectrum of human diversity. It is, however, frequently accompanied by significant gender dysphoria (GD), which is characterised by the distress that arises from incongruence between a person's gender identity and their sex assigned at birth. It is well recognised that trans and gender diverse individuals are at increased risk of harm because of discrimination, social exclusion, bullying, physical assault and even homicide.³⁻⁶ Serious psychiatric morbidity is seen in children and adolescents. A study of the mental health of trans young people living in Australia found very high rates of ever being diagnosed with depression (74.6%), anxiety (72.2%), post-traumatic stress disorder (25.1%), a personality disorder (20.1%), psychosis (16.2%) or an eating disorder (22.7%). Furthermore 79.7% reported ever self-harming and 48.1% ever attempting suicide.⁷

Increasing evidence demonstrates that with supportive, gender affirming care⁸ during childhood and adolescence, harms can be ameliorated and mental health and wellbeing outcomes can be significantly improved.⁹⁻¹¹

As mentioned above, the recommendations made in this document are based primarily on clinician consensus, along with previously published standards of care from the World Professional Association for Transgender Health (WPATH),¹² treatment guidelines and position statements,¹³⁻¹⁹ and findings from a limited number of non-randomised clinical studies and observational studies.^{8-11,20-26} It is clear that further research is warranted across all domains of care for trans and gender diverse children and adolescents, the findings of which are likely to influence future recommendations.



RCH Gender Service Ambassador, Georgie Stone

Terminology

Terminology used to describe trans children and adolescents is rapidly evolving. Below are some current terms that are frequently used. However, many more terms exist and it is important to ensure that the child or adolescent is given the opportunity to express their individual preferences for use of terminology to enable respectful communication.

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 doesn't identify exclusively as male or female.

Gender fluid

A person whose gender identity varies over time.

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.

General principles for supporting trans and gender diverse children and adolescents^a

Individualise care

Every child or adolescent who presents with concerns regarding their gender will have a unique clinical presentation and their own individual needs. The options for intervention that are appropriate for one person might not be helpful for another.¹² For example, although many trans and gender diverse individuals may benefit from both hormonal intervention and surgery, some may choose only one of these options, and others may decide to have neither.¹⁵ The importance of tailoring interventions is especially true for those expressing a non-binary gender identity,²⁸ but equally applies to those who present with a trans male or trans female identity. Consistent with the above, decision making should be driven by the child or adolescent wherever possible, and 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 trans children and adolescents.^{19,29} Providing an environment that demonstrates inclusiveness and respect for diversity is essential, with Australian research reporting that healthcare environments experienced as discriminatory for trans and gender diverse people are correlated with poorer mental health outcomes.^{4,30} Some children or adolescents may request use of a preferred name or pronoun only in certain circumstances, such as when their parents are, or are not, present in the room. This is important to respect and enact to enable optimal patient-clinician engagement, and ensure confidentiality and patient safety.

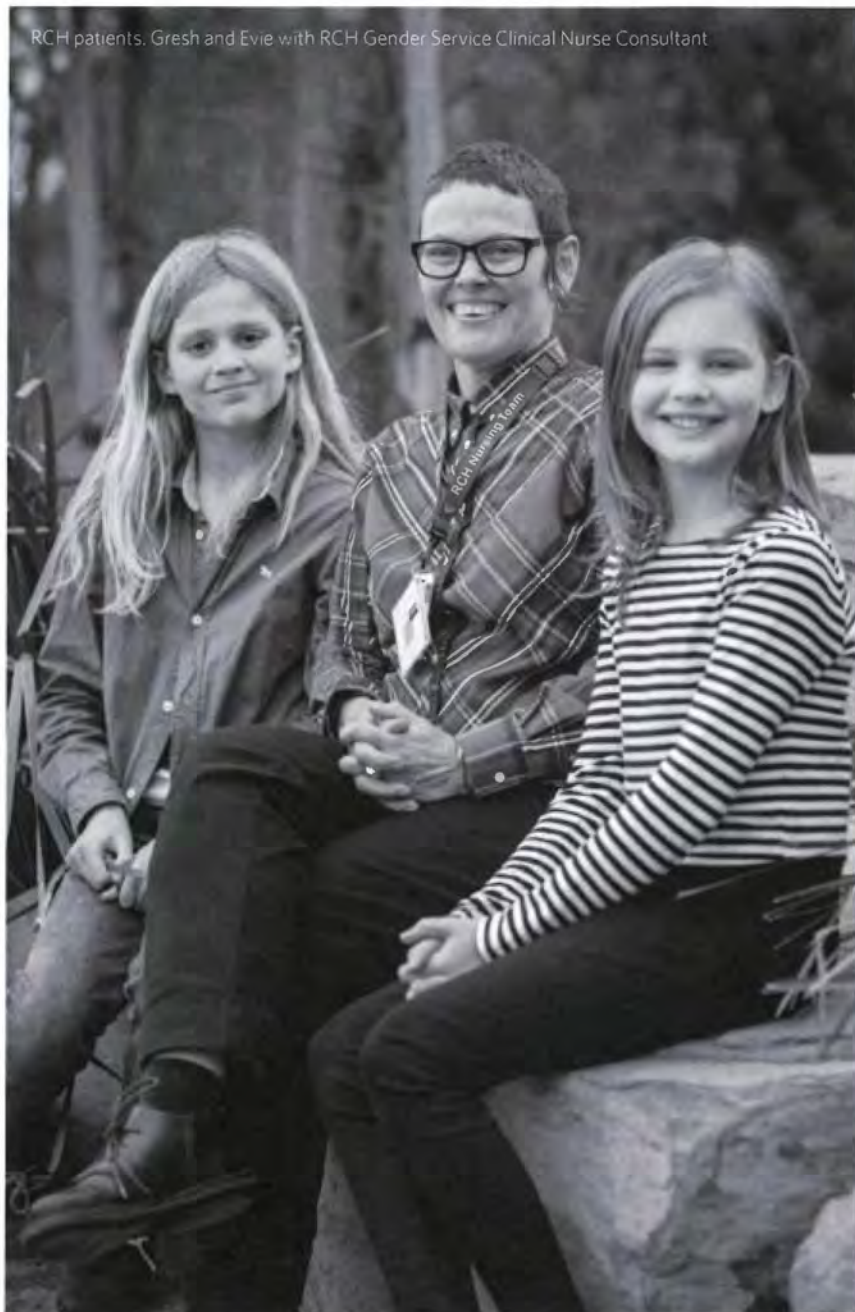
Avoid causing harm

Avoiding harm is an important ethical consideration for health professionals when considering different options for medical and surgical intervention. Withholding of gender affirming treatment is not considered a neutral option, and may exacerbate distress in a number of ways including increasing depression, anxiety and suicidality, social withdrawal, as well as possibly increasing chances of young people illegally accessing medications.³¹

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 Such practices, typically known as conversion or reparative therapies, lack efficacy,³³ are considered unethical¹² and may cause lasting damage to a child or adolescent's social and emotional health and wellbeing.^{18,33,34}

^aAdapted from: *Abnormal Psychology: Leading Researcher Perspectives*, 4e, 2017. Edited by Elizabeth Rieger. Reproduced with permission of McGraw-Hill Education (Australia) Pty Ltd.⁴⁷

RCH patients, Gresh and Evie with RCH Gender Service Clinical Nurse Consultant



Understanding and using a person's preferred name and pronouns is vital to the provision of affirming and respectful care of trans children and adolescents.

Consider sociocultural factors

Fear of experiencing stigma and discrimination by health professionals can be a barrier for trans and gender diverse individuals in accessing general medical healthcare as well as treatment directly related to gender dysphoria.³⁵ Indigenous trans and gender diverse Australians experience problems of racism and gender related discrimination in the broader Australian context as well as transphobia within traditional community groups, which adds an additional barrier to treatment access.³⁶ It is also important to recognise difficulties that may exist for children or adolescents and their families who belong to particular religious or cultural groups. In these circumstances, beliefs and values may be at odds with a gender affirming approach and may prevent them from accessing support within their local community.

Consider legal requirements

Australian trans and gender diverse children and adolescents experience barriers to obtaining identity documentation that accurately reflects their gender. Federal Government agencies providing identity documentation such as passports and Medicare cards allow a young person to change their gender marker to that which is preferred. Identity documents such as birth certificates, however, are governed under State based jurisdictions which vary across Australia. In the jurisdictions where birth certificate laws require an individual to undergo gender affirming surgical procedures prior to a change in one's gender marker, children and adolescents are prevented from doing so. This has implications for young people's rights to privacy and confidentiality when enrolling in school or applying for work. Conflicting gender markers across multiple identity documents is also a complicating factor which further disadvantages these young people.

Historically, court processes have played a significant role in determining access to hormone treatment for trans adolescents in Australia. Following the case in the Family Court of Australia known as *Re: Alex* (2004),³⁷ 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)³⁸ and *Re: Kelvin* (2017).³⁹ Current law allows the adolescent's clinicians to determine their capacity to provide informed consent for treatment. Court authorisation prior to 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/legal guardians can provide informed consent on their behalf without requiring court authorisation.

Current law allows the adolescent's clinicians to determine their capacity to provide informed consent for treatment.

RCH patient, Evie



Supporting trans and gender diverse children

Some trans and gender diverse individuals express gender diverse behaviour from a very young age, whilst others do not express a trans or gender diverse identity until adolescence or adulthood. The clinical needs of these groups are inherently different and, consequently, we provide separate guidelines for trans and gender diverse children (i.e. those who are in a pre-pubertal stage of development) and adolescents (i.e. those in whom puberty has commenced but are not yet legally adults).

Psychological support

Supporting trans and gender diverse children requires a developmentally appropriate and gender affirming approach. A non-judgemental, safe and supportive environment for the child and their parents or caregivers allows optimal outcomes from care provision.

There is growing evidence to suggest that for children, family support is associated with more optimal mental health outcomes.¹¹ Whilst many trans and gender diverse children and their families will benefit from some form of psychological support, the level of support required will depend on the clinical and psychosocial circumstances. Trans or gender diverse children with good health and wellbeing who are supported and affirmed by their family, community, and educational environments may not require any additional psychological support beyond occasional and intermittent contact with relevant professionals in the child's life, such as the family's general practitioner or school supports.

Others may benefit from a skilled clinician working together with family members to help develop a common understanding of the child's experience. Developing a shared understanding allows the child to feel genuinely supported and affirmed in who they are and for the family to be able to make considered and informed treatment decisions in the future, therefore ensuring optimal care.

Autism Spectrum Disorder (ASD) has been demonstrated to be associated with gender diversity,⁴⁰⁻⁴² and many children presenting to specialist gender services have co-existing ASD.⁴³ Clinical guidelines for the management of co-existing ASD and gender dysphoria have recently been developed.¹³ For some children, a formal diagnosis of ASD can be helpful for their family and teachers in understanding their social interactions and behaviour and to find strategies to manage the difficulties they encounter.

When a child's medical, psychological and/or social circumstances are complicated by co-existing mental health difficulties, trauma, abuse, significantly impaired family

functioning, or learning or behavioural difficulties, a more intensive approach with input from a mental health clinician will be required. This form of psychological support should be undertaken by a skilled mental health clinician with expertise in child cognitive and emotional development as well as child psychopathology, and experience in working with children with gender diversity and gender dysphoria. This support requires an understanding of the child and their family through a comprehensive exploration of the child's developmental history, gender identity, emotional functioning, intellectual and educational functioning, peer and other social relationships, family functioning as well as immediate and extended family support, in a safe and therapeutic environment.

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 have to take an all or nothing approach. It may occur broadly across different social contexts such as within the home and school environments, or be kept to selective environments should the child wish to do so. Provision of education about social transition to the child's kindergarten or school is often necessary to support a child who is socially transitioning to help facilitate the transition and minimise negative experiences such as bullying or discrimination.⁴⁴ Children who are engaged in sporting or other activities may also need assistance to allow transition to occur without exclusion or withdrawal from these groups. Social transition can reduce a child's distress and improve their emotional functioning.^{11,24} Evidence suggests that trans children who have socially transitioned demonstrate rates of depression, anxiety and self-worth comparable to their cisgender peers.^{11,24} The number of children in Australia who later socially transition back to their gender assigned at birth is not known, but anecdotally appears to be low and no current evidence of harm in doing so exists.



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The roles of the clinician involved in the care of the pre-pubertal child expressing gender diverse behaviour may include:

1. Supportive exploration of the child's gender identity over time.
2. Assessment of family support, dynamics and functioning. Provision of parent support and family work over time may be necessary to enable a safe and supportive home environment for the child. For children in out of home care, provision of support for carers and advocacy to ensure gender affirming environments may be required.
3. Assessment of developmental and family history, cognitive, emotional, educational and social functioning. Advocacy on behalf of the child and their family may be necessary to ensure gender affirming support is provided within their kindergarten or school, and other community environments.
4. Assessment and treatment of co-existing mental health difficulties, with referral where necessary.
5. Provision of clinically relevant education about gender identity, gender dysphoria and information regarding local support groups and organisations available to provide support for the child, siblings, parents and carers.
6. If the child is expressing a desire to live in a role consistent with their gender identity, provision of psychological support and practical assistance to the child and their family to facilitate social transition.
7. Referral of a child with gender dysphoria to a paediatrician or paediatric endocrinologist experienced in the care of trans and gender diverse adolescents for medical assessment, ideally prior to the onset of puberty.

Support and treatment for trans and gender diverse adolescents

The optimal model of care for trans and gender diverse adolescents who present to services involves a coordinated, multidisciplinary team approach.⁴⁵ This may include clinicians with expertise in the disciplines of child and adolescent psychiatry, paediatrics, adolescent medicine, paediatric endocrinology, clinical psychology, gynaecology, andrology, fertility services, speech therapy, general practice and nursing. It is unrealistic that all trans and gender diverse adolescents in Australia will be able to directly access comprehensive specialist paediatric services, especially with these specialist disciplines co-located within a public health service. Provision of a multidisciplinary team approach with coordination of care from general practitioners, private specialist practitioners and community based clinicians can be an effective alternative in ensuring best practice and accessibility to medical intervention. Utilisation of telehealth services for those based in rural and regional Australia may also facilitate treatment access.

Psychological support

Providing psychological care to trans and gender diverse 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 as well as immediate and extended family support. For example, many adolescents have experienced difficulties such as family rejection, bullying by peers, discrimination and occasionally physical assaults or other forms of abuse perpetrated against them in relation to their gender identity,³⁵ and it is important to assess for this.

Like trans and gender diverse children, trans and gender diverse adolescents present with a wide range of clinical and support needs.⁴⁶ In adolescents with insistent, persistent and consistent gender diverse expression, a supportive family, affirming educational environment and an absence of co-existing mental health difficulties, the adolescent and their parents or caregivers may benefit from an initial assessment followed by intermittent consultations with a mental health clinician. The latter may be necessary when new concerns arise, or as required for planning for and implementing medical transition.

Sometimes, an adolescent's medical, psychological and/or social circumstances are complicated by co-existing mental health difficulties, trauma, abuse, significantly impaired family functioning, learning or behavioural difficulties, or risk issues. In such cases, more intensive mental health input may be required from a skilled mental health clinician who not only has expertise in the cognitive and emotional development of young people and adolescent psychopathology, but also has experience in working with adolescents with gender diversity and gender dysphoria in a safe and therapeutic environment.

Adolescents often encounter resistance from their parents and other family members when their trans or gender diverse identity is first disclosed during adolescence.⁴⁷ They have often spent months or even years developing an understanding and acceptance of themselves and their gender identity and have thoroughly considered how to inform their families over a long period of time. At the time of disclosure


however, parents may perceive the change as being sudden and have little time to adjust before their adolescent is requiring their support and expressing a desire for intervention. For the clinician, investing time for parent support as well as individual work for the adolescent will assist in creating a shared understanding of the adolescent's experience and will enable optimisation of clinical outcomes and family functioning.

A high proportion of trans young people report difficulties at school, university or TAFE.⁷ Reduced school attendance is a common problem for adolescents,⁴⁸ which in part may be attributable to difficulties navigating the gendered environments found in many schools across Australia. Others withdraw from school altogether, limiting social interaction with peers and educational and employment opportunities available to them in the longer term. Working with the adolescent, their parents, other family members and the school is vital in ensuring successful return.⁴⁹

Managing distress during the assessment process can be difficult for adolescents and significant pressure is often experienced by clinicians from an adolescent who is certain of their need for treatment. This is often exacerbated by long waiting times to see clinicians who can provide treatment for gender dysphoria. Working with the adolescent to manage their expectations about progress and their distress is a necessity. Occasionally, counselling those who consider or do obtain hormone treatment from non-medical sources (e.g. online, via friends) on the risks of doing so should be undertaken whilst providing ongoing support and care to reduce vulnerability and risk.

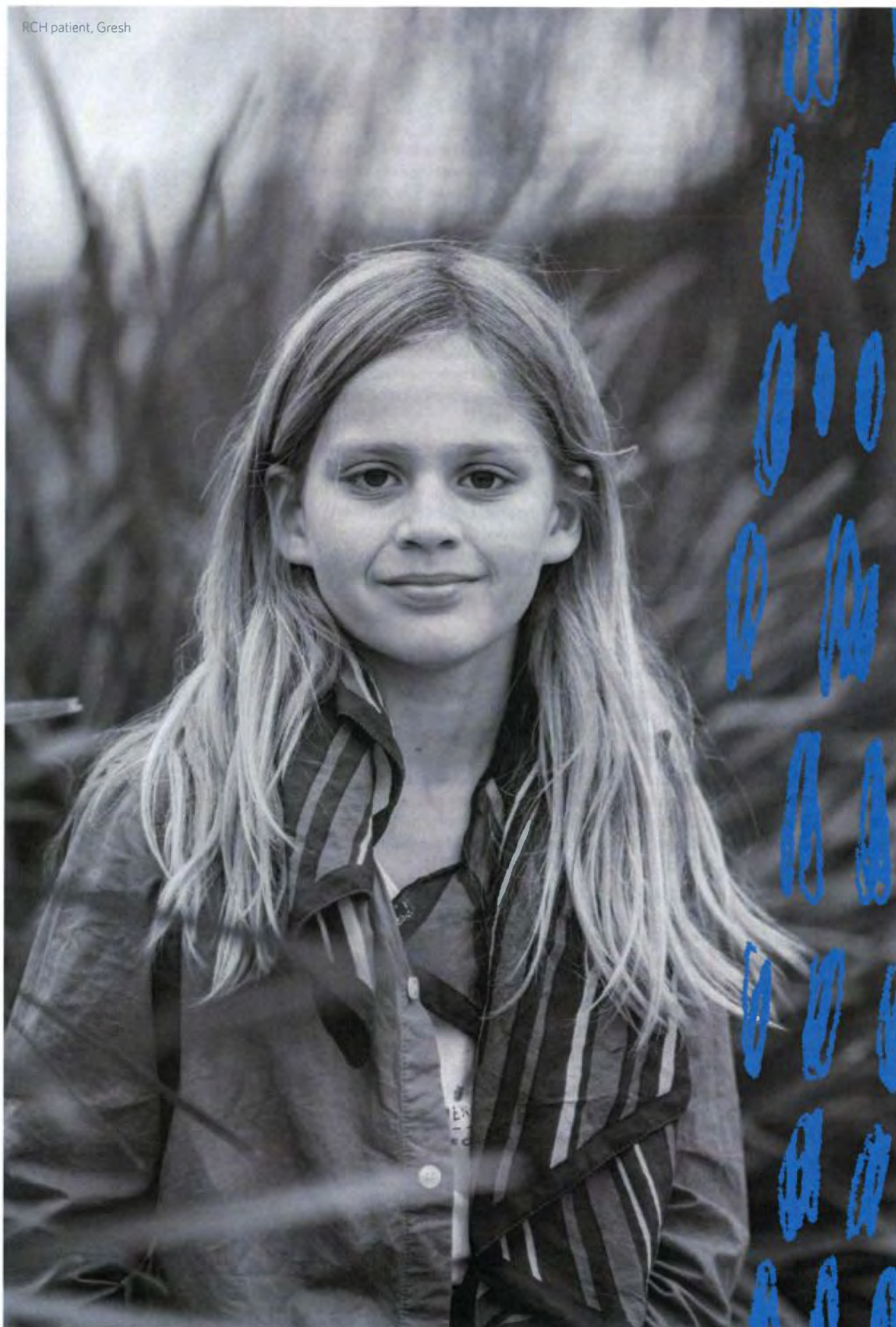
As mentioned earlier, ASD has been demonstrated to be associated with gender diversity and gender dysphoria^{40,50} and as such, many adolescents presenting to specialist gender services have a history of co-existing ASD. Clinical guidelines for the management of co-existing ASD and gender dysphoria have recently been developed.¹³ For some adolescents, a formal diagnosis of ASD can be helpful for their family and teachers in understanding their social interactions and behaviour and to find strategies to manage the difficulties they encounter. For the clinician, the presence of ASD can make the assessment of an adolescent with gender dysphoria more complex and formulation may require an extended assessment period. However, the presence of ASD with confirmation of a diagnosis of gender dysphoria should not prevent access to medical treatment where indicated.⁴³

An increased prevalence of disordered eating behaviours exists in trans and gender diverse adolescents,^{7,51,52} possibly due to a desire to adhere to the perceived ideals of one's experienced gender.^{45,46} Unsafe weight management behaviours such as dietary fasting, diet-pill and laxative use are elevated in trans young people, with use of non-prescription steroids also being higher in trans adolescents when compared to their cisgender peers.⁵³ It is therefore important that the assessment of adolescents with gender dysphoria includes consideration of the possibility of co-existing eating disorders. It has been suggested that addressing an adolescent's gender dysphoria may improve disordered eating behaviours.⁵⁴⁻⁵⁶ Other psychiatric comorbidities such as depression, anxiety and psychosis may also increase the complexity associated with treatment and intervention decisions but should not necessarily prevent medical transition in adolescents with gender dysphoria.⁴⁵



Investing time for parent support as well as individual work for the adolescent will assist in creating a shared understanding of the adolescent's experience.

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Voice and communication training

Voice is an important component of gender expression. Communication assessment, speech therapy and voice coaching by specialist speech pathologists with experience in 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.¹⁶

Social transition

The principles of social transition mentioned on page 9 are also applicable to adolescents. For older adolescents, consideration of further modification of gender expression may be helpful in reducing dysphoria. Breast binding or breast augmentation via padding can assist in masculinising or feminising the appearance of one's chest. Safe binding practices include use of a properly fitting binder, limiting their frequency (e.g. by having 'off-days'), and avoiding inflexible or adhesive tape which can cause skin irritability, pain and limitation of chest movement.⁵⁷ The practice of genital tucking or use of a penile prosthesis can also change one's appearance to be more consistent with the person's gender identity, although safety has not been studied. Hair removal utilising electrolysis, laser treatment or waxing can be useful for some adolescents with a feminine or female gender identity.⁵⁸

Fertility counselling and preservation procedures

Fertility preservation information and counselling should be provided to all adolescents prior to commencement of puberty suppression or gender affirming hormones.¹⁴ This will need to be tailored to the developmental stage of the adolescent,¹⁷ especially for those who are in the early stages of puberty who have limited understanding of reproductive biology. Although puberty suppression medication is reversible and should not in itself affect long term fertility,⁵⁹ it is very rare for an adolescent to want to cease this treatment to conduct fertility preserving interventions (e.g. semen storage) prior to commencement of gender affirming hormones. It is therefore necessary for counselling to be conducted prior to commencement of puberty suppression or gender affirming hormone treatment.¹⁷

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.^{60,61} However, the degree to which testosterone may reduce one's reproductive potential when taken in adolescence and early adulthood is unknown. It is also important to counsel the adolescent on the risks of unwanted pregnancy when taking testosterone. Despite a commonly held belief to the contrary, testosterone will not provide adequate contraception when engaging in sex with a person who is assigned male at birth and, should an unplanned pregnancy occur, androgenising effects of testosterone on the foetus are likely to cause harm.⁶²

For trans females, there is evidence that oestrogen impairs sperm production,⁶³⁻⁶⁵ although whether these effects are permanent remain unknown.¹⁴ 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.¹⁷

Should a trans female adolescent be commencing puberty suppression in early adolescence (Tanner stage 2-3) collection of mature sperm will usually not be possible since mature sperm are produced from mid puberty (Tanner stage 3-4). Unfortunately, this point in development often coincides with voice deepening, so most adolescents will find waiting for sperm maturation to occur unacceptable in the context of their gender dysphoria. Should the adolescent not have mature sperm for cryopreservation, testicular tissue cryopreservation can be offered as a potential means for reproduction in the future,¹⁷ but is currently experimental and with limited availability across Australia outside of major capital cities.

There is a surgical disadvantage that arises from the reduced availability of penile and scrotal skin for creation of a neovagina with early commencement of puberty suppression,⁶⁶ and this may be another consideration for trans female adolescents commencing puberty suppression in early adolescence (Tanner stage 2-3), who also desire genital surgery in adulthood.

Voice is an important component of gender expression.

Puberty suppression (stage 1 treatment)

Puberty suppression involves medication which suppresses the endogenous oestrogen and testosterone responsible for induction of secondary sexual characteristics.^{67,68} In Australia, gonadotrophin releasing hormone analogues (GnRHa) are available in subcutaneous and intramuscular injectable preparations. Puberty suppression typically relieves distress for trans adolescents by halting progression of physical changes such as breast growth in trans males and voice deepening in trans females,^{9,20,21} and is reversible in its effects.¹⁴ Other physical changes such as linear growth and weight gain continue to occur whilst on these medications²⁵ and the adolescent is given time to develop emotionally and cognitively prior to making decisions on gender affirming hormone use which have some irreversible effects.

Puberty suppression is most effective in preventing the development of secondary sexual characteristics when commenced at Tanner stage 2. However, in trans female adolescents presenting between Tanner stages 2 and 5, use of puberty suppression can prevent further masculinisation of the face and body that typically occurs into early adulthood. Whilst GnRHa provide effective pubertal suppression, use of anti-androgen medications such as cyproterone acetate or spironolactone may also relieve dysphoria in trans female adolescents. For trans male adolescents, commencement of GnRHa is likely to be most beneficial in those who are at Tanner stage 2 to Tanner stage 3. For trans males presenting following significant breast growth and post onset of menstruation, GnRHa will induce amenorrhoea to reduce dysphoria around menstruation, but this can also be achieved less invasively and more affordably with oral norethisterone. The side effect profiles of each of these medications differ and the decision regarding choice of puberty suppression medication should be made between the adolescent and their treating team with oral norethisterone or GnRHa to be offered as indicated.

The main concern with use of puberty suppression from early puberty is the impact it has on bone mineral density due to the absence of effect of oestrogen or testosterone on bone mineralisation during this time.^{22,26} Assessment of bone mineral density at commencement of treatment and regular monitoring during stage 1 treatment is therefore recommended.¹⁴ Reduction in the duration of use of puberty suppression by earlier commencement of stage 2 treatment must be considered in adolescents with reduced bone density to minimise negative impacts. Improvement in bone mineral density is seen following commencement of oestrogen and testosterone in stage 2 treatment,^{22,26} but the long term impact of puberty suppression on bone mineralisation is currently unknown. Encouraging adolescents on puberty suppression to optimise bone health with adequate calcium intake, vitamin D supplementation (if indicated) and weight bearing exercise is important.⁶⁸

Puberty suppression is most effective in preventing the development of secondary sexual characteristics when commenced at Tanner stage 2.

Gender affirming hormone treatment using oestrogen and testosterone (stage 2 treatment)

Gender affirming hormones oestrogen and testosterone are used to either feminise or masculinise a person's appearance by inducing onset of secondary sexual characteristics of the desired gender.^{14,22} Some of the effects of these medications are irreversible, whilst others have a degree of expected reversibility that is likely, unlikely or unknown (see tables below).

Table 1. Physiological effects of oestrogen (Adapted from *The Endocrine Society Guidelines* 2017)¹⁴

Effect of oestrogen	Onset	Maximum	Reversibility
Redistribution of body fat	3-6 months	2-3 years	Likely
Decrease in muscle mass and strength	3-6 months	1-2 years	Likely
Softening of skin and decreased oiliness	3-6 months	unknown	Likely
Decreased libido	1-3 months	3-6 months	Likely
Decreased spontaneous erections	1-3 months	3-6 months	Likely
Breast growth	3-6 months	2-3 years	Not possible
Decreased testicular volume	3-6 months	2-3 years	Unknown
Decreased sperm production	Unknown	> 3 years	Unknown
Decreased terminal hair growth	6-12 months	>3 years	Possible
Scalp hair	Variable		
Voice changes	None		

Table 2. Physiological effects of testosterone (Adapted from *The Endocrine Society Guidelines* 2017)¹⁴

Effect of testosterone	Onset	Maximum	Reversibility
Skin oiliness and acne	1-6 months	1-2 years	Likely
Facial and body hair growth	6-12 months	4-5 years	Unlikely
Scalp hair loss	6-12 months		Unlikely
Increased muscle mass and strength	6-12 months	2-5 years	Likely
Fat redistribution	1-6 months	2-5 years	Likely
Cessation of menses	1-6 months		Likely
Clitoral enlargement	1-6 months	1-2 years	Unknown
Vaginal atrophy	1-6 months	1-2 years	Unknown
Deepening of voice	6-12 months	1-2 years	Not possible



Ideally, the decision regarding timing of hormone commencement should be individualised to provide best care for the adolescent.

The ideal time for commencement of stage 2 treatment in trans adolescents will depend on the individual seeking treatment and their unique circumstances. There is no empirical evidence to provide objective recommendations for the appropriate age for introduction of stage 2 treatment, with previous guidelines using age informed cut-offs based on clinician consensus and the age at which consent for medical procedures is achieved in that particular jurisdiction.

Informed consent for this treatment must be obtained from the adolescent and ideally, but not necessarily, consent should be also obtained from their parents, carers or guardians.

Adolescents vary in the age at which they become competent to make decisions that have complex risk-benefit ratios,⁶⁹ as is the case with hormone treatment that is partially irreversible. This is an important consideration, with a thorough assessment of competence being a central part of both mental health and paediatric assessments. In addition to ensuring the adolescent is competent to make an informed decision, the timing of commencement of stage 2 treatment will also depend on the nature of the history and presentation of the person's gender dysphoria, duration of time on puberty suppression for those undertaking stage 1 treatment, co-existing mental health and medical issues and existing family support.

On occasion, a trans or gender diverse adolescent may express a desire to medically transition but not be in a position to provide informed consent. The case of an adolescent with an intellectual disability (ID) is one such example.⁷⁰ Cognitive ability and developmental level may influence the presentation of gender diversity and it appears that those with ID are less likely to receive treatment for gender dysphoria despite guidelines advocating access to the full range of available help and services irrespective of disability.⁷¹ In these cases, treatment decisions require an individualised and developmental approach⁷⁰ and should be made in close consultation with the family, based on the adolescent's best interest rather than solely on their capacity.

Whilst later commencement of hormone treatment during adolescence provides time for further emotional maturation and potentially lessens the risk that the adolescent will regret their decision, this should be carefully balanced by the biological, psychological and social costs to the adolescent of delaying treatment. Biological implications of delaying hormones include prolonged administration of puberty suppression, where used, with longer suppression likely to be associated with a greater risk of relative osteopenia. Some trans females may also be distressed by linear growth beyond their expected final height due to delayed growth plate closure with oestrogen and testosterone deficiency. Psychological costs may include the negative contribution treatment delay may have on an adolescent's sense of autonomy and agency, and may contribute to, or exacerbate, distress, anxiety or depression with subsequent increase in self-harm or suicide risk. Lack of control over personal decision making when faced with barriers to care perceived to be arbitrary and/or unnecessary can be especially difficult for adolescents. Social costs of delayed treatment include peer group and relationship difficulties with pubertal development occurring significantly behind expected norms.

Ideally, the decision regarding timing of hormone commencement should be individualised to provide best care for the adolescent, taking into consideration all the factors mentioned above. The decision should be shared between the clinicians, the adolescent and their family with the values and belief systems of all contributors being respectfully considered.

The roles of the mental health professional in the assessment and ongoing care of adolescents with gender dysphoria may include:

1. Assessment of developmental history, gender identity, cognitive and emotional functioning.
2. Assessment of family support, dynamics and functioning. Provision of family support over time may be necessary to enable a safe and supportive home environment. Provision of support for carers and advocacy to ensure gender affirming environments for adolescents in out of home care or within youth justice facilities will be necessary in these circumstances.
3. Assessment of social, educational or vocational functioning. Advocacy on behalf of the adolescent and their family may be necessary to ensure gender affirming support is provided within their educational environment or place of work.
4. Diagnostic assessment for gender dysphoria in adolescence. The DSM-5 criteria for Gender Dysphoria in Adolescents and Adults 302.85 (F64.1) and ICD-10 codes (F64) are widely used for diagnostic purposes internationally.
5. Assessment and treatment of co-existing mental health difficulties such as depression and anxiety with ongoing assessment of risk for self-harm and suicide.
6. Identification of circumstances that may require more intensive psychotherapy and referral where necessary.
7. Assessment of the adolescent's ability to consent to medical intervention in collaboration with the paediatrician, adolescent physician or endocrinologist.
8. Supportive psychotherapy to assist the adolescent in the exploration of their gender identity, preparing for and undertaking social and/or medical transition and provision of post transition psychological support. This should include an exploration of the potential psychosocial impacts of social transitioning prior to medical transition and managing these expectations and difficulties should they arise over time.
9. Provision of developmentally appropriate counselling regarding the impact of medical intervention on sexuality, sexual pleasure, fertility potential and the options available for fertility preservation.
10. Referral for fertility preservation as required.
11. Counselling of the adolescent and their parents/ caregivers on the available options for gender affirming surgical procedures such as chest reconstruction with referral where appropriate.
12. Provision of clinically relevant education about gender identity, gender dysphoria and information regarding local support groups and organisations available to provide support for the adolescent, siblings, parents and carers.
13. Provision of documentation to assist the adolescent to change identity documents to reflect the adolescent's preferred name and gender when requested.
14. Management of timely transition from paediatric to adult services as appropriate.

Adolescents vary in the age at which they become competent to make decisions that have complex risk-benefit ratios.

The roles of the paediatrician, adolescent physician or endocrinologist in the assessment and ongoing care of adolescents with gender dysphoria may include:

1. Assessment of the adolescent's gender identity, general health and wellbeing through medical and psychosocial history taking, physical examination and appropriate investigations (see recommended investigations prior to medical intervention in appendices 1 and 2).
2. Assessment of family support, dynamics and functioning. Provision of family support over time may be necessary to enable a safe and supportive home environment. Provision of support for carers and advocacy to ensure gender affirming environments for adolescents in out of home care or within youth justice facilities will be necessary in these circumstances.
3. Assessment of social, educational or vocational functioning. Advocacy on behalf of the adolescent and their family may be necessary to ensure gender affirming support is provided within their school environment or place of work.
4. Provision of information and education to the adolescent and their parents/carers regarding options for medical transitioning including risks and benefits of puberty suppression and gender affirming hormones.
5. Education, advice and provision of medical intervention when appropriate for the management of menstrual suppression, contraception and pregnancy related issues.
6. Provision of developmentally appropriate education regarding the impact of medical intervention on sexuality, sexual pleasure, fertility potential and the options available for fertility preservation.
7. Referral for fertility preservation as required.
8. Assessment of the adolescent's ability to consent to medical intervention. This should be done in collaboration with the mental health clinician.
9. Prescription of medication for initiation and maintenance of pubertal suppression and gender affirming hormone treatment.
10. Monitoring of physical and mental health during medical transition. This includes identification and monitoring for both desired physical and psychological changes and adverse effects from treatment.
11. Work in collaboration with the mental health clinician to monitor emotional and psychological functioning and to identify change in self-harm and suicidal risk over time.
12. Counselling of the adolescent and their parents/ caregivers on the available options for gender affirming surgical procedures such as chest reconstruction with referral where appropriate.
13. Provision of documentation to assist the adolescent to change identity documents to reflect the adolescent's preferred name and gender when requested.
14. Management of timely transition from paediatric to adult services as appropriate.



The roles of the gynaecologist and/or andrologist in the assessment and ongoing care of adolescents with gender dysphoria may include:

1. Education, advice and provision of medical intervention when appropriate for the management of menstrual suppression, contraception and pregnancy related issues.
2. Counselling of the trans or gender diverse adolescent regarding issues of sexuality and sexual pleasure.
3. Provision of information and education to the adolescent and their parents/carers regarding options for medical transitioning including risks and benefits of puberty suppression and gender affirming hormones.
4. Provision of developmentally appropriate education regarding the impact of medical intervention on fertility potential and the options available for fertility preservation.
5. Referral for fertility preservation as required.
6. Counselling of birth assigned female adolescents and their parents/caregivers on the options for gender affirming surgical procedures such as chest reconstruction. Counselling on the risks, benefits and potential limitations of other surgical procedures such as phalloplasty, hysterectomy and bilateral salpingectomy as required.
7. Counselling of birth assigned male adolescents and their parents/caregivers on the impact medical treatment such as puberty suppression may have on future surgical procedures, including creation of the neovagina. Counselling on the potential for altered sensation relating to orgasm as a consequence of this surgery is also necessary.

The roles of the nurse in the assessment and ongoing care of adolescents with gender dysphoria may include:

1. Provision of family-centred, developmentally appropriate gender affirming nursing practice.
2. Conduct outpatient consultations to assess medical, psychosocial and cultural needs.
3. Assessment of self-harm and suicide risk.
4. Provision of education to enable adolescents and their families to make informed decisions regarding treatment options.
5. Provision of interventions such as medication administration and monitoring of desired effects and adverse outcomes of treatment.
6. Provision of psychosocial support to the adolescent and their family/carers throughout the treatment pathway.
7. Liaise with the patient's multidisciplinary team in the care of adolescents and their families to ensure best practice.
8. Provide referrals to community based support groups and organisations who can provide education, support and advocacy for the adolescent and their family.

The roles of the speech pathologist in the assessment and ongoing care of adolescents with gender dysphoria may include:

1. Supportive exploration of the adolescent's own voice and communication style and the changes which may occur during transition.
2. Provision of education regarding voice development, vocal health and effective communication.
3. Teaching efficient voice production focussing on gender specific characteristics and listener perceptions.
4. Support the adolescent through training options, including self-guided practice and telehealth consultations where available.

The roles of the general practitioner (GP) in the assessment and ongoing care of adolescents with gender dysphoria:

Many GPs play an active role in the optimisation of support and treatment of trans or gender diverse adolescent patients and their families. Regular communication between the GP and the other members of the multidisciplinary team allows for a high level of care coordination with maximisation of available locally based services to address clinical, psychological and social supports that may be required. Other roles may include:

1. Assessment of the adolescent's gender identity, general health and wellbeing through medical and psychosocial history taking, physical examination and appropriate investigations (see recommended investigations prior to medical intervention in appendices 1 and 2).
2. Assessment of family support and family functioning. Provision of family support over time is necessary to enable a safe and supportive home environment. Provision of support for carers and advocacy to ensure gender affirming environments for adolescents in out of home care or within youth justice facilities will be necessary in these circumstances.
3. Provision of individual support to the siblings, parents and other family members of the trans or gender diverse adolescent where appropriate.
4. Assessment of social, educational or vocational functioning. Advocacy on behalf of the adolescent and their family may be necessary to ensure gender affirming support is provided within their school environment or place of work.
5. Provision of information and education to the adolescent and their parents/carers regarding options for medical transitioning including risks and benefits of puberty suppression and gender affirming hormones.
6. Referral to specialist gender services when required.
7. Education, advice and provision of medical intervention when appropriate for the management of menstrual suppression, contraception and pregnancy related issues.
8. Provision of developmentally appropriate education regarding the impact of medical intervention on sexuality, sexual pleasure, fertility potential and the options available for fertility preservation.
9. Referral for fertility preservation as required.
10. Monitoring of emotional and psychological functioning and identification of self-harm and suicidal risk over time.
11. Prescribing and administration of medication for puberty suppression or gender affirming hormones in collaboration with the paediatrician, adolescent physician or paediatric endocrinologist.
12. Monitoring of physical and mental health during medical transition. This includes identification and monitoring for both desired physical and psychological changes and adverse effects from treatment.
13. Counselling of the adolescent and their parents/ caregivers on the available options for gender affirming surgical procedures such as chest reconstruction with referral where appropriate.
14. Provision of documentation to assist the adolescent to change identity documents to reflect the adolescent's preferred name and gender when requested.

The roles of the bioethicist and the legal practitioner in the care of adolescents with gender dysphoria may include:

1. Bioethicists can provide secondary consultation to clinicians or multidisciplinary teams who request assistance in decision making regarding a complex clinical situation or dilemma in provision of care. Examples may include treatment decisions involving adolescents who are especially vulnerable or at high risk, parents with conflicting and opposing views, or discordance in clinician opinion regarding an adolescent's ability to provide informed consent or their best interests.
2. Legal advice may be sought when young people or their families experience discrimination or in the case of an objecting parent or legal guardian who initiates legal proceedings with the aim of preventing commencement or continuation of treatment.

RCH Gender Service Clinical Nurse Consultant



Commencement of puberty suppression using gonadotrophin releasing hormone analogues (GnRHa)

Criteria for adolescents to commence puberty suppression:

1. A diagnosis of Gender Dysphoria in Adolescence, made by a mental health clinician with expertise in child and adolescent development, psychopathology and experience with children and adolescents with gender dysphoria.
2. Medical assessment including fertility preservation counselling has been completed by a general practitioner, paediatrician, adolescent physician or endocrinologist. This assessment should include further fertility preservation counselling by a gynaecologist and/or andrologist as required with referral for fertility preservation when requested.
3. Tanner stage 2 pubertal status has been achieved. This can be confirmed via clinical examination with presence of breast buds or increased testicular volume (>4 mL) and elevation of luteinising hormone to ≥ 0.5 IU/L.
4. The treating team should agree that commencement of puberty suppression is in the best interest of the adolescent and assent from the adolescent and informed consent from their legal guardians has been obtained.

Commencement of gender affirming hormone treatment using oestrogen or testosterone

Criteria for adolescents to commence gender affirming hormone treatment using oestrogen or testosterone:

1. A diagnosis of Gender Dysphoria in Adolescence, made by a mental health clinician with expertise in child and adolescent development, psychopathology and experience with children and adolescents with gender dysphoria.
2. Medical assessment including fertility preservation counselling has been completed by a general practitioner, paediatrician, adolescent physician or endocrinologist. This assessment should include further fertility preservation counselling by a gynaecologist and/or andrologist as required with referral for fertility preservation when requested.
3. The treating team should agree that commencement of oestrogen or testosterone is in the best interest of the adolescent and informed consent from the adolescent has been obtained. Although obtaining consent from parents/guardians for commencement of hormone treatment is ideal, parental consent is not required when the adolescent is considered to be competent to provide informed consent. For adolescents who are assessed as not being competent to provide informed consent, parents/legal guardians can provide informed consent on their behalf without requiring court authorisation.

Should the adolescent not have capacity to provide informed consent, treatment decisions are based on the adolescent's best interests.

Surgical interventions for trans and gender diverse adolescents

Chest reconstructive surgery (also known as top surgery) may be appropriate in the care of trans males during adolescence.⁷² In alignment with the recommendations of WPATH SOC version 7⁷² chest reconstructive surgery is regularly performed across the world in countries where the age of majority for medical procedures is 16 years.⁷³

Given the irreversible nature of gender affirming surgical procedures, the decision to undertake chest reconstructive surgery during adolescence requires considered and thorough assessment by professionals experienced in working with adolescents with gender dysphoria. Similar to the decisions regarding commencement of gender affirming hormones, an individualised approach is needed. Thorough assessments of the cognitive and emotional maturity of the adolescent, their support networks and their capacity to understand the risks and benefits of surgical intervention are required to ensure good outcomes. 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 parents/guardians and the clinicians involved in their care. Ideally, this would include the members of the multidisciplinary team taking a holistic approach with the paediatrician or endocrinologist, the mental health clinicians and the surgeon in agreement regarding best interest.¹²

Genital surgery performed before the age of 18 years remains a relatively uncommon practice internationally. Surgeons' attitudes towards specific guidelines on undertaking vaginoplasties in minors vary.⁷³ Decisions regarding an individual adolescent's best interest and ability to consent for genital surgery are more complex than that of chest reconstructive surgery. This is partly due to 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 complexity, delaying genital surgery until adulthood is advised.

Chest reconstructive surgery (also known as top surgery) may be appropriate in the care of trans males during adolescence.

Transition of care to adult health providers

Transition to adult healthcare services can be a source of significant anxiety for trans adolescents and their family when they have been cared for within a paediatric setting over many years. Not only have they established therapeutic relationships with the clinicians and other staff, most adolescents are continuing to experience ongoing physical changes from hormone treatment and are simultaneously dealing with the psychological impacts of finishing their secondary school education and entering further education or employment opportunities.

Discussion with the adolescent and their family regarding the need for transition of care and the process by which this will occur should start in the years prior to the actual transfer taking place. The young person's GP is vital in facilitating a smooth process and many GPs continue as the primary doctor involved in hormone prescribing and monitoring of mental health after engaging in a shared care arrangement during paediatric treatment. This is especially helpful for adolescents who live in rural or regional areas where specialist gender services are not available.

For adolescents who have significant co-existing mental health conditions or who are at high risk of self-harm or suicide, ongoing specialist mental health care is required.



Appendices

As mentioned above, the recommendations made in this document are based primarily on clinician consensus, along with previously published standards of care from the World Professional Association for Transgender Health (WPATH),¹² treatment guidelines and position statements,¹³⁻¹⁹ and findings from a limited number of non-randomised clinical studies and observational studies.^{8-11,20-26} It is clear that further research is warranted across all domains of care for trans and gender diverse children and adolescents, the findings of which are likely to influence future recommendations.

Appendix 1: Recommended medical examination and investigations for puberty suppression using gonadotrophin releasing hormone analogues (GnRHa)

	Physical Examination	Investigations
Initial examination and investigations prior to commencement of puberty suppression	Height Weight BMI Blood pressure Tanner stage	FBE UEC LFT Oestradiol &/or Testosterone LH and FSH Bone mineral density Bone age Lipid profile BSL
Monitoring during puberty suppression every 3 months	Height Weight BMI Blood pressure Documentation of physical changes or side effects	
Monitoring during puberty suppression at 6 months (just prior to the third dose of Goserelin or Leuprorelin acetate)		LH and FSH Oestradiol or Testosterone
Monitoring during puberty suppression every 12 months until completion of puberty suppression treatment	Tanner stage	FBE UEC LFT Lipid profile BSL Bone mineral density (as required) LH and FSH Oestradiol or Testosterone

Note: Full blood examination (FBE); Urea and electrolytes (UEC); Liver function test (LFT); Lutenising hormone (LH); Follicle stimulating hormone (FSH); Blood sugar level (BSL); Body mass index (BMI).

Appendix 2: Recommended medical examination and investigations prior to commencement and throughout treatment with oestrogen or testosterone

	Physical Examination	Investigations
Initial examination and investigations prior to commencement of gender affirming hormones	Height Weight BMI Blood pressure Tanner stage	FBE UEC LFT Oestradiol or Testosterone LH and FSH Lipid profile BSL
Monitoring during gender affirming hormone treatment every 3 months	Height Weight BMI Blood pressure Documentation of physical changes: e.g. breast growth, voice changes, facial and body hair Documentation of unwanted effects	
Monitoring during gender affirming hormone treatment every 6 months (Note: testosterone levels should be performed just prior to the testosterone undecanoate dose or half way in between doses of testosterone enanthate)		LH and FSH Oestradiol or Testosterone FBE UEC LFT
Monitoring during gender affirming hormone treatment every 12 months	Tanner stage	Bone mineral density (to document recovery after being on puberty suppression as required) BSL Lipid profile

Note: Full blood examination (FBE); Urea and electrolytes (UEC); Liver function test (LFT); Lutenising hormone (LH); Follicle stimulating hormone (FSH); Blood sugar level (BSL); Body mass index (BMI).

Appendix 3: Induction of feminising hormones for adolescents: treatment recommendations

1. If the patient is already on GnRH analogues continue this medication for at least 6 months

Goserelin 10.8 mg subcutaneous implant approximately every 10 – 12 weeks

Leuprorelin 22.5mg or 30mg intramuscular injection every 3-4 months

Triptorelin 22.5mg intramuscular injection every 5-6 months

2. Commencing oestrogen for induction of female puberty

Commence oestradiol valerate (e.g. Progynova) 1mg oral daily or equivalent dose transdermal oestradiol patch and continue for 6-12 months

Increase the dose to 2mg oral daily depending on clinical effect at 6 or 12 months. Further increases may be necessary over time to a maximum dose of 2-4mg oral daily

On cessation of puberty suppression, commence anti-androgen medication if desired

An anti-androgen can be commenced at the time of oestrogen induction if the adolescent is not on a GnRH analogue. Options include:

- i. Spironolactone 100mg oral daily, increasing to up to 200mg oral twice daily as required
- ii. Cyproterone acetate 25-50mg oral daily

Appendix 4: Induction of masculinising hormones for adolescents: treatment recommendations

1. If the patient is taking the oral contraceptive pill this should be discontinued

A withdrawal bleed will occur over approximately 5-7 days

2. If the patient is on norethisterone for induced amenorrhoea continue this for at least 6 months to prevent menstruation

3. If the patient has a levonorgestrel (e.g. Mirena) intrauterine device in situ this can remain in place to prevent menstruation and provide contraception

4. If the patient is already on GnRH analogues continue this medication for at least 6 months

Goserelin 10.8 mg subcutaneous implant approximately every 10 – 12 weeks

Leuprorelin 22.5mg or 30mg intramuscular injection every 3-4 months

Triptorelin 22.5mg intramuscular injection every 5-6 months

5. Commencing testosterone

5a) Patients at Tanner stage 2-4 and currently on puberty suppression

Start testosterone enanthate in a dose of 0.5mL (125mg) intramuscular injection every 3 weeks

After a total of 6 months of testosterone treatment the dose may be increased to 1mL (250mg) testosterone enanthate intramuscular injection every 3 weeks

Once the testosterone enanthate dose has been increased to 250 mg every 3 weeks, it should be possible to stop the GnRHa, as the testosterone alone will suppress endogenous female hormones. In the long term it may be best to treat with long-acting testosterone undecanoate (e.g. Reandron 1000) intramuscular injection every 8-12 weeks. This can be discussed with each young person on an individual basis

5b) Patients at Tanner stage 4-5 and not on puberty suppression

Consider commencement of testosterone treatment by either:

The graded approach as above in 5a)

or

Consider using long-acting testosterone undecanoate (e.g. Reandron 1000) intramuscular injection from the outset. Should testosterone treatment be initiated by using long-acting testosterone undecanoate, the second dose should be given at 6 weeks and subsequently continued at 12 week intervals. In the longer term, long-acting testosterone undecanoate may be given at 8-12 week intervals depending on serum testosterone levels

References

1. 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.
2. 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.
3. Hillier L, Jones T, Moriagale 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, McCaul K, Rooney R, Jancey J. *The First Australian National Trans Mental Health Study: Summary of Results*. Perth, Australia: School of Public Health, Curtin University; 2014.
5. Giordano S. *Children with Gender Identity Disorder: A Clinical, Ethical, and Legal Analysis*. Oxon, UK: Routledge; 2013.
6. Couch M, Pitts M, Mulcare H, Croy S, Mitchell A, Patel S. *Tranznation: A Report on the Health and Wellbeing of Transgendered People in Australia and New Zealand*. Melbourne: The Australian Research Centre in Sex, Health & Society, La Trobe University; 2007.
7. Strauss P, Cook A, Winter S, Watson V, Wright Toussaint D, Lin A. *Trans Pathways: The Mental Health Experiences and Care Pathways of Trans Young People. Summary of Results*. Perth, Australia: Telethon Kids Institute; 2017.
8. 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(5):285-290.
9. de Vries AL, McGuire J, Steensma T, Wagenaar EC, Doreleijers TA, Cohen-Kettenis PT. Young adult psychological outcome after puberty suppression and gender reassignment. *Pediatrics*. 2014;134:696-704.
10. Simons L, Schrager S, Clark L, Belzer M, Olson J. Parental support and mental health among transgender adolescents. *J Adolesc Health*. 2013;53:791-793.
11. Olson K, Durwood L, DeMeules M, McLaughlin K. Mental health of transgender children who are supported in their identities. *Pediatrics*. 2016;137(3):e20153223.
12. 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(4):165-232.
13. 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(1):105-115.
14. 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(11):3869-3903.
15. Bockting WO, Goldberg J. *Guidelines for Transgender Care*. Binghamton, NY: Haworth Medical Press; 2006.
16. 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.
17. 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(1):99-107.
18. American Psychological Association, Task Force on Gender Identity and Gender Variance. *Report of the Task Force on Gender Identity and Gender Variance*. Washington, DC: Author; 2009.
19. Burnes TR, Singh AA, Harper A, et al. American Counseling Association: Competencies for counseling with transgender clients. *J LGBT Issues Couns*. 2010;4(3-4):135-159.110.
20. Costa R, Dunsford M, Skagerberg E, Holt V, Carmichael P, Colizzi M. Psychological support, puberty suppression, and psychosocial functioning in adolescents with gender dysphoria. *J Sex Med*. 2015;12(11):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(8):2276-2283.
22. 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.
23. 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(5):747-757.
24. Durwood L, McLaughlin KA, Olson KR. Mental health and self-worth in socially transitioned transgender youth. *J Am Acad Child Adolesc Psychiatry*. 2017;56(2):116-123.e112.
25. 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(7):1125-1132.
26. Vlot MC, Klink DT, den Heijer M, Blankenstein MA, Rotteveel J, Heijboer AC. 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.
27. Rieger E, ed *Abnormal Psychology: Leading Researcher Perspectives*. 4 ed. Australia: McGraw-Hill Education (Australia) Pty Ltd; 2017.
28. Richards C, Bouman WP, Seal L, Barker MJ, Nieder TO, T'Sjoen G. Non-binary or genderqueer genders. *Int Rev Psychiatry*. 2016;28(1):95-102.
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(6):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(4):689-700.
32. Gelder MG, Marks IM. Aversion treatment in transvestism and transsexualism. In: Green R, Money J, eds. *Transsexualism and Sex Reassignment*. Baltimore, MD: Johns Hopkins Press; 1969:383-413.
33. Substance Abuse and Mental Health Services Administration. *Ending Conversion Therapy: Supporting and Affirming LGBTQ Youth*. HHS Publication No. (SMA) 15-4928. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2015.
34. Drescher J. Controversies in gender diagnoses. *LGBT Health*. 2013;1(1):10-14.
35. Smith E, Jones T, Ward R, Dixon J, Mitchell A, Hillier L. *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 & Society; 2014.
36. Kerry SC. Sisters/brothers: The status of indigenous transgender Australians. *Int J Transgend*. 2014;15:173-186.
37. 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;query=Re:Alex;mask_path=. Accessed February 26, 2018.
38. 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;query=Re:Jamie;mask_path=. Accessed February 26, 2017.
39. 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;query=re:kelvin;mask_path=. Accessed February 26, 2018.
40. May T, Pang K, Williams K. Gender variance in children and adolescents with autism spectrum disorder from the National Database for Autism Research. *Int J Transgend*. 2016;18:7-15.
41. Janssen A, Huang H, Duncan C. Gender variance among youth with autism spectrum disorders: A retrospective chart review. *Transgend Health*. 2016;1(1):63-68.
42. Strang JF, Kenworthy L, Dominska A, et al. Increased gender variance in autism spectrum disorders and attention deficit hyperactivity disorder. *Arch Sex Behav*. 2014;43(8):1525-1533.
43. de Vries AL, Noens IL, Cohen-Kettenis PT, van Berckelaer-Onnes IA, Doreleijers TA. Autism spectrum disorders in gender dysphoric children and adolescents. *J Autism Dev Disord*. 2010;40(8):930-936.
44. Bartholomaeus C, Riggs DW, Andrew Y. The capacity of South Australian primary school teachers and pre-service teachers to work with trans and gender diverse students. *Teach Teach Educ*. 2017;65:127-135.
45. Tishelman AC, Kaufman R, Edwards-Leeper L, Mandel FH, Shumer DE, Spack NP. Serving transgender youth: Challenges, dilemmas, and clinical examples. *Prof Psychol Res Pr*. 2015;46(1):37.
46. de Vries AL, Doreleijers TA, Steensma TD, Cohen-Kettenis PT. Psychiatric comorbidity in gender dysphoric adolescents. *J Child Psychol Psychiatry*. 2011;52(11):1195-1202.

47. Dierckx M, Motmans J, Mortelmans D, T'sjoen G. Families in transition: A literature review. *Int Rev Psychiatry*. 2016;28(1):36-43.
48. Terada S, Matsumoto Y, Sato T, Okabe N, Kishimoto Y, Uchitomi Y. School refusal by patients with gender identity disorder. *Gen Hosp Psychiatry*. 2012;34(3):299-303.
49. Kearney CA. School absenteeism and school refusal behavior in youth: A contemporary review. *Clin Psychol Rev*. 2008;28(3):451-471.
50. Jacobs L, Rachlin K, Erickson-Schroth L, Janssen A. Gender dysphoria and co-occurring autism spectrum disorders: Review, case examples, and treatment considerations. *LGBT Health*. 2014;2(00).
51. Vocks S, Stahn C, Loenser K, Legenbauer T. Eating and body image disturbances in male-to-female and female-to-male transsexuals. *Arch Sex Behav*. 2009;38(3):364-377.
52. Witcomb GL, Bouman WP, Brewin N, Richards C, Fernandez-Aranda F, Arcelus J. Body image dissatisfaction and eating-related psychopathology in trans individuals: A matched control study. *Eur Eat Disord Rev*. 2015;23(4):287-293.
53. Guss CE, Williams DN, Reisner SL, Austin SB, Katz-Wise SL. Disordered weight management behaviors, nonprescription steroid use, and weight perception in transgender youth. *J Adolesc Health*. 2017;60(1):17-22.
54. Ewan LA, Middleman AB, Feldmann J. Treatment of anorexia nervosa in the context of transsexuality: A case report. *Int J Eat Disord*. 2014;47(1):112-115.
55. Strandjord SE, Ng H, Rome ES. Effects of treating gender dysphoria and anorexia nervosa in a transgender adolescent: Lessons learned. *Int J Eat Disord*. 2015;48(7):942-945.
56. Testa RJ, Rider GN, Haug NA, Balsam KF. Gender confirming medical interventions and eating disorder symptoms among transgender individuals. *Health Psychol*. 2017;36(10):927-936.
57. Peitzmeier S, Gardner I, Weinand J, Corbet A, Acevedo K. Health impact of chest binding among transgender adults: A community-engaged, cross-sectional study. *Cult Health Sex*. 2017;19(1):64-75.
58. Ginsberg BA, Calderon M, Seminara NM, Day D. A potential role for the dermatologist in the physical transformation of transgender people: A survey of attitudes and practices within the transgender community. *J Am Acad Dermatol*. 2016;74(2):303-308.
59. Guaraldi F, Beccuti G, Gori D, Ghizzoni L. Management of endocrine disease: Long-term outcomes of the treatment of central precocious puberty. *Eur J Endocrinol*. 2016;174(3):R79-87.
60. Light A, Obedin-Maliver J, Sevelius J, Kerns J. Transgender men who experienced pregnancy after female-to-male gender transitioning. *Obstet Gynecol*. 2014;124(6):1120-1127.
61. Obedin-Maliver J, Makadon HJ. Transgender men and pregnancy. *Obstet Med*. 2016;9(1):4-8.
62. Carlsen SM, Jacobsen G, Romundstad P. Maternal testosterone levels during pregnancy are associated with offspring size at birth. *Eur J Endocrinol*. 2006;155(2):365-370.
63. Thiagaraj D, Gunasegaram R, Loganath A, Peh KL, Kottegoda SR, Ratnam SS. Histopathology of the testes from male transsexuals on oestrogen therapy. *Ann Acad Med Singapore*. 1987;16(2):347-348.
64. 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(1):31-43.
65. Lubbert H, Leo-Rossberg I, Hammerstein J. Effects of ethinyl estradiol on semen quality and various hormonal parameters in a eugonadal male. *Fertil Steril*. 1992;58(3):603-608.
66. van der Sluis WB, Bouman MB, de Boer NK, et al. Long-term follow-up of transgender women after secondary intestinal vaginoplasty. *J Sex Med*. 2016;13(4):702-710.
67. Kreukels BP, Cohen-Kettenis PT. Puberty suppression in gender identity disorder: The Amsterdam experience. *Nat Rev Endocrinol*. 2011;7(8):466-472.
68. Mahfouda S, Moore JK, Siafarikas A, Zepf FD, Lin A. Puberty suppression in transgender children and adolescents. *Lancet Diabetes Endocrinol*. 2017.
69. Bird S. Consent to medical treatment: The mature minor. *Aust Fam Physician*. 2011;40(3):159-160.
70. Bevan R. Gender dysphoria and intellectual disability 2016; <http://www.rcpsych.ac.uk/workinpsychiatry/faculties/intellectualdisability/newsletters/newsletterjanuary2016/genderdysphoriaandintellect.aspx>. Accessed July 20, 2017.
71. Wylie K, Barrett J, Besser M, et al. Good practice guidelines for the assessment and treatment of adults with gender dysphoria. *Sex Relation Ther*. 2014;29(2):154-214.
72. Marinkovic M, Newfield RS. Chest reconstructive surgeries in transmasculine youth: Experience from one pediatric center. *Int J Transgend*. 2017;18(4):376-381.
73. 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(4):624-634.



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ATTACHMENT MT-4

This is the attachment marked 'MT-4' referred to in the witness statement of Associate Professor Michelle Telfer dated 1 July 2019.



Time's up for sexual harassment in medicine



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See [Comment](#) page 2587

A career in medicine can be a gruelling endeavour. Long hours, heavy workloads, and high responsibilities make the job physically and emotionally demanding. Yet a report released this month by The National Academies of Sciences, Engineering, and Medicine (NASEM) reveals often under-recognised additional challenges for women: a staggering 58% of female faculty and staff across academia have experienced sexual harassment, and female medical students experience sexual harassment at much higher rates than their peers in science and engineering.

Sexual harassment is a form of gender-based violence that violates women's rights, harms their health, damages their careers, and undermines the credibility and success of organisations. As Adrienne O'Neil and colleagues outline in today's *Lancet*, sexual harassment can result in anxiety, depression, and post-traumatic stress disorder. In the workplace, sexual harassment decreases productivity, damages team relationships, and can cause women to leave their position, institution, or profession.

NASEM found that sexual harassment is most likely to occur in environments where such behaviour is perceived as tolerated. For clinicians, it is most common in surgery and emergency medicine, which tend to be male dominated and value hierarchical working environments. In a culture that accepts, and even glorifies, the conquest of challenges at work, abusive and sexually degrading behaviour, particularly towards residents, can become normalised—part of what women are expected to endure to succeed.

Recommendations for preventing sexual harassment include zero tolerance, improved transparency and accountability, and increased representation of women at all levels. *The Lancet* is committed to publishing scholarship that addresses gender inequality across science, medicine, and global health, and today launches an online collection on gender in advance of a planned #LancetWomen theme issue in February, 2019. Tolerance of sexual harassment must not continue to be the price that women pay for a career in medicine. ■ [The Lancet](#)

For the **NASEM** report see
<http://sites.nationalacademies.org/shstudy/index.htm>

For the **#LancetWomen** hub see
<https://www.thelancet.com/lancet-women>



Gender-affirming care needed for transgender children



The Royal Children's Hospital Creative Studio

The number of children and adolescents seeking support for gender dysphoria—the distress caused by incongruence between gender identity and sex assigned at birth—has soared in recent years. On June 18, the first guidelines focusing solely on the care of transgender and gender-diverse children and adolescents were published by the Royal Children's Hospital Gender Service, Melbourne, Australia. Initiated to advocate for legal reform in Australia, where until recently anyone younger than 18 years needed to obtain legal permission to access hormone treatment, the guidelines outline a framework for provision of respectful, gender-affirming care of transgender and gender diverse children and adolescents.

Based on empirical evidence, clinician consensus, and results of non-randomised and observational studies, the guidelines were developed in consultation with multidisciplinary experts, support groups, and transgender children and adolescents, and their families. The guidelines stand apart from existing recommendations by suggesting that social transition—the process by which a person changes their gender expression to more closely

match their gender identity, for example, by changing one's name, hairstyle, or clothing—should be led by the child. They also move away from the idea that access to hormone treatment should be based on chronological age, instead suggesting that the transition to treatment should depend on an individual's ability to make informed decisions, duration of puberty suppression, any coexisting health issues, and the level of family support. Gaps in the evidence remain, however, and further research on development of gender identity and long-term outcomes after treatment is needed.

Spurred on by increasing acceptance of transgender individuals in society (and normalisation of the right for anyone to question their gender identity), the number of young people seeking support is likely to increase further. Children and adolescents with gender dysphoria often experience stigma, bullying, and abuse, resulting in high rates of mental illness, including depression, anxiety, and self-harm. But with supportive, gender-affirming management—as laid out by the Australian guidelines—these consequences can be minimised. ■ [The Lancet](#)

For the **Australian** guidelines see <https://www.rch.org.au/uploadedFiles/Main/Content/adolescent-medicine/australian-standards-of-care-and-treatment-guidelines-for-trans-and-gender-diverse-children-and-adolescents.pdf>



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ATTACHMENT MT-5

This is the attachment marked 'MT-5' referred to in the witness statement of Associate Professor Michelle Telfer dated 1 July 2019.

TRANS PATHWAYS SUMMARY



What is Trans Pathways?

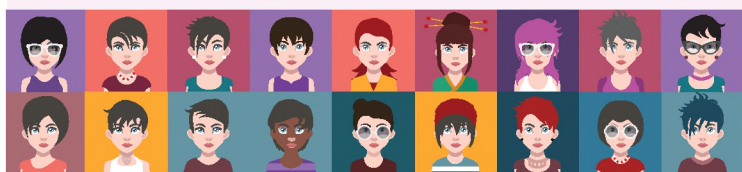


- **Trans Pathways** was a national online survey launched in 2016
- We asked about the mental health of Australian trans young people and their experiences with accessing services. There was also a survey for parents or guardians of trans young people.

Who took part in Trans Pathways?



- **859** trans and gender diverse young people (aged 14-25 years)
 - **Sex assigned at birth:**
 - 74.4% assigned female at birth
 - 25.6% assigned male at birth
 - **Gender identity:**
 - 48.6% nonbinary
 - 29.7% male
 - 15% female
- **194** parents/guardians of trans young people
- Trans (or transgender) people identify as a gender that does not match the sex assigned to them at birth.



What are the results of Trans Pathways?



Mental health issues

- 4 out of 5 trans young people have ever self-harmed (79.7%)
 - This is compared to 10.9% of adolescents (12-17 years) in the Australian general population
- Almost 1 in 2 trans young people have ever attempted suicide (48.1%)
 - This is 20 times higher than adolescents (12-17 years) in the Australian general population
 - This is 14.6 times higher than adults (aged 16-85 years) in the Australian general population
- 3 in 4 trans young people have ever been diagnosed with depression (74.6%)
 - This is 10 times higher than adolescents (12-17 years) in the Australian general population
- 72.2% of trans young people have ever been diagnosed with anxiety
 - This is 10 times higher than adolescents (12-17 years) in the Australian general population
- 22.7% of trans young people had been diagnosed with an eating disorder
- 25.1% of trans young people had been diagnosed with post-traumatic stress disorder

Risks for poor mental health

- 89% had experienced peer rejection and 74% had experienced bullying
- 78.9% had experienced issues with school, university or TAFE
- 68.9% had experienced discrimination
- 65.8% had experienced lack of family support
- 22% had experienced accommodation issues or homelessness.

Protective factors

- Trans young people shared the strategies they use to feel better about themselves and improve their mental wellbeing.

These include: music and art, peers and friends, activism, social media and pets.

Experiences with medical and mental health services

- 60.1%** have experienced feeling isolated from medical and mental health services
- 42.1%** of participants have reached out to a service provider who did not understand, respect or have previous experience with gender diverse people

Problems included:

- Lack of knowledge on trans issues
- Not knowing how to help the trans young person or where to refer them
- Transphobia
- Telling the young person they were going through a phase
- Being forced to repeat their story every time they saw a new clinician
- Services that are trans-friendly are at capacity, have long waiting lists, and may be costly because they are private.



Recommendations for medical and mental health services

- Increase funding for services for trans people (both adults and under 18s), to create services in areas where there are none, and expand services where they are at capacity
- Improve services where they are perceived to be sub-standard via enhanced education and upskilling of current service providers
- Ensure trans healthcare is affordable by expanding services and treatments covered by Medicare and the Pharmaceutical Benefits Scheme, and encourage private health insurance companies to include trans health needs in their coverage.



Guidelines for schools, universities and TAFE

- Teachers and staff should seek out information on gender diversity and incorporate equitable practices into educational environments.



Guidelines for parents

- Parents need to be supportive: young people who do not have the support of their parents are at greater risk of poor mental health
- Realise that your child may be exploring their gender identity and that this is okay – it is okay to reach out for support for yourself, and/or your child.

Conclusion and next steps

Trans young people are at very high risk for mental health problems, self-harm and suicide. This can be improved by changing some of the risk factors identified in the survey, and developing interventions based on strengths and protective factors. Services are lacking and education is desperately needed.

Recommendations for Government and health commissioners and service providers are provided below.

Recommendations and Guidelines



Recommendations for Australian governments

- Increase funding for provision of and enhancement of gender services and research
- Promote and enact trans-inclusive public policies (for example, regarding access to gendered facilities)
- Trans-inclusive legislation and trans-inclusive data collection, particularly in population-based surveys such as the Census, to ensure recognition of Australian trans populations
- Provide better education on gender diversity and practical information on how to uphold the rights of trans people.





Royal Commission into
Victoria's Mental Health System

ATTACHMENT MT-6

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Original article

Associations of Lesbian, Gay, Bisexual, Transgender, and Questioning—Inclusive Sex Education With Mental Health Outcomes and School-Based Victimization in U.S. High School Students



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A B S T R A C T

Purpose: Homophobic school climates are related to increased victimization for sexual minority youth (SMY), leading to increased risk of adverse mental health outcomes. Interventions that promote positive school climate may reduce the risk of victimization and adverse mental health outcomes in SMY. This study explored whether lesbian, gay, bisexual, transgender, and questioning (LGBTQ)—inclusive sex education is associated with adverse mental health and school-based victimization in U.S. youth.

Methods: Data analysis of representative data from the 2015 Youth Risk Behavior Survey and the 2014 School Health Profiles was conducted using multilevel logistic models testing whether youth in states with higher proportions of schools teaching LGBTQ-inclusive sex education had lower odds of reporting being bullied in school and experiencing adverse mental health outcomes, including depressive symptoms and suicidality.

Results: After controlling for covariates, protective effects for all youth were found for suicidal thoughts (adjusted odds ratio [AOR]: .91, 95% confidence interval [CI]: .89–.93) and making a suicide plan (AOR: .79; 95% CI: .77–.80). Lesbian and gay youth had lower odds of experiencing bullying in school as the proportion of schools within a state teaching LGBTQ-inclusive sex education increased (AOR: .83; CI: .71–.97). Bisexual youth had significantly lower odds of reporting depressive symptoms (AOR: .92; 95% CI: .87–.98).

Conclusions: Students in states with a greater proportion of LGBTQ-inclusive sex education have lower odds of experiencing school-based victimization and adverse mental health. These findings can be used to guide intervention development at the school and state levels.

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IMPLICATIONS AND
CONTRIBUTIONS

States where more schools teach lesbian, gay, bisexual, transgender, and questioning—inclusive sex education have youth with lower odds of experiencing bullying in school and lower odds of reporting adverse mental health outcomes. These protective associations are strongest in sexual minority youth.

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Mental health problems remain one of the greatest threats to the success and well-being of sexual minority youth (SMY) in the United States. Results from the 2015 Youth Risk Behavior Survey (YRBS) indicate that over 60% of lesbian, gay, and bisexual youth experienced prolonged feelings of hopelessness or sadness in the last year, compared with only a quarter of heterosexual youth [1].

Rates of suicidality are also alarmingly high, with SMY five times more likely to report attempting suicide than their heterosexual peers [1]. A meta-analysis of the mental health literature found that SMY are significantly more likely to experience depression and have three times the odds of reporting attempting suicide than heterosexual youth [2].

Minority Stress Theory posits that the heightened prevalence of adverse mental health outcomes seen within SMY emerge from prolonged exposure to stigmatization resulting from minority status [3]. For high school age youth, who average 6.8 hours of school each weekday [4], much of the sexuality-based stigmatization they experience is perpetrated by peers on school property. Approximately 58% of lesbian, gay, bisexual, transgender, and questioning (LGBTQ) students reported feeling unsafe at school, with 71% of LGBTQ youth reporting being verbally harassed at school based on their sexual identity [4]. The 2015 YRBS indicated that 12.5% of SMY reported skipping school due to safety concerns compared with 5.6% of heterosexual youth [1]. School-based victimization can have profound effects on the mental and physical health of these youth, with studies showing a significant relationship between school-based victimization and experiencing depression [5–7] and suicidal ideation [6].

A growing body of research suggests that promoting a supportive school climate by introducing Gay/Straight Alliances (GSAs) or antidiscrimination policies can have positive outcomes for SMY. Participation in and the presence of Gay/Straight Alliances or Gender/Sexuality Alliances (GSAs) in a school is associated with higher perceived social support [8] and participation in fewer risky behaviors [9]. However, GSAs may be insufficient in reducing the prevalence of victimization that leads to poor outcomes in SMY: owing to self-selecting participation in GSAs, notions of sexual diversity may not reach those most likely to perpetuate victimization and instead only provide a buffer against negative health and achievement outcomes for SMY [10]. Similarly, school-wide antidiscrimination policies have been linked to lower instances of past-year suicide in SMY [11], but their effectiveness may be diminished if they are not regularly enforced or if students are unaware of the policy [12,13].

Integration of LGBTQ-inclusive information and representation into standard curricula, where it is explicitly visible and accessible to all youth, may help overcome the downsides of other strategies such as GSAs or antidiscrimination policies. Toomey, McGuire, and Russell found that students perceived their school as safer if LGBTQ-inclusive education (e.g., receiving information about sexual orientation, learning about LGBTQ history or current events) was present [14]. Qualitative research has also found that students feel that there is less bullying and more LGBTQ inclusivity when LGBTQ history, events, or health issues are discussed in sex education, English, or social science classrooms [15]. LGBTQ students have also reported fewer experiences of victimization based on sexual orientation in schools with a curriculum that teaches about LGBTQ people, history, or events (14.8%) than those without (31.1%) [7]. For those students who reported both a GSA and inclusive curriculum, students perceived more peer supportiveness (75.2%) than schools that only had a GSA (61.0%) [7]. Despite the potential to minimize reported victimization in schools, no studies have looked at whether an LGBTQ-inclusive curriculum exclusively is related to fewer negative mental health outcomes in SMY.

The purpose of this study was to test whether a specific type of LGBTQ-inclusive curricula, LGBTQ-inclusive sex education, is

associated with mental health disparities and victimization among SMY. Data concerning the prevalence of LGBTQ-inclusive sex education in schools are currently available through the School Health Profiles (SHPs) conducted biennially through the Center for Disease Control and Prevention, which is representative at the state level. Previous analyses using SHP have found that state-level school climate, including the presence of LGBTQ-inclusive curriculum among other support factors, is associated with reduced suicidal thoughts [16] and alcohol use [17] in SMY. For LGBTQ-inclusive sex education, state-level measures may be important to examine as policies dictating what type of sex education is taught in schools vary from state to state [18]. Thus, absent school-level data, state-level variables may provide a snapshot of the likelihood of schools within a state to have protective school climates and cultures that are influenced by LGBTQ-inclusive sex education and provides additional evidence of sociocultural factors that can influence SMY mental health and experiences of victimization.

Using data from the 2015 YRBS and 2014 SHP, we tested whether the proportion of schools teaching LGBTQ-inclusive sex education in a state was associated with mental health outcomes and bullying victimization in a representative sample of U.S. high school students. Furthermore, we tested whether any associations were significantly different for SMY compared with their heterosexual peers. We hypothesized that any protective associations of LGBTQ-inclusive sex education would be stronger for SMY than heterosexual youth.

Methods

Study design

This study analyzed data from the 2015 state-level YRBS. The YRBS used two-stage, cluster sampling to achieve representativeness for public high school students in grades 9–12 in their respective states. Detailed methodology regarding questionnaire development and sampling design for the state-level YRBS has been previously published [19]. The main predictor, the degree to which a state teaches LGBTQ-inclusive sex education, was operationalized using data from the 2014 SHPs. Sampling strategies used by the SHP result in representative data from health course educators concerning health education in secondary schools, grades 6 through 12, for each state [20]. For all states that completed the SHP in 2014, sample sizes ranged from 66 to 660 teachers, and response rates ranged from 70% to 89%. Detailed methodology for the SHP is published elsewhere [20].

States were included in analyses if they met three criteria: (1) YRBS results were authorized to be publicly released ($k=31$ states); (2) students in the state reported their sexual identity ($k=19$ states); and (3) the state agreed to release data from the 2014 SHPs. Eleven states met all three of these criteria: Arizona, Delaware, Florida, Kentucky, Maine, Michigan, New York, North Carolina, South Dakota, West Virginia, and Wyoming. Total YRBS sample sizes for these 11 states ranged from 1,622 to 10,834 students.

Individuals were excluded from the analyses if they were missing sexual identity or any of the demographic variables (sex, grade, or race). After excluding these individuals from the sample, participants who were missing all the outcome variables were also excluded. Of 51,895 total participants, we retained a final sample of 47,730 (8% missing).

Table 1

Frequency distributions of sexual identity by state, Youth Risk Behavior Survey 2015

State	Heterosexual, n (%)	Gay or lesbian, n (%)	Bisexual, n (%)	Not sure, n (%)
Arizona	2,080 (87.4)	61 (2.7)	166 (7.0)	75 (3.0)
Delaware	2,314 (87.6)	40 (1.8)	180 (6.7)	101 (4.0)
Florida	5,144 (87.6)	126 (2.2)	359 (6.0)	249 (4.2)
Kentucky	2,244 (87.6)	62 (2.8)	140 (6.6)	80 (3.0)
Maine	8,199 (87.4)	208 (2.1)	631 (6.3)	441 (4.2)
Michigan	4,124 (88.0)	128 (2.2)	295 (6.2)	176 (3.6)
New York	8,827 (86.0)	285 (3.0)	831 (6.6)	532 (4.4)
North Carolina	5,076 (88.5)	208 (3.0)	418 (5.7)	229 (2.8)
North Dakota	1,884 (90.5)	35 (1.9)	104 (4.8)	59 (2.8)
West Virginia	1,370 (86.9)	46 (2.9)	106 (6.5)	60 (3.7)
Wyoming	2,069 (88.5)	60 (2.5)	142 (5.1)	108 (3.9)

All percentages are weighted to account for the complex survey design and the sampling strategy.

Measures

Dependent variables

Mental health. To assess depressive symptoms, participants were asked “During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?” For suicidal thoughts, participants answered the question, “During the past 12 months, did you ever seriously consider attempting suicide?” Whether a participant had made a plan to commit suicide was measured by one item, “During the past 12 months, did you make a plan about how you would attempt suicide?” All mental health outcomes were measured dichotomously as “yes” or “no.”

Bullying victimization. To assess experiences of being bullied at school, participants were asked, “During the past 12 months, have you ever been bullied on school property?” Responses to this question were dichotomous.

Independent variables

LGBTQ-inclusive sex education. Lead health educators were asked “Does your school provide curricula or supplementary materials that include HIV, STD, or pregnancy prevention information that is relevant to lesbian, gay, bisexual, transgender, and questioning

youth (e.g., curricula or materials that use inclusive language or terminology)?” The proportion of those who answered “yes” to this question was used to generate a continuous variable reflecting the proportion of schools in each state that taught LGBTQ-inclusive sex education from this representative sample of schools. After scaling, a one-unit increase in LGBTQ-inclusive sexual education reflects a 10% increase in the number of schools providing this curriculum within a state.

Sexual identity. Participants were asked to select which sexual identity best described them. Options included heterosexual (straight), gay/lesbian, bisexual, and not sure, and all four categories were retained in analyses. Frequency distributions for each sexual identity by state are presented in Table 1.

State-level covariates. To control for the influence of state-level climate toward LGBTQ individuals, presence of statewide LGBTQ antidiscrimination policies was included. This variable was measured continuously on a scale from –10 to 34 and was obtained from the 2015 State Policy Tallies developed and provided by the Movement Advancement Project, a think-tank tracking LGBTQ equality [21]. State Policy Tallies are calculated based on the presence of antidiscrimination laws in six policy areas (i.e., marriage and relationship recognition, adoption and parenting, nondiscrimination, safe schools, health and safety, and identity documents), as well as the presence of explicitly negative laws that target LGBTQ individuals, such as HIV criminalization laws. For the states included in this analysis, State Policy Tallies ranged from .50 to 21.00. The density of same-sex couples in each state was calculated from the 2014 American Community Survey [22] as a rate per 1,000 coupled households, and median household income of each state was obtained from the 2015 American Community Survey [22].

Demographic covariates. Grade, sex, and race of participants were included as individual-level covariates. Grade was measured categorically and was dummy coded (ninth vs. 10th, 11th, and 12th grades). Sex was measured dichotomously as “female” versus “male.” Race was dummy coded as “African-American,” “Hispanic,” and “other” versus “white.”

Analytic approach

Analyses were conducted in Stata v. 14.2 using individual-level weighting to account for the complex survey design of

Table 2

Frequencies and descriptive statistics for sexual identity and level 2 covariates by outcomes, Youth Risk Behavior Survey 2015

Level 1 covariates	Depressive symptoms, n (%)	Suicidal thoughts, n (%)	Suicide plan, n (%)	Been bullied, n (%)
Sexual identity				
Heterosexual	10,413 (24.6)	5,107 (12.1)	3,575 (10.6)	6,874 (16.8)
Gay or lesbian	534 (53.8)	369 (36.7)	257 (30.3)	328 (34.6)
Bisexual	1,917 (62.8)	1,400 (44.6)	941 (39.3)	1,006 (34.2)
Not sure	852 (48.1)	550 (30.4)	361 (24.9)	519 (31.2)
Number of participants	47,226	47,221	37,513	45,037
Level 2 covariates	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
LGBTQ-inclusive sex education	34.5 (13.9)	34.5 (13.9)	28.5 (8.6)	35.4 (13.6)
Same-sex couples population density	13.4 (4.1)	13.4 (4.1)	12.7 (4.3)	13.4 (4.2)
Median household income	51806.3 (5696.2)	51806.3 (5696.2)	49837.3 (4736.6)	51887.6 (5832.0)
LGBT antidiscrimination	10.5 (8.3)	10.5 (8.3)	8.2 (7.8)	10.8 (8.3)
Number of states	11	11	10	10

Percentages are weighted to account for survey design.

LGBTQ = lesbian, gay, bisexual, transgender, and questioning; SD = standard deviation.

the YRBS [23]. Owing to the unavailability of outcome data, New York was excluded from analyses examining making a suicide plan, and Arizona was excluded from experiences of bullying on school property. To check for variation among states on dependent variables, unconditional models were fit with random intercepts for states using multilevel logistic models fit using generalized linear latent and mixed models [24]. Next, the main predictors (proportion of schools that taught LGBTQ-inclusive sex education and sexual identity) and individual-level covariates were added to each model. State-level covariates (anti-discrimination policies, median income, and density of same-sex couples) were then introduced in the model. The final models retained random intercepts for schools with the inclusion of cross-level interactions between proportion of schools that taught LGBTQ-inclusive sex education and sexual identity, while controlling for individual- and state-level covariates. These final models provided evidence for whether LGBTQ-inclusive sex education modifies the relationship between sexual identity and mental health and bullying victimization. Missing data were handled using listwise deletion. The University of Pittsburgh Institutional Review Board deemed the present study exempt.

Results

Descriptive analyses indicated that the sample was 55.4% white, 17.2% African-American, 19.8% Hispanic, and 7.6% other races. Participants were spread out fairly evenly among different grade levels, with 27.5% of youth in ninth grade, 25.9% in 10th grade, 23.8% in 11th grade, and 22.8% in 12th grade. Overall, 87.4% of the sample identified as heterosexual, 2.6% identified as gay or lesbian, 6.3% identified as bisexual, and 3.7% reported being unsure of their sexual identity.

Table 2 shows descriptive statistics for participants by depressive symptoms, suicidal thoughts, making a plan to commit suicide, and experiencing bullying on school property, as well as state-level covariates. Bisexual youth reported the highest frequency of past-year depressive symptoms (62.8%), suicidal thoughts (44.6%), and making a suicide plan (39.3%). Gay/lesbian youth reported the highest frequency of bullying victimization on school property (34.2%). The percentage of schools teaching LGBTQ-inclusive sex education ranged from 16.2% to 57.1% (mean=34.4, standard deviation=13.9).

For all mental health outcomes, the unconditional model indicated the presence of significant variation among states (depressive symptoms: variance component [VC] = .05, $p < .01$; suicidal thoughts: VC=.01, $p < .001$; suicide plan: VC = .05, $p < .001$), supporting the use of multilevel models. Students living in states with higher proportions of schools teaching LGBTQ-inclusive sex education had significantly lower odds of depressive symptoms after controlling for covariates (adjusted odds ratio [AOR]=.86; 95% confidence interval [CI]=.85–.88). Adjusted odds ratios and confidence intervals for outcomes are depicted in Table 3. The final model added the cross-level interaction between sexual identity and the proportion of schools teaching LGBTQ-inclusive sex education in the state. An interaction effect was found for bisexual youth, indicating that the disparity between bisexual and heterosexual youth reporting depressive symptoms decreased more in states with higher proportions of schools teaching LGBTQ-inclusive sex education (AOR = .92; 95% CI=.87–.98).

After controlling for state-level covariates, the proportion of schools teaching LGBTQ-inclusive sex education in a state was

significantly related to lower odds of suicidal thoughts (AOR=.91; 95% CI=.89–.93) and making a suicide plan (AOR=.79; 95% CI=.77–.80). No interaction effects were found between sexual identity and the proportion of schools teaching LGBTQ-inclusive sex education for suicidal thoughts and making a suicide plan.

After introducing state-level covariates, LGBTQ-inclusive sex education was not a significant predictor of experiencing bullying at school (AOR=1.01; 95% CI=.98–1.05). An interaction effect was found in the final model, with gay and lesbian youth having a significantly greater reduction in the odds of experiencing bullying in the last year than heterosexual youth in states with a higher proportion of schools teaching LGBTQ-inclusive sex education (AOR=.83; 95% CI=.71–.97).

Discussion

This study tested whether LGBTQ-inclusive sex education is associated with reduced adverse mental health outcomes and bullying victimization in U.S. high school students. We found that LGBTQ-inclusive sex education is related to lower reports of adverse mental health among all youth and experiences of bullying among SMY subgroups.

Protective associations of LGBTQ-inclusive sex education were found for depressive symptoms, suicidal thoughts, and making a suicide plan for all youth. Notably, there was a 20% reduction in reported suicide plans for every 10% increase in schools teaching LGBTQ-inclusive sex education in a state. This finding supports past research indicating that inclusive school climates have positive implications for heterosexual youth as well as SMY [9,25,26].

A significant interaction effect was found for bisexual youth and depressive symptoms, such that with every 10% increase in the proportion of schools teaching LGBTQ-inclusive sex education in a state, the disparity in depressive symptoms between bisexual and heterosexual youth decreased. Notably, bisexual youth are at an increased risk for adverse mental health outcomes compared with both their heterosexual and gay/lesbian peers [27–29]. It is possible that LGBTQ-inclusive sex education programs influence not only heterosexual peers' perceptions of sexual diversity but also gay/lesbian peers' perceptions of sexual diversity, thereby reducing the double discrimination that bisexual youth often face [30]. The exact mechanisms that produce additional mental health disparities between bisexual youth and their lesbian and gay peers are understudied [30].

There was also a significant interaction effect for gay/lesbian youth, such that a 10% increase in the proportion of schools teaching LGBTQ-inclusive sex education in a state was associated with significantly lower odds of gay/lesbian youth experiencing bullying on school property compared with heterosexual youth. The question measuring bullying on school property used by the YRBS was not specific to homophobic bullying. For instance, the question did not specify whether a student experienced bullying due to being a sexual minority or perceived as a sexual minority. We would expect to see LGBTQ-inclusive sex education be associated with a reduction in homophobic bullying, not necessarily all bullying, which may have diluted the findings through use of a general bullying victimization measure. Future research should take care to specify the type of bullying being perpetuated, particularly when looking at bullying motivated by aspects of identity.

Table 3

Associations between lesbian, gay, bisexual, transgender, and questioning–inclusive sex education and adverse mental health outcomes and experiences of bullying in schools, Youth Risk Behavior Survey 2015

	Depressive symptoms, AOR (95% CI)			Suicidal thoughts, AOR (95% CI)	
	Model 1	Model 2	Model 3	Model 1	Model 2
Level 1 covariates					
Sexual identity					
Heterosexual (ref)	1.00	1.00	1.00	1.00	1.00
Gay/lesbian	3.68 (2.76–4.89)	3.67 (2.76–4.89)	3.65 (1.85–7.22)	4.27 (3.31–5.52)	4.28 (3.31–5.54)
Bisexual	4.22 (3.53–5.05)	4.23 (3.53–5.06)	5.58 (3.95–7.87)	5.06 (4.77–5.36)	5.04 (4.75–5.35)
Not sure	2.66 (2.49–2.83)	2.66 (2.50–2.84)	2.58 (2.10–3.17)	2.92 (2.48–3.44)	2.92 (2.49–3.42)
Grade					
9th grade (ref)	1.00	1.00	1.00	1.00	1.00
10th grade	1.09 (1.03–1.15)	1.09 (1.03–1.15)	1.09 (1.03–1.15)	.99 (.93–1.04)	.98 (.93–1.04)
11th grade	1.14 (1.00–1.30)	1.14 (1.00–1.30)	1.14 (1.00–1.30)	.94 (.79–1.12)	.94 (.79–1.12)
12th grade	1.07 (.93–1.24)	1.07 (.93–1.24)	1.07 (.93–1.24)	.81 (.73–.90)	.81 (.72–.90)
Sex					
Female (ref)	1.00	1.00	1.00	1.00	1.00
Male	.44 (.41–.48)	.44 (.41–.48)	.44 (.41–.48)	.56 (.53–.60)	.56 (.53–.60)
Race/ethnicity					
White (ref)	1.00	1.00	1.00	1.00	1.00
African-American	1.00 (.90–1.11)	1.00 (.90–1.11)	1.00 (.90–1.11)	.77 (.71–.83)	.78 (.71–.85)
Hispanic	1.25 (1.07–1.45)	1.26 (1.07–1.47)	1.26 (1.08–1.48)	1.05 (.93–1.17)	1.05 (.93–1.17)
Other	1.05 (.94–1.21)	1.05 (.96–1.17)	1.05 (.94–1.17)	1.02 (.93–1.12)	1.02 (.94–1.12)
Level 2 covariates					
LGBTQ-inclusive sex education	.93 (.92–.93)	.86 (.85–.88)	.90 (.89–.91)	.95 (.94–.96)	.91 (.89–.93)
Same-sex couples		.97 (.96–.98)	.96 (.96–.97)		.95 (.95–.95)
Antidiscrimination		1.02 (1.01–1.02)	1.02 (1.02–1.03)		1.01 (1.00–1.02)
Median income		1.08 (1.05–1.10)	1.08 (1.06–1.10)		1.16 (1.13–1.20)
Cross-level interactions					
Gay/lesbian × sex education			1.00 (.89–1.13)		
Bisexual × sex education			.92 (.87–.98)		
Not sure × sex education			1.01 (.97–1.05)		

Boldface indicates statistical significance ($p < .05$).

AOR = adjusted odds ratio; CI = confidence interval; LGBTQ = lesbian, gay, bisexual, transgender, and questioning; ref = referent.

In all models, a higher population density of same-sex couples in a state was significantly related to fewer adverse mental health outcomes and bullying victimization in youth. Past research has suggested that population density of same-sex couples in a state is related to lower instances of mood and anxiety disorders in sexual minority adults [31]. While this association has not been examined for youth, higher density of same-sex couples may indicate a normative shift in the perception of sexual minority relationships in a state and, similar to LGBTQ-inclusive sex education, may increase the likelihood that youth are exposed to representations of sexual minority individuals and same-sex relationships. These findings suggest the importance of examining and controlling for sociocultural factors on state climate and culture when examining youth mental health.

It is important to implement and evaluate LGBTQ-inclusive sex education in U.S. high schools. A previous cluster-randomized controlled trial found that LGBTQ-inclusive sex education increased student knowledge and safe sex practices in California schools [32,33], but this study did not measure or report on outcomes related to heterosexual students' perceptions and attitudes toward sexual diversity or outcomes related to SMY's feelings of safety. Including these measures can provide information about the impact LGBTQ-inclusive sex education may have on shaping bullying and school climate and help support existing research that suggests youth feel safer when LGBTQ curriculum is presented in schools [14,15]. Furthermore, measuring perceptions of internalized homophobia and perceived school safety before and after the introduction of LGBTQ-inclusive sex education can provide insight into whether

LGBTQ-inclusive sex education can influence internal stressors that are related to mental well-being in SMY according to the Minority Stress Model.

Limitations and strengths

While this study provides a novel approach to conceptualizing the benefits of LGBTQ-inclusive sex education, it is not without limitations. We were unable to control for school-level factors or measure the impact of a specific school's sex education curriculum on students attending that school. However, significant state differences in the effect of teaching LGBTQ-inclusive sex education on SMY mental health and bullying victimization lends additional support for previous studies, asserting that larger sociocultural contextual factors play a role in the health and well-being of SMY [16,17,31]. The proportion of schools teaching LGBTQ-inclusive sex education is likely not randomly distributed and is related to other sociocultural contextual factors within a state and state-level policies. This study controlled for three state-level variables that could influence the proportion of schools with inclusive sex education (population density of same-sex couples, median household income, and the presence of inclusive antidiscrimination policies). Owing to a small number of states (10–11 states per model), there was low statistical power for state-level covariates. In addition, we were unable to account for the proportion of schools with GSAs in the state due to collinearity ($r = .93$) with the proportion of LGBTQ-inclusive sex education. As such, we recommend conducting studies at the school level to help disentangle

Table 3
Continued

Suicidal thoughts, AOR (95% CI)	Suicide plan, AOR (95% CI)			Been bullied, AOR (95% CI)		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
1.00	1.00	1.00	1.00	1.00	1.00	1.00
4.35 (2.45–7.73)	3.75 (2.94–4.78)	3.76 (2.94–4.80)	2.10 (.62–7.18)	2.88 (1.80–4.62)	2.88 (1.79–4.62)	5.67 (2.34–13.79)
4.90 (4.15–5.78)	4.85 (4.44–5.30)	4.87 (4.45–5.34)	3.92 (2.31–6.69)	2.44 (1.98–2.99)	2.43 (1.98–2.99)	2.95 (1.99–4.38)
3.30 (2.24–4.85)	2.65 (2.33–3.00)	2.66 (2.33–3.03)	2.98 (1.32–6.70)	2.10 (1.62–2.71)	2.09 (1.62–2.71)	2.34 (1.15–4.76)
1.00	1.00	1.00	1.00	1.00	1.00	1.00
.99 (.93–1.05)	1.07 (.94–1.22)	1.08 (.94–1.23)	1.07 (.94–1.23)	.82 (.71–.96)	.82 (.71–.96)	.82 (.71–.96)
.94 (.79–1.12)	.83 (.68–1.01)	.83 (.68–1.01)	.83 (.68–1.01)	.68 (.57–.81)	.68 (.57–.81)	.68 (.57–.81)
.81 (.72–.90)	.67 (.63–.72)	.68 (.63–.73)	.68 (.63–.73)	.57 (.48–.67)	.57 (.48–.67)	.57 (.48–.67)
1.00	1.00	1.00	1.00	1.00	1.00	1.00
.56 (.53–.60)	.62 (.55–.69)	.62 (.55–.69)	.62 (.56–.69)	.73 (.67–.79)	.73 (.67–.79)	.73 (.67–.79)
1.00	1.00	1.00	1.00	1.00	1.00	1.00
.78 (.71–.85)	.89 (.67–1.19)	.88 (.65–1.19)	.88 (.65–1.19)	.51 (.43–.62)	.52 (.43–.63)	.52 (.43–.63)
1.04 (.93–1.17)	1.18 (.99–1.40)	1.23 (.99–1.54)	1.24 (.99–1.54)	.70 (.62–.80)	.71 (.61–.81)	.72 (.64–.82)
1.02 (.93–1.12)	1.06 (.82–1.38)	1.07 (.82–1.40)	1.07 (.83–1.40)	.77 (.66–.90)	.78 (.66–.91)	.77 (.66–.91)
.96 (.94–.97)	.76 (.69–.83)	.79 (.77–.80)	.77 (.75–.79)	1.01 (1.00–1.01)	1.01 (.98–1.05)	1.04 (1.02–1.07)
.97 (.97–.98)		.96 (.94–.97)	.96 (.93–.97)		.93 (.91–.94)	.94 (.93–.95)
1.00 (1.00–1.01)		1.02 (1.01–1.02)	1.02 (1.01–1.02)		1.01 (1.00–1.02)	1.01 (1.01–1.02)
1.11 (1.10–1.13)		1.18 (1.13–1.23)	1.18 (1.13–1.23)		1.29 (1.23–1.35)	1.21 (1.15–1.28)
.99 (.90–1.09)			1.27 (.81–1.98)			.83 (.71–.97)
1.01 (.98–1.04)			1.09 (.90–1.32)			.95 (.88–1.01)
.96 (.90–1.03)			.96 (.72–1.27)			.97 (.85–1.10)

the independent effects of GSAs and LGBTQ-inclusive sex education or other inclusive curricula. While this study did include both traditionally liberal and conservative states, including additional states could add variability in the proportion of LGBTQ-inclusive sex education taught in each state and may provide a better understanding of its influence on mental health and bullying outcomes country wide. In line with prior research [34], we found no significant interactions between gender and sexual identity for the three mental health outcomes. Nevertheless, future research should consider gender differences in the effect that LGBTQ-inclusive sex education has on mental health outcomes in youth.

Despite limitations, this study utilized a large, representative sample from the YRBS and SHP. Results, therefore, reflect the typical experiences of U.S. public high school students within the states included in analyses. The statistical methodology used to test associations accounted for state differences and controlled for important contextual factors, such as the presence of statewide antidiscrimination policies, to account for confounding. Multilevel logistic modeling also accounts for clustering within states and produces more accurate estimations of standard errors than multiple logistic regression. This sensitivity to the potential dependence among participants within their respective states produces more robust results than traditional multiple logistic regression models.

It is important to note that certain policy barriers may affect the ability of schools within certain states and regions within the U.S. to implement LGBTQ-inclusive sex education in their schools. As of October 2018, Texas, Oklahoma, Arizona, South Carolina, and

Alabama all have some form of statewide policy in place that require schools to teach negative information related to homosexuality, such as harmful stereotypes regarding HIV/AIDS risk and arguments that homosexuality is unnatural or immoral [18]. In these states, youth may be at even more risk of mental health disparities and victimization, but without political action, interventions that can improve their health may be out of reach at the school level. While challenges do exist, public support [35] and evidence that federally inclusive policies such as marriage equality can positively impact SMY mental health [36] suggest that there is potential for LGBTQ-inclusive sex education to become part of standard curricula in many regions of the country.

In conclusion, the results of this study provide novel evidence that LGBTQ-inclusive sex education is associated with positive mental health outcomes and fewer reports of bullying victimization in both SMY and heterosexual youth in U.S. public high schools. Furthermore, the results of this study support the need for school-level analyses and evaluation of individual LGBTQ-inclusive sex education programs. This study highlights the importance of examining the impact of sociocultural factors on SMY mental health and bullying victimization.

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References

- [1] Kann L, Olsen E, McManus T, et al. Sexual identity, sex of sexual contacts, and health-related behaviors among students in grades 9–12—United States and selected sites, 2015. *MMWR Surveill Summ* 2016;65:1–202.
- [2] Marshal MP, Dietz LJ, Friedman MS, et al. Suicidality and depression disparities between sexual minority and heterosexual youth: A meta-analytic review. *J Adolesc Health* 2011;49:115–23.
- [3] Meyer IH. Minority stress and mental health in gay men. *J Health Soc Behav* 1995;36:38–56.
- [4] A day in the life. America's Adolescents 2016. Available at: <https://www.hhs.gov/ash/oah/adolescent-health-topics/americas-adolescents/day.html>. Accessed March 16, 2017.
- [5] Burton CM, Marshal MP, Chisolm DJ, et al. Sexual minority-related victimization as a mediator of mental health disparities in sexual minority youth: A longitudinal analysis. *J Youth Adolesc* 2013;42:394–402.
- [6] Russell ST, Ryan C, Toomey RB, et al. Lesbian, gay, bisexual, and transgender adolescent school victimization: Implications for young adult health and adjustment. *J Sch Health* 2011;81:223–30.
- [7] Kosciw JG, Greytak EA, Giga NM, et al. The 2015 national school climate survey: The experiences of lesbian, gay, bisexual, transgender, and queer youth in our nation's schools. New York: GLSEN; 2016. Available at: www.glsen.org. Accessed March 16, 2017.
- [8] St John A, Travers R, Munro L, et al. The success of gay–straight alliances in Waterloo region, Ontario: A confluence of political and social factors. *J LGBT Youth* 2014;11:150–70.
- [9] Poteat VP, Sinclair KO, DiGiovanni CD, et al. Gay–straight alliances are associated with student health: A multischool comparison of LGBTQ and heterosexual youth. *J Res Adolesc* 2013;23:319–30.
- [10] Toomey RB, Ryan C, Diaz RM, Russell ST. High school gay–straight alliances (GSAs) and young adult well-being: An examination of GSA presence, participation, and perceived effectiveness. *Appl Dev Sci* 2011;15:175–85.
- [11] Goodenow C, Szalacha L, Westheimer K. School support groups, other school factors, and the safety of sexual minority adolescents. *Psychol Sch* 2006;43:573–89.
- [12] Chesir-Teran D, Hughes D. Heterosexism in high school and victimization among lesbian, gay, bisexual, and questioning students. *J Youth Adolesc* 2009;38:963–75.
- [13] Hansen AL. School-based support for GLBT students: A review of three levels of research. *Psychol Sch* 2007;44:839–48.
- [14] Toomey RB, McGuire JK, Russell ST. Heteronormativity, school climates, and perceived safety for gender nonconforming peers. *J Adolesc* 2012;35:187–96.
- [15] Snapp SD, Burdge H, Licona AC, et al. Students' perspectives on LGBTQ-inclusive curriculum. *Equity Excell Educ* 2015;48:249–65.
- [16] Hatzenbuehler ML, Birkett M, Van Wagenen A, Meyer IH. Protective school climates and reduced risk for suicide ideation in sexual minority youths. *Am J Public Health* 2014;104.
- [17] Coulter RWS, Birkett M, Corliss HL, et al. Associations between LGBTQ-affirmative school climate and adolescent drinking behaviors. *Drug Alcohol Depend* 2016;161:340–7.
- [18] Guttmacher Institute. Sex and HIV education. State Laws and Policies 2018. Available at: <https://www.guttmacher.org/state-policy/explore/sex-and-hiv-education>. Accessed June 3, 2018.
- [19] Brener ND, Kann L, Shanklin S, et al. Methodology of the youth risk behavior surveillance system — 2013. *MMWR Recomm Rep* 2013;62:1–20.
- [20] Dermessie Z, Brener ND, McManus T, et al. School Health Profiles 2014: Characteristics of health programs among secondary schools. Atlanta, GA: U.S. Department of Health and Human Services; 2014.
- [21] State Policy Tally frequently asked questions. Available at: <http://lgbtmap.org/state-policy-tally-faq>. 2016. Accessed March 25, 2017.
- [22] American FactFinder. Available at: <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>. Accessed February 3, 2017.
- [23] Centers for Disease Control and Prevention. Software for analysis of YRBS data. Atlanta, GA: U.S. Department of Health and Human Services; 2016.
- [24] Rabe-Hesketh S, Pickles A, Taylor C. Generalized linear latent and mixed models. *Stata Technical Bulletin* 2003;53:47–57.
- [25] Black WW, Fedewa AL, Gonzalez KA. Effects of “safe school” programs and policies on the social climate for sexual-minority youth: A review of the literature. *J LGBT Youth* 2012;9:321–39.
- [26] Saewyc EM, Konishi C, Rose HA, Homma Y. School-based strategies to reduce suicidal ideation, suicide attempts, and discrimination among sexual minority and heterosexual adolescents in Western Canada. *Int J Child Youth Family Stud* 2014;5:89–112.
- [27] Shilo G, Savaya R. Effects of family and friend support on LGB youths' mental health and sexual orientation milestones. *Fam Relat* 2011;60:318–30.
- [28] Shearer A, Herres J, Kodish T, et al. Differences in mental health symptoms across lesbian, gay, bisexual, and questioning youth in primary care settings. *J Adolesc Health* 2016;59:38–43.
- [29] Marshal MP, Dermody SS, Cheong J, et al. Trajectories of depressive symptoms and suicidality among heterosexual and sexual minority youth. *J Youth Adolesc* 2013;42:1243–56.
- [30] Friedman MR, Dodge B, Schick V, et al. From bias to bisexual health disparities: Attitudes toward bisexual men and women in the United States. *LGBT Health* 2014;1:309–18.
- [31] Hatzenbuehler ML, Keyes KM, McLaughlin KA. The protective effects of social/contextual factors on psychiatric morbidity in LGB populations. *Int J Epidemiol* 2011;40:1071–80.
- [32] Rohrbach LA, Berglas NF, Jerman P, et al. A rights-based sexuality education curriculum for adolescents: 1-year outcomes from a cluster-randomized trial. *J Adolesc Health* 2015;57:399–406.
- [33] Constantine NA, Jerman P, Berglas NF, et al. Short-term effects of a rights-based sexuality education curriculum for high-school students: A cluster-randomized trial. *BMC Public Health* 2015;15:293.
- [34] Coulter RWS, Kessel Schneider S, Beadnell B, O'Donnell L. Associations of outside-and within-school adult support on suicidality: Moderating effects of sexual orientation. *Am J Orthopsychiatry* 2017;87:671–9.
- [35] Sexuality Information and Education Council of the United States. On our side: Public support for comprehensive sexuality education. SEICUS Fact Sheet 2010. Available at: <https://siecus.org/resources/public-support-sex-education/>. Accessed March 25, 2017.
- [36] Raifman J, Moscoe E, Austin SB, McConnell M. Difference-in-differences analysis of the association between state same-sex marriage policies and adolescent suicide attempts. *JAMA Pediatr* 2017;171:350–6.



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ATTACHMENT MT-7

This is the attachment marked 'MT-7' referred to in the witness statement of Associate Professor Michelle Telfer dated 1 July 2019.

Psychosocial functioning in children and adolescents presenting to a multidisciplinary paediatric gender service

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Background (problem): Trans and gender diverse youth (TGDY) experiencing gender dysphoria are considered to be highly vulnerable. Studies using community-based samples evidence high rates of social stigma and discrimination in this population alongside high rates of mental health problems, consistent with the minority stress model. It is unclear whether these experiences are indicative of clinically-referred populations. **Purpose:** With increasing referrals of TGDY to paediatric gender services in Australia, we need to better understand the psychosocial profile of clinically-referred TGDY and factors that may be contributing to poor mental health such as adverse social experiences (e.g., bullying) in order to provide best care. This study describes the extent of bullying and mental health difficulties in 383 patients presenting to the Royal Children's Hospital Gender Service (RCHGS) in Melbourne, Australia, and draws on initial data from the first two years of Trans20, a prospective cohort study.

Methods: Participants comprise 108 birth-assigned males (mean age = 11.4) and 275 birth-assigned females (mean age = 13.6). Patients and parents complete online questionnaires prior to the first appointment with RCHGS and regularly thereafter as part of routine clinical care; these data form the basis of Trans20. Tools used to measure psychological functioning in Trans20 include the Youth Self Report: YSR (internalizing and externalizing problems), Spence Children's Anxiety Scale: SCAS (anxiety symptomatology), the Columbia Suicide Severity Rating Scale (suicide risk) and the Social Responsiveness Scale-2 (autism features). The Gatehouse Bullying Scale is used to measure bullying. **Findings:** Preliminary analyses indicate high rates of bullying victimization and mental health problems. Half of the patients had been bullied with the most common form being teased or called names (34%). Of those that were bullied, 17% showed high suicide risk compared with 8% who had not been bullied. Many patients scored in the borderline/clinical range on the YSR DSM-oriented scales (70% depressive problems, 53% anxiety problems, 31% Attention Deficit/Hyperactivity problems, 22% somatic problems, 21% oppositional defiant problems, 19% conduct problems). Rates of depression, anxiety and ADHD problems were significantly higher in those who had been bullied than those not bullied. The SCAS revealed that 51% and 53% of patients had elevated levels of generalized anxiety and social phobia respectively. Of those who were bullied, 65% had elevated generalized anxiety vs 38% who had not been bullied. Higher rates of social phobia were also noted in those who were bullied (65%) compared to those not bullied (43%). With regards to autism features, 29% fell within the mild-moderate range and 16% in the severe range on the SRS-2 total scale. Rates on the SRS-2 subscales did not significantly differ by bullying status.

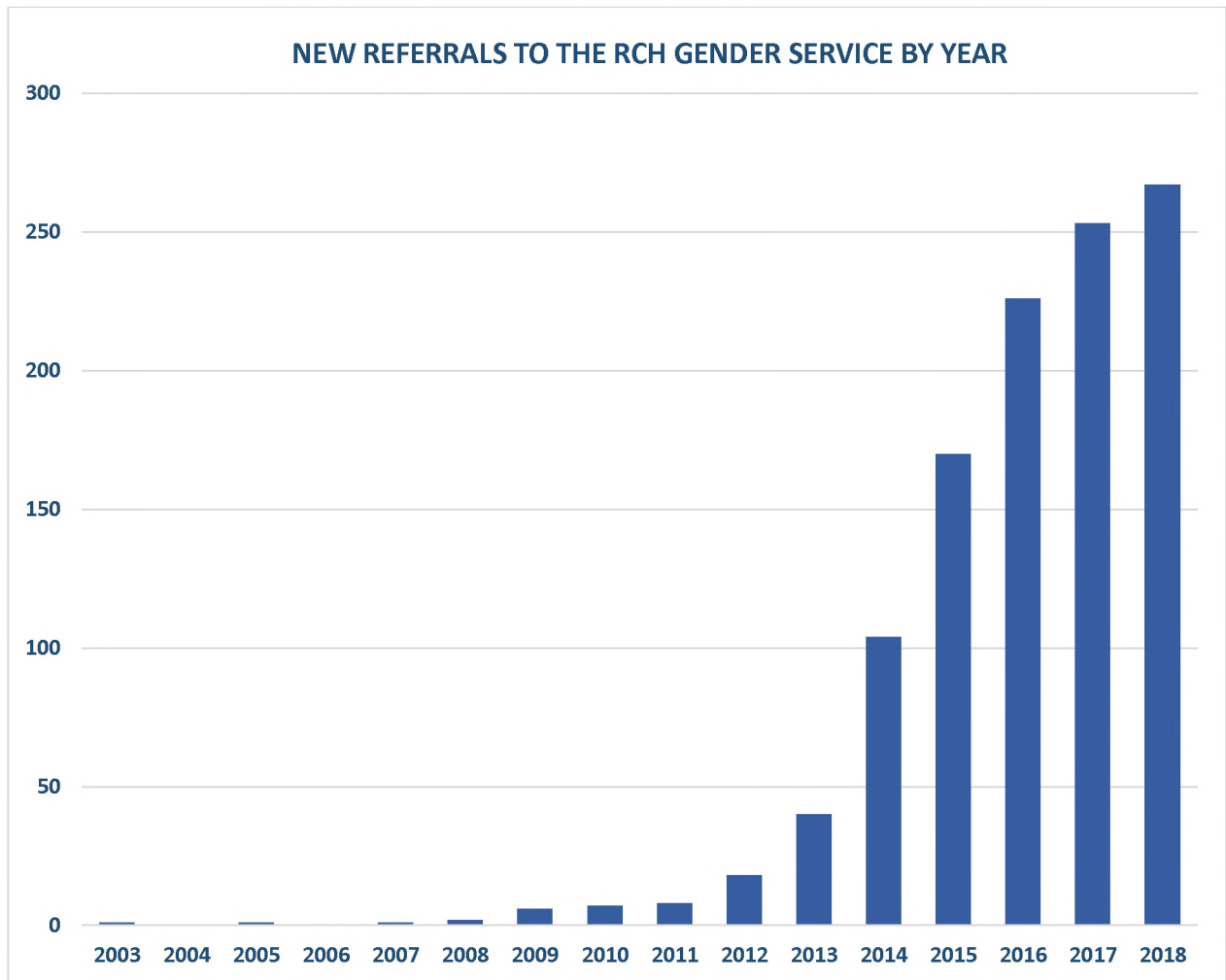
Conclusion: This study confirms the complex needs of TGDY presenting to RCHGS. The RCHGS patient cohort present with high rates of mental health problems and co-existing bullying experiences. These early findings support the minority stress model and highlight the need to address both the mental health of TGDY in clinical practice, and attitudes of peers through bullying interventions at the broader sociocultural level.



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ATTACHMENT MT-8

This is the attachment marked 'MT-8' referred to in the witness statement of Associate Professor Michelle Telfer dated 1 July 2019.





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ATTACHMENT MT-9

This is the attachment marked 'MT-9' referred to in the witness statement of Associate Professor Michelle Telfer dated 1 July 2019.

Evaluating the role of a Single Session Nurse-led assessment clinic for transgender children and adolescents



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Background

Transgender individuals have a gender identity, or internal sense of their gender, which is incongruent with the sex assigned to them at birth.¹

Increased awareness and acceptance of gender diversity have contributed to a marked increase in the number of transgender children and adolescents seeking specialist care.¹

At The Royal Children's Hospital Gender Service (RCHGS) referrals have increased exponentially, causing wait times to reach up to 14 months.²

In response, a Single Session Nurse-led assessment clinic (SSNac) was introduced into its model of care in 2016.²

SSNac aims to deliver information, education and support to patients and their families, through a 90 minute, face-to-face, single session consultation. It is the clinical entry point for all patients aged 8 to 17 years.²

SSNac has been shown to reduce wait times and provide efficient triage², but little is known about what impact this care has on patients.

Aim

To determine what changes occur in the lives of transgender children and adolescents after attending SSNac.

Methods

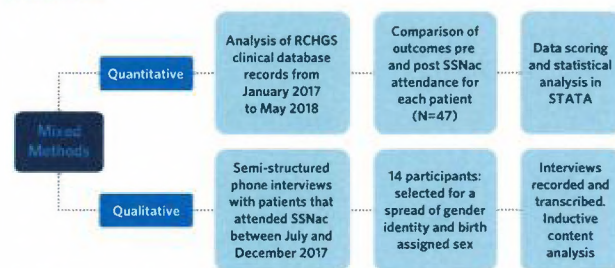


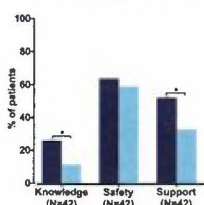
Figure 1. Mixed methods approach.

Results

Attendance at SSNac is associated with improved outcomes

47 patients were included in the quantitative analysis; median age 15.1 years, 34 (72%) birth assigned females. The time between pre and post SSNac assessments ranged from 74 to 376 days (median 163).

A) Concerns regarding social transition



B) Overall social transition

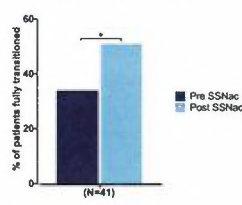


Figure 2. Results from RCHGS social transition questionnaire. A) Concerns regarding social transition. B) Composite score of overall level of social transition. * $p < 0.05$ using McNemar's test.

Less patients had concerns about social transition after attending SSNac (Fig 2A). More had also undergone full social transition overall (Fig 2B). Changes to transition in the home setting and to preferred name were the most significant ($\Delta=17.1\%$, $p=0.020$; $\Delta=13.2\%$, $p=0.025$, respectively).

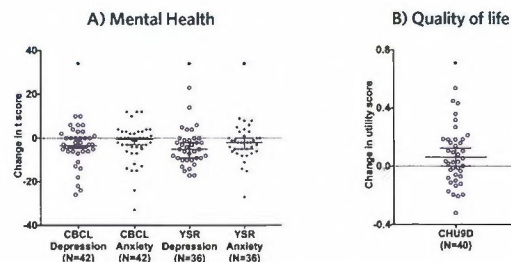


Figure 3. A) Child Behaviour Checklist (CBCL, parent-reported) and Youth Self Report (YSR) DSM-oriented scale normalised t scores. B) Utility calculated from Child Health Utility 9D (CHU9D) score and Australian adolescent tariff.³ Error bars represent median (A) or mean (B) and 95% CI. * $p < 0.05$ using Wilcoxon signed-rank test (A) or paired t test (B).

Measures of anxiety and depression significantly improved following SSNac attendance (Fig 3A). Quality of life also increased (Fig 3B), with a mean utility change of 0.06 ($p=0.048$); twice the minimum considered to be clinically important.⁴

SSNac contributes to increased agency

14 participants were interviewed; 13 to 17 years of age, 13 birth assigned females. Time since SSNac ranged from 102 to 208 days. Interviews were 12 to 31 minutes.

Participants described a wide variety of changes occurring in relation to SSNac.

The main category of change arising from the interviews was an increased sense of agency. This was contributed to by changes in confidence, sense of self, validation and outlook (Fig 4).

The major barrier to change was having already enacted the suggestions made in SSNac.



Figure 4. Categories of change arising from interviews.

Agency	"In that time [before medical transition] there's a lot I can do... there's the voice coaching... there's socially transitioning and there's [be]coming more confident with who I am and... what I identify as." (Participant 4)
Confidence	"It helped with me feeling more confident because I knew there were other people like me and I was now having appointments to make those next steps in the transition." (Participant 12)
Sense of self	"I've definitely learnt a lot more about the LGBT [lesbian, gay, bisexual and transgender] community and I've just kind of realised exactly who I am, and that's been really, really helpful." (Participant 11)
Validation	"Seeing someone who's seen a lot of other trans people, it really helped to know that it's actually something that people do, it's not just something that I'm doing." (Participant 11)
Outlook	"Well I now have a goal to work towards, 'cos beforehand I just didn't really know what was going to happen, but now I know what I want to do and hopefully what deadlines... I want to have it done by..." (Participant 7)

Conclusions

Measures of social transition, mental health and quality of life improved for patients following attendance at SSNac.

Interviews revealed that this may be due to an increased sense agency, driven by changes in outlook, confidence, validation and sense of self.

This suggests that SSNac has a positive impact on the lives of patients. Further research is required to establish what effect SSNac has on parents and caregivers.

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References

- Shumer DE. Advances in the care of transgender children and adolescents. *Adv Pediatr*. 2016;63(1):79-102.
- Eade DM. Implementing a single-session nurse-led assessment clinic into a gender service. *Transgend Health*. 2018;3(1):43-6.
- Ratcliffe J. Valuing the Child Health Utility 9D: Using profile case best worst scaling methods to develop a new adolescent specific scoring algorithm. *Soc Sci Med*. 2016;157:48-59.
- Drummond M. Introducing economic and quality of life measurements into clinical studies. *Ann Med*. 2001;33(5):344-9.



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ATTACHMENT MT-10

This is the attachment marked 'MT-10' referred to in the witness statement of Associate Professor Michelle Telfer dated 1 July 2019.

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Young Adult Psychological Outcome After Puberty Suppression and Gender Reassignment

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Young Adult Psychological Outcome After Puberty Suppression and Gender Reassignment

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KEY WORDS

gender dysphoria, transgenderism, adolescents, psychological functioning, puberty suppression, longitudinal outcomes

ABBREVIATIONS

ABCL—Adult Behavior Checklist
ASR—Adult Self-Report
BDI—Beck Depression Inventory
BIS—Body Image Scale
CBCL—Child Behavior Checklist
CGAS—Children's Global Assessment Scale
CSH—cross-sex hormones
GD—gender dysphoria
GnRHa—gonadotropin-releasing hormone analogs
GRS—gender reassignment surgery
SHS—Subjective Happiness Scale
STAI—Spielberger's Trait Anxiety Scale
SWLS—Satisfaction With Life Scale
TPI—Spielberger's Trait Anger Scale
UGDS—Utrecht Gender Dysphoria Scale
YSR—Youth Self-Report

Dr de Vries conceptualized the study, clinically assessed the participants, drafted the initial manuscript, and reviewed and revised the manuscript; Dr McGuire conceptualized the study, planned and carried out the analyses, assisted in drafting the initial manuscript, and reviewed and revised the manuscript; Dr Steensma conceptualized the study, coordinated and supervised data collection, and reviewed and revised the manuscript; Dr Wagenaar coordinated and invited participants for assessments and reviewed and revised the manuscript; Drs Doreleijers and Cohen-Kettenis conceptualized the study and reviewed and revised the manuscript; and all authors approved the final manuscript as submitted.

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(Continued on last page)



WHAT'S KNOWN ON THIS SUBJECT: Puberty suppression has rapidly become part of the standard clinical management protocols for transgender adolescents. To date, there is only limited evidence for the long-term effectiveness of this approach after gender reassignment (cross-sex hormones and surgery).



WHAT THIS STUDY ADDS: In young adulthood, gender dysphoria had resolved, psychological functioning had steadily improved, and well-being was comparable to same-age peers. The clinical protocol including puberty suppression had provided these formerly gender-dysphoric youth the opportunity to develop into well-functioning young adults.

abstract

BACKGROUND: In recent years, puberty suppression by means of gonadotropin-releasing hormone analogs has become accepted in clinical management of adolescents who have gender dysphoria (GD). The current study is the first longer-term longitudinal evaluation of the effectiveness of this approach.

METHODS: A total of 55 young transgender adults (22 transwomen and 33 transmen) who had received puberty suppression during adolescence were assessed 3 times: before the start of puberty suppression (mean age, 13.6 years), when cross-sex hormones were introduced (mean age, 16.7 years), and at least 1 year after gender reassignment surgery (mean age, 20.7 years). Psychological functioning (GD, body image, global functioning, depression, anxiety, emotional and behavioral problems) and objective (social and educational/professional functioning) and subjective (quality of life, satisfaction with life and happiness) well-being were investigated.

RESULTS: After gender reassignment, in young adulthood, the GD was alleviated and psychological functioning had steadily improved. Well-being was similar to or better than same-age young adults from the general population. Improvements in psychological functioning were positively correlated with postsurgical subjective well-being.

CONCLUSIONS: A clinical protocol of a multidisciplinary team with mental health professionals, physicians, and surgeons, including puberty suppression, followed by cross-sex hormones and gender reassignment surgery, provides gender dysphoric youth who seek gender reassignment from early puberty on, the opportunity to develop into well-functioning young adults. *Pediatrics* 2014;134:1–9

Transgender adolescents experience an incongruence between their assigned gender and their experienced gender and may meet the Diagnostic and Statistical Manual of Mental Disorders 5 criteria for gender dysphoria (GD).¹ Fifteen years ago, pubertal delay was introduced as an aid in the treatment of a gender dysphoric adolescent.² Although not without debate, blocking pubertal development has rapidly become more widely available^{3–7} and is now part of the clinical management guidelines for GD.^{8–12} Gonadotropin-releasing hormone analogs (GnRHa) are a putatively fully reversible¹³ medical intervention intended to relieve distress that gender dysphoric adolescents experience when their secondary sex characteristics develop. A protocol designed by Cohen-Kettenis and Delemarre-van de Waal¹⁴ (sometimes referred to as “the Dutch model”)^{4,7} considers adolescents, after a comprehensive psychological evaluation with many sessions over a longer period of time, eligible for puberty suppression, cross-sex hormones (CSH), and gender reassignment surgery (GRS) at the respective ages of 12, 16, and 18 years when there is a history of GD; no psychosocial problems interfering with assessment or treatment, for example, treatment might be postponed because of continuous moving from 1 institution to another or repeated psychiatric crises; adequate family or other support; and good comprehension of the impact of medical interventions.¹² Puberty suppression is only started after the adolescent actually enters the first stages of puberty (Tanner stages 2–3), because although in most prepubertal children GD will desist, onset of puberty serves as a critical diagnostic stage, because the likelihood that GD will persist into adulthood is much higher in adolescence than in the case of childhood GD.^{15,16}

Despite the apparent usefulness of puberty suppression, there is only limited evidence available about the effective-

ness of this approach. In the first cohort of adolescents who received GnRHa, we demonstrated an improvement in several domains of psychological functioning after, on average, 2 years of puberty suppression while GD remained unchanged.¹⁶ The current study is a longer-term evaluation of the same cohort, on average, 6 years after their initial presentation at the gender identity clinic. This time, we were not only interested in psychological functioning and GD, but added as important outcome measures objective and subjective well-being (often referred to as “quality of life”), that is, the individuals’ social life circumstances and their perceptions of satisfaction with life and happiness.^{17–19} After all, treatment cannot be considered a success if GD resolves without young adults reporting they are healthy, content with their lives, and in a position to make a good start with their adult professional and personal lives.²⁰ Because various studies show that transgender youth may present with psychosocial problems,^{21,22} a clinical approach that includes both medical (puberty suppression) and mental health support (regular sessions, treatment when necessary, see Cohen-Kettenis et al¹²) aims to improve long-term well-being in all respects.

In the present longitudinal study, 3 primary research questions are addressed. Do gender dysphoric youth improve over time with medical intervention consisting of GnRHa, CSH, and GRS? After gender reassignment, how satisfied are young adults with their treatment and how do they evaluate their objective and subjective well-being? Finally, do young people who report relatively greater gains in psychological functioning also report a higher subjective well-being after gender reassignment?

METHODS

Participants and Procedure

Participants included 55 young adults (22 transwomen [natal males who

have a female gender identity] and 33 transmen [natal females who have a male gender identity]) of the first cohort of 70 adolescents who had GD who were prescribed puberty suppression at the Center of Expertise on Gender Dysphoria of the VU University Medical Center and continued with GRS between 2004 and 2011. These adolescents belonged to a group of 196 consecutively referred adolescents between 2000 and 2008, of whom 140 had been considered eligible for medical intervention and 111 were prescribed puberty suppression (see de Vries et al¹⁶). The young adults were invited between 2008 and 2012, when they were at least 1 year past their GRS (vaginoplasty for transwomen, mastectomy and hysterectomy with ovariectomy for transmen; many transmen chose not to undergo a phalloplasty or were on a long waiting list). Nonparticipation ($n = 15$, 11 transwomen and 4 transmen) was attributable to not being 1 year postsurgical yet ($n = 6$), refusal ($n = 2$), failure to return questionnaires ($n = 2$), being medically not eligible (eg, uncontrolled diabetes, morbid obesity) for surgery ($n = 3$), dropping out of care ($n = 1$), and 1 transfemale died after her vaginoplasty owing to a postsurgical necrotizing fasciitis. Between the 55 participants and the 15 nonparticipating individuals, Student’s t tests revealed no significant differences on any of the pretreatment variables. A similar lack of differences was found between the 40 participants who had complete data and the 15 who were missing some data.

Participants were assessed 3 times: pre-treatment (T0, at intake), during treatment (T1, at initiation of CSH), and post-treatment (T2, 1 year after GRS). See Table 1 for age at the different time points. The VU University Medical Center medical ethics committee approved the study, and all participants gave informed consent.

TABLE 1 Age at Different Treatment Milestones and Intelligence by Gender

Variable	All Participants ^a (N = 55)		Transwomen (Natal Males) (N = 22)		Transmen (Natal Females) (N = 33)	
Age, y	Mean (SD)	Range	Mean (SD)		Mean (SD)	
At assessment PreT	13.6 (1.9)	11.1–17.0	13.6 (1.8)		13.7 (2.0)	
At start of GnRHa	14.8 (1.8)	11.5–18.5	14.8 (2.0)		14.9 (1.9)	
At start of GSH	16.7 (1.1)	13.9–19.0	16.5 (1.3)		16.8 (1.0)	
At GRS	19.2 (0.9)	18.0–21.3	19.6 (0.9)		19.0 (0.8)	
At assessment PostT	20.7 (1.0)	19.5–22.8	21.0 (1.1)		20.5 (0.8)	
Full-scale intelligence ^b	99.0 (14.3)	70–128	97.8 (14.2)		100.4 (14.3)	

PostT, post-treatment; PreT, pre-treatment.

^a Comparisons between those who had complete data ($n = 40$) and those who had missing data on the CBCL/ABCL ($n = 15$) reveal no significant differences between the groups in age at any point in the study or in natal sex.

^b WISC-R, the WISC-III, or the WAIS-III at first assessment, depending on age and time.^{45–47}

Measures

Time was the predominate independent variable. Other demographic characteristics were incorporated in some models, including, age, natal sex, Full Scale Intelligence, and parent marital status; where significantly different they are reported.

Gender Dysphoria/Body Image

There was 1 indicator measuring GD (Utrecht Gender Dysphoria Scale [UGDS]) and 3 indicators measuring body image (Body Image Scale [BIS] with primary, secondary, and neutral subscales). Higher UGDS (12 items, 1–5 range, total score ranging from 12–60) total scores indicate higher levels of GD, for example, “I feel a continuous desire to be treated as a man/woman.”²³ There are separate versions of the UGDS for males and females with mostly different items, permitting no gender difference analyses. BIS (30 items, 1–5 range) higher scores indicate more dissatisfaction with primary sex characteristics (important gender-defining body characteristics, eg, genitals, breasts), secondary sex characteristics (less obvious gender-defining features, eg, hips, body hair), and neutral (hormonally unresponsive) body characteristics (eg, face, height).²⁴ The male and the female BIS are identical except for the sexual body parts. The UGDS and the BIS of the natal gender were administered at T0 and T1. At T1, we chose the UGDS of the assigned gender, because no physical changes had occurred yet and some were still

treated as their assigned gender. This way, however, decreased GD caused by social transitioning was not measured. At T2 young adults filled out the versions of their affirmed gender.

Psychological Functioning

There were 10 indicators assessing psychological functioning. To assess global functioning, the Children's Global Assessment Scale (CGAS) was used.²⁵ The Beck Depression Inventory (BDI; 21 items, 0–3 range) indicates presence and severity of depressive symptoms.²⁶ Spielberger's Trait Anger (TPI) and Spielberger's Trait Anxiety (STAI; 10 and 20 items, respectively, 1–4 range) scales of the State-Trait Personality Inventory were administered to assess the tendency to respond with anxiety or anger, respectively, to a threatening or annoying situation.^{27,28}

Behavioral and emotional problems were assessed by the total, internalizing, and externalizing T scores as well as clinical range scores for these 3 indices (T score >63) of the Child/Adult Behavior Checklist (CBCL at T0 and T1, ABCL at T2), the Youth/Adult Self-Report (YSR at T0 and T1, ASR at T2).^{29–31} Items referring to GD in the CBCL/YSR and ABCL/ASR were scored as 0 (for more explanation, see Cohen-Kettenis et al³²).

Objective and Subjective Well-Being (T2 Only)

A self-constructed questionnaire was used to ask the young adults about their current life circumstances, such

as living conditions, school and employment, and social support (objective well-being), and satisfaction with treatment (subjective well-being). Three instruments further assessed subjective well-being. To measure quality of life, the WHOQOL-BREF (quality of life measure developed by the World Health Organization) was administered (24 items, 4 domains: Physical Health, Psychological Health, Social Relationships, and Environment, 1–5 range with higher scores indicating better quality of life).¹⁷ The Satisfaction With Life Scale (SWLS, 5 items, 5–35 range, 20 being neutral) was used to assess life satisfaction.¹⁸ Higher scores on the Subjective Happiness Scale (SHS, 4 items, 7-point Likert scale, average score 1–7) reflect greater happiness.¹⁹

Data Analyses

General Linear Models examined the repeated measures with an analysis of variance-based model, incorporating continuous and categorical predictors, and correcting for the unbalanced cell sizes. Linear and quadratic effects of the 14 indicators across 3 time points, with time as the within-subjects factor, and sex as a between-subjects factor in a second set of analyses are reported in Tables 2 and 3 and Fig 1. A linear effect signifies an overall change across T0 to T2. A quadratic effect signifies that the change was not continuous, such as when an indicator does not improve from T0 to T1 but improves from T1 to T2. It is possible to have both a significant linear and quadratic effect on the same

TABLE 2 Gender Dysphoria and Body Image of Adolescents at Intake (T0), While on Puberty Suppression (T1), and After Gender Reassignment (T2)

	N ^a	T0	T1	T2	T0–T2	Time		Time × Sex
						t test	Linear Effect Quadratic Effect	Linear Effect Quadratic Effect
		Mean (SD)	Mean (SD)	Mean (SD)	P	P	P	P
UGDS	33	53.51 (8.29)	54.39 (7.70)	15.81 (2.78)	<.001			
MtF	11	47.07 (11.05)	48.95 (10.80)	17.27 (2.57)	<.001		<.001	n/a
							<.001	
FtM	22	56.74 (3.74)	57.11 (3.40)	15.08 (2.64)	<.001		<.001	n/a
							<.001	
Body Image (BIS)								
Primary sex characteristics	45	4.13 (0.59)	4.05 (0.60)	2.59 (0.82)	<.001		<.001	.01
							<.001	.45
MtF	17	4.03 (0.68)	3.82 (0.56)	2.07 (0.74)	<.001			
FtM	28	4.18 (0.53)	4.13 (0.60)	2.89 (0.71)	<.001			
Secondary sex characteristics	45	2.73 (0.72)	2.86 (0.67)	2.27 (0.56)	<.001		<.001	.10
							<.001	<.001
MtF	17	2.63 (0.60)	2.34 (0.68)	1.93 (0.63)	<.001			
FtM	28	2.80 (0.72)	3.18 (0.43)	2.48 (0.40)	.05			
Neutral body characteristics	45	2.35 (0.68)	2.49 (0.53)	2.23 (0.49)	.29		.29	.007
							.01	.01
MtF	17	2.57 (0.70)	2.29 (0.50)	2.09 (0.56)	.014			
FtM	28	2.21 (0.64)	2.61 (0.52)	2.32 (0.44)	.40			

FtM, female to male transgender; MtF, male to female transgender; n/a, not applicable.

^a Participants who had complete data at all 3 waves were included. Some assessments were added to the study later, yielding fewer total participants for those scales.

indicator. Other potential between-subjects factors (age, total IQ, parental marital status) were examined but excluded owing to a lack of relationship with the 14 indicators at T0. The 1 exception, age predicting secondary sex characteristics, is described below in the findings. We compared T2 sample means to population norms for subjective well-being using 1-sample *t* tests from previously published validation studies. Finally, we examined T2 subjective well-being correlations with residual change scores from T0 to T2 on the 14 indicators (an indicator of who improved relatively more or less over time).

All measures used were self-reported, except the CGAS (attending clinician) and the CBCL/ASR (parents). Each participant was given all measures at each of 3 assessments. Numbers varied across indicators owing to the later inclusion of the YSR, CGAS, BDI, TPI, and STAI, yielding 8 persons who had missing data at T0 and a clinician error yielding missing data at T1 for 10 participants on the UGDS. Dutch versions were used (see de Vries et al¹⁶).

RESULTS

Gender Dysphoria and Body Satisfaction

Figure 1 and Table 2 show that GD and body image difficulties persisted through puberty suppression (at T0 and T1) and remitted after the administration of CSH and GRS (at T2) (significant linear effects in 3 of 4 indicators, and significant quadratic effects in all indicators). Time by sex interactions revealed that transwomen reported more satisfaction over time with primary sex characteristics than transmen and a continuous improvement in satisfaction with secondary and neutral sex characteristics. Transmen reported more dissatisfaction with secondary and neutral sex characteristics at T1 than T0, but improvement in both from T1 to T2. Age was a significant covariate with secondary sex characteristics (the only significant demographic covariate with any outcome indicator in the study), indicating that older individuals were more dissatisfied at T0, but the age gap in body satisfaction narrowed over time ($F(1, 42) = 8.18; P < .01$).

Psychological Functioning

As presented in Table 3, significant linear effects showed improvement over time in global functioning (CGAS), CBCL/ABCL total, internalizing and externalizing *T* scores, and YSR/ASR total and internalizing *T* scores. Quadratic effects revealed decreases from T0 to T1 followed by increases from T1 to T2 in depression and YSR/ASR internalizing *T* scores. Quadratic trends revealed decreases from T0 to T1, followed by increases from T1 to T2 in depression and YSR/ASR internalizing *T* scores. For all CBCL/ABCL and YSR/ASR indicators except YSR/ASR externalizing, the percentage in the clinical range dropped significantly (McNemar's test, *P* value < 0.05) from T0 to T1, from T0 to T2, or from T1 to T2.

Over time, transmen showed reduced anger, anxiety, and CBCL/ABCL externalizing *T* scores, whereas transwomen showed stable or slightly more symptomatology on these measures. Transwomen improved in CBCL/ABCL total *T* scores in a quadratic fashion (all the improvement between T1 and T2),

TABLE 3 Psychological Functioning of Adolescents at Intake (T0), While on Puberty Suppression (T1), and After Gender Reassignment (T2)

	N ^a	T0	T1	T2	T0–T2	Time	Time × Sex
		Mean (SD)	Mean (SD)	Mean (SD)	t test P	Linear Effect Quadratic Effect P P	Linear Effect Quadratic Effect P P
Global functioning (CGAS)	32	71.13 (10.46)	74.81 (9.86)	79.94 (11.56)	<.001	<.001	.89 .68
MtF	15	74.33 (7.53)	78.20 (9.56)	82.40 (8.28)	<.001	.61	
FtM	17	67.65 (11.87)	70.65 (9.89)	76.29 (14.48)	.02		
Depression (BDI)	32	7.89 (7.52)	4.10 (6.17)	5.44 (8.40)	.21	.23 .04	.66 .49
MtF	12	4.73 (4.20)	2.25 (3.54)	3.38 (4.40)	.12		
FtM	20	10.09 (8.34)	5.05 (7.08)	6.95 (9.83)	.32		
Anger (TPI)	32	17.55 (5.72)	17.22 (5.61)	16.01 (5.28)	.20	.15 .52	.04 .12
MtF	12	14.17 (3.01)	14.00 (3.36)	5.58 (3.92)	.18		
FtM	20	19.55 (5.96)	19.25 (5.69)	16.56 (6.06)	.05		
Anxiety (STAI)	32	39.57 (10.53)	37.52 (9.87)	37.61 (10.39)	.45	.42 .47	.05 .52
MtF	12	31.87 (7.42)	31.71 (8.36)	35.83 (10.22)	.14		
FtM	20	44.41 (9.06)	41.59 (9.03)	39.20 (10.53)	.12		
CBCL–ABCL							
Total T score	40	60.20 (12.66)	54.70 (11.58)	48.10 (9.30)	<.001	<.001	.25
% Clinical		38 _x	20 _y	5 _y		.68	.03
MtF	15	57.40 (12.76)	49.67 (12.29)	48.13 (12.58)	.002		
FtM	25	61.88 (12.56)	57.72 (10.23)	48.08 (6.95)	<.001		
Int T score	40	60.83 (12.36)	54.42 (10.58)	50.45 (10.04)	<.001	<.001	.91
% Clinical		30 _x	12.5 _y	10 _y		.42	.33
MtF	15	59.40 (10.03)	50.93 (11.15)	48.75 (12.61)	<.001		
FtM	25	61.68 (13.70)	56.52 (9.88)	51.48 (8.25)	<.001		
Ext T score	40	57.85 (13.73)	53.85 (12.77)	47.85 (8.59)	<.001	<.001	.19
% Clinical		40 _x	25 _x	2.5 _y		.43	.12
MtF	15	52.53 (14.11)	47.87 (12.07)	46.33 (10.95)	.10		
FtM	25	61.04 (12.71)	57.44 (12.01)	48.76 (6.89)	<.001		
YSR–ASR							
Total T score	43	54.72 (12.08)	49.16 (11.16)	48.53 (9.46)	.005	.005	.28
% Clinical		30 _x	14 _{xy}	7 _y		.07	.75
MtF	17	50.65 (12.19)	45.94 (12.24)	47.24 (12.28)	.28		
FtM	26	57.38 (11.47)	51.27 (10.08)	49.38 (7.21)	.01		
Int T score	43	55.47 (13.08)	48.65 (12.33)	50.07 (11.15)	.03	.03	.87
% Clinical		30 _x	9.3 _y	11.6 _{xy}		.008	.73
MtF	17	54.00 (12.31)	47.59 (14.26)	48.12 (12.54)	.04		
FtM	26	56.42 (13.86)	49.35 (11.13)	51.35 (10.19)	.17		
Ext T score	43	52.77 (12.47)	49.44 (9.59)	49.44 (9.37)	.14	.14	.005
% Clinical		21 _x	11.6 _x	7 _x		.09	.14
MtF	17	46.00 (11.58)	44.71 (9.53)	50.24 (11.18)	.17		
FtM	26	57.16 (11.14)	52.54 (8.43)	48.92 (8.18)	.006		

FtM, female to male transgender; MtF, male to female transgender.

_{xy} Percent clinical range, shared subscripts indicate no significant difference in values. In no case was an increase in percent in the clinical range significant from 1 time point to any other time point, indicating an overall decline or stability of clinical symptoms over time.^a Participants who had complete data at all 3 waves were included. Some assessments were added to the study later, yielding fewer total participants for those scales.

whereas transmen improved steadily across the 3 time points (linear effect only).

Objective Well-Being

At T2, the participants were vocationally similar to the Dutch population except they were slightly more likely to live with parents (67% vs 63%), and more likely,

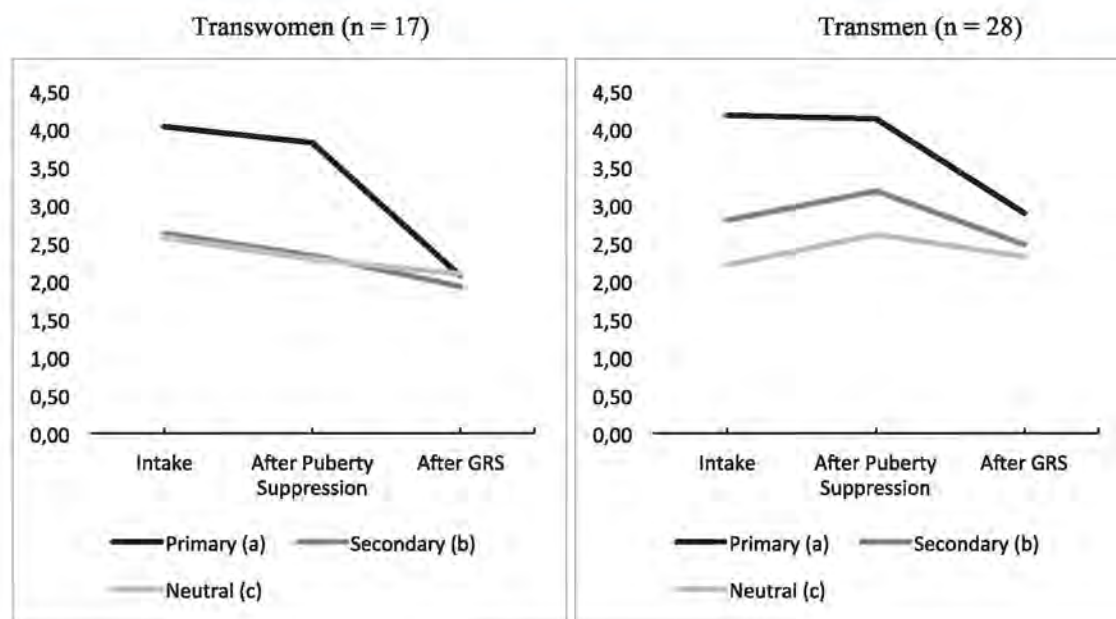
when studying, to be pursuing higher education (58% vs 31%).³³

Families were supportive of the transitioning process: 95% of mothers, 80% of fathers, and 87% of siblings. Most (79%) young adults reported having 3 or more friends, were satisfied with their male (82%) and female peers (88%), and almost all (95%) had received support

from friends regarding their gender reassignment. After their GRS, many participants (89%) reported having been never or seldom called names or harassed. The majority (71%) had experienced social transitioning as easy.

Subjective Well-Being

None of the participants reported regret during puberty suppression, GSH



Eta Squared for Linear and Quadratic Effects

- (a) Primary sex characteristics
Time: .79 ($P < .001$), .66 ($P < .001$),
Time \times sex: .14 ($P = .01$), .01 ($P = .45$),
- (b) Secondary sex characteristics
Time: .31 ($P < .001$), .30 ($P < .001$),
Time \times sex: .06 ($P = .10$), .22 ($P < .001$)
- (c) Neutral body characteristics
Time: .07 ($P < .001$), .09 ($P = .29$)
Time \times sex: .16 ($P = .007$), .15 ($P = .01$)

FIGURE 1

BIS²³ for transwomen and transmen at T0 (pretreatment, at intake), T1 (during treatment, at initiation of cross-gender hormones), and T2 (post-treatment, 1 year after GRS).

treatment, or after GRS. Satisfaction with appearance in the new gender was high, and at T2 no one reported being treated by others as someone of their assigned gender. All young adults reported they were very or fairly satisfied with their surgeries.

Mean scores on WHOQOL-BREF, the SWLS, and the SHS are presented in Table 4, together with scores from large validation and reliability studies of these measures,^{17,19,34} revealing similar scores in all areas except WHOQOL-Environment subdomain, which was higher for the participants than the norm. There were some differences across gender; transwomen scored higher than transmen on the SWLS (mean = 27.7; SD = 5.0 vs mean = 23.2; SD = 6.0; $t(52)$

= 2.82; $P < .01$) and on the psychological subdomain of the WHOQOL (mean = 15.77; SD = 2.0 vs mean = 13.92; SD = 2.5; $t(53) = 2.95$; $P < .01$).

Correlations With Residual Change Scores

The residual change scores of secondary sex characteristics, global functioning, depression, anger, anxiety, and YSR total, internalizing and externalizing from T0 to T2, were significantly correlated with the 6 T2 quality of life indicators. Most correlation coefficients were within the moderate to large magnitude (eg, 0.30–0.60), except depression, which was highly correlated (0.60–0.80) (see Table 5).

DISCUSSION

Results of this first long-term evaluation of puberty suppression among transgender adolescents after CSH treatment and GRS indicate that not only was GD resolved, but well-being was in many respects comparable to peers.

The effectiveness of CSH and GRS for the treatment of GD in adolescents is in line with findings in adult transsexuals.^{35,36} Whereas some studies show that poor surgical results are a determinant of postoperative psychopathology and of dissatisfaction and regret,^{37,38} all young adults in this study were generally satisfied with their physical appearance and none regretted treatment. Puberty suppression had caused their bodies to

TABLE 4 Subjective Well-Being: Quality of Life, Satisfaction With Life, and Subjective Happiness Mean Scores With Scores From Validation Studies

	<i>N</i>	Mean (SD)	Range	Validation Studies Scores Mean (SD)	Comparison <i>P</i>
WHOQOL ^a Physical	55	15.22 (2.49)	8.8–20.0	15.0 (2.9) ^b	.56
WHOQOL Psychological	55	14.66 (2.44)	6.67–20.0	14.3 (2.8) ^b	.24
WHOQOL Social Relations	55	14.91 (2.35)	9.3–20.00	14.5 (3.4) ^b	.18
WHOQOL Environment	55	15.47 (2.06)	10.5–20.00	13.7 (2.6) ^b	<.001
SWLS	54	24.98 (6.0)	9.0–35.0	26.18 (5.7) ^c	.16
SHS	54	4.73 (0.77)	2.75–6.0	4.89 (1.1) ^d	.17

^a WHOQOL, Bref, Skevington et al.¹⁶^b International field trial, ages 21 to 30 years, Skevington et al.¹⁶^c Dutch young adults, Arindell et al.³³^d US Public College Students, Lyubomirsky.¹⁸

not (further) develop contrary to their experienced gender.

Psychological functioning improved steadily over time, resulting in rates of clinical problems that are indistinguishable from general population samples (eg, percent in the clinical range dropped from 30% to 7% on the YSR/ASR³⁰) and quality of life, satisfaction with life, and subjective happiness comparable to same-age peers.^{17,19,34} Apparently the clinical protocol of a multidisciplinary team with mental health professionals, physicians, and surgeons gave these formerly gender dysphoric youth the opportunity to develop into well-functioning young adults. These individuals, of whom an even higher percentage than the general population were pursuing higher education, seem different from the

transgender youth in community samples with high rates of mental health disorders, suicidality and self-harming behavior, and poor access to health services.^{21,22,39,40}

In this study, young adults who experienced relatively greater improvements in psychological functioning were more likely to also report higher levels of subjective postsurgical well-being. This finding suggests value to the protocol that involves monitoring the adolescents' functioning, physically and psychologically, over many years, and providing more support whenever necessary.

This clinic-referred sample perceived the Environmental subdomain (with items like "access to health and social care" and "physical safety and secu-

rity") of the WHOQOL-BREF as even better than the Dutch standardization sample.¹⁷ Whereas in some other contexts transgender youth may experience gender-related abuse and victimization,^{22,41,42} the positive results may also be attributable to supportive parents, open-minded peers, and the social and financial support (treatment is covered by health insurance) that gender dysphoric individuals can receive in the Netherlands.

Both genders benefitted from the clinical approach, although transwomen showed more improvement in body image satisfaction (secondary sex characteristics) and in psychological functioning (anger and anxiety). None of the transmen in this study had yet had a phalloplasty because of waiting lists or

TABLE 5 Correlations Between Residual Change in Psychological Functioning Over Time and Young Adult Subjective Well-Being

	WHOQOL BREF					
	Physical	Psychological	Social	Environment	SWLS	SHS
Gender dysphoria (UGDS)	0.01 (.97)	0.05 (.75)	−0.09 (.57)	−0.02 (.89)	0.06 (.71)	0.30 (.04)
Body image subscales (BIS)						
Primary sex characteristics	−0.22 (.14)	−0.25 (.09)	−0.35 (.02)	−0.04 (.78)	−0.22 (.14)	−0.21 (.17)
Secondary sex characteristics	−0.39 (.006)	−0.45 (<.001)	−0.47 (<.001)	−0.34 (.02)	−0.35 (.02)	−0.26 (.08)
Neutral body characteristics	−0.21 (.16)	−0.27 (.07)	−0.15 (.32)	−0.28 (.06)	−0.26 (.08)	−0.16 (.28)
Psychological functioning						
Global functioning (CGAS)	0.60 (<.001)	0.52 (.002)	0.52 (.002)	0.27 (.14)	0.58 (<.001)	0.50 (.004)
Depression (BDI)	−0.76 (<.001)	−0.72 (<.001)	−0.51 (.002)	−0.49 (.003)	−0.61 (<.001)	−0.77 (<.001)
Trait anger (TPI)	−0.37 (.03)	−0.18 (.31)	−0.22 (.20)	−0.29 (.09)	−0.33 (.07)	−0.35 (.05)
Trait anxiety (STAI)	−0.58 (<.001)	−0.64 (<.001)	−0.38 (.03)	−0.44 (.01)	−0.49 (.004)	−0.57 (<.001)
CBCL-ABCL						
Total <i>T</i> score	−0.20 (.20)	−0.12 (.45)	−0.07 (.65)	−0.14 (.35)	−0.32 (.03)	−0.16 (.29)
Internalizing <i>T</i> score	−0.29 (.06)	−0.29 (.06)	−0.23 (.14)	−0.12 (.44)	−0.48 (<.001)	−0.36 (.02)
Externalizing <i>T</i> score	−0.13 (.40)	−0.05 (.75)	0.16 (.29)	−0.20 (.19)	−0.15 (.36)	0.00 (.99)
Youth Self Report (YSR-ASR)						
Total <i>T</i> score	−0.53 (<.001)	−0.45 (.002)	−0.33 (.03)	−0.42 (.005)	−0.52 (<.001)	−0.55 (<.001)
Internalizing <i>T</i> score	−0.62 (<.001)	−0.61 (<.001)	−0.47 (<.001)	−0.40 (.007)	−0.66 (<.001)	−0.60 (<.001)
Externalizing <i>T</i> score	−0.23 (.13)	−0.10 (.53)	−0.07 (.67)	−0.37 (.02)	−0.22 (.15)	−0.35 (.02)

P values are in parentheses.

a desire for improved surgery techniques. This finding warrants further study of the specific concerns of young transmen.

Despite promising findings, there were various limitations. First, the study sample was small and came from only 1 clinic. Second, this study did not focus on physical side effects of treatment. Publications on physical parameters of the same cohort of adolescents are submitted or in preparation. A concurring finding exists in the 22-year follow-up of the well-functioning first case now at age 35 years who has no clinical signs of a negative impact of earlier puberty suppression on brain development, metabolic and endocrine parameters, or bone mineral density.⁴³ Third, despite the absence of pretreatment differences on measured indicators, a selection bias could exist between adolescents of the original cohort that participated in this study compared with nonparticipants.

Age criteria for puberty suppression and CSH are under debate, although they worked well for adolescents in the current study. Especially in natal females, puberty will often start before the age of 12 years. Despite the fact that developing evidence suggests that cognitive and affective cross-gender identification, social role transition, and age at assessment are related to persistence of childhood GD into adolescence, predicting individual persistence at a young age will always remain difficult.⁴⁴ The age criterion of 16 years for the start of CSH may be problematic especially for transwomen, as growth in height continues as long as cross-sex steroids are not provided (causing the growth plates to close). Therefore, psychological maturity and the capacity to give full informed consent may surface as the required criteria for puberty suppression and CSH⁴⁵ in cases that meet other eligibility criteria.

CONCLUSIONS

Results of this study provide first evidence that, after CSH and GRS, a treatment protocol including puberty suppression leads to improved psychological functioning of transgender adolescents. While enabling them to make important age-appropriate developmental transitions, it contributes to a satisfactory objective and subjective well-being in young adulthood. Clinicians should realize that it is not only early medical intervention that determines this success, but also a comprehensive multidisciplinary approach that attends to the adolescents' GD as well as their further well-being and a supportive environment.

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REFERENCES

1. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. 5th ed. Washington, DC: American Psychiatric Association; 2013
2. Cohen-Kettenis PT, van Goozen SH. Pubertal delay as an aid in diagnosis and treatment of a transsexual adolescent. *Eur Child Adolesc Psychiatry*. 1998;7(4):246–248
3. Nakatsuka M. [Adolescents with gender identity disorder: reconsideration of the age limits for endocrine treatment and surgery.] *Seishin Shinkeigaku Zasshi*. 2012;114(6):647–653
4. Zucker KJ, Bradley SJ, Owen-Anderson A, Singh D, Blanchard R, Bain J. Puberty blocking hormonal therapy for adolescents with gender identity disorder: a descriptive clinical study. *J Gay Lesbian Ment Health*. 2010;15(1):58–82
5. Hewitt JK, Paul C, Kasiannan P, Grover SR, Newman LK, Warne GL. Hormone treatment of gender identity disorder in a cohort of children and adolescents. *Med J Aust*. 2012;196(9):578–581
6. Olson J, Forbes C, Belzer M. Management of the transgender adolescent. *Arch Pediatr Adolesc Med*. 2011;165(2):171–176
7. Spack NP, Edwards-Leeper L, Feldman HA, et al. Children and adolescents with gender identity disorder referred to a pediatric medical center. *Pediatrics*. 2012;129(3):418–425
8. Byne W, Bradley SJ, Coleman E, et al. Treatment of gender identity disorder. *Am J Psychiatry*. 2012;169(8):875–876
9. Adelson SL. Practice parameter on gay, lesbian, or bisexual sexual orientation, gender nonconformity, and gender discordance in children and adolescents. *J Am Acad Child Adolesc Psychiatry*. 2012;51(9):957–974
10. Hembree WC, Cohen-Kettenis P, Delemarre-van de Waal HA, et al. Endocrine treatment of transsexual persons: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*. 2009;94(9):3132–3154
11. 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 Transgenderism*. 2012;13(4):165–232
12. 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(4):689–700
13. Thornton P, Silverman LA, Geffner ME, Neely EK, Gould E, Danoff TM. Review of outcomes after cessation of gonadotropin-releasing hormone agonist treatment of girls with precocious puberty. *Pediatr Endocrinol Rev Mar*. 2014;11(3):306–317
14. 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*. 2008;155(suppl 1):S131–S137
15. Steensma TD, Biemond R, Boer FD, Cohen-Kettenis PT. Desisting and persisting gender dysphoria after childhood: a qualitative follow-up study. *Clin Child Psychol Psychiatry*. 2011;16(4):499–516
16. 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
17. Skevington SM, Lotfy M, O'Connell KA. The World Health Organization's WHOQOL-BREF

- quality of life assessment: psychometric properties and results of the international field trial. A report from the WHOQOL group. *Qual Life Res*. 2004;13(2):299–310
18. Diener E, Emmons RA, Larsen RJ, Griffin S. The Satisfaction With Life Scale. *J Pers Assess*. 1985;49(1):71–75
 19. Lyubomirsky S, Lepper HS. A measure of subjective happiness: preliminary reliability and construct validation. *Soc Indic Res*. 1999;46(2):137–155
 20. Koot HM. The study of quality of life: concepts and methods. In: Koot HM, Wallander JL, eds. *Quality of Life in Child and Adolescent Illness: Concepts, Methods and Findings*. London, UK: Harwood Academic Publishers; 2001:3–20
 21. Carver PR, Yunger JL, Perry DG. Gender identity and adjustment in middle childhood. *Sex Roles*. 2003;49(3–4):95–109
 22. Grossman AH, D'Augelli AR. Transgender youth: invisible and vulnerable. *J Homosex*. 2006;51(1):111–128
 23. Steensma TD, Kreukels BP, Jurgensen M, Thyen U, De Vries AL, Cohen-Kettenis PT. The Urecht Gender Dysphoria Scale: a validation study. *Arch Sex Behav* provisionally accepted
 24. Lindgren TW, Pauly IB. A body image scale for evaluating transsexuals. *Arch Sex Behav*. 1975;4:639–656
 25. Shaffer D, Gould MS, Brasic J, et al. A children's global assessment scale (CGAS). *Arch Gen Psychiatry*. 1983;40(11):1228–1231
 26. Beck AT, Steer RA, Brown GK. *Manual for the Beck Depression Inventory-II*. San Antonio, TX: Psychological Corporation; 1996
 27. Spielberger CD. *Manual for the State-Trait Anger Expression Inventory (STAXI)*. Odessa, FL: Psychological Assessment Resources; 1988
 28. Spielberger CD, Gorsuch RL, Lushene PR, Vagg PR, Jacobs GA. *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press, Inc; 1983
 29. Achenbach TM. *Manual for the Youth Self-Report*. Burlington, VT: University of Vermont, Department of Psychiatry; 1991
 30. Achenbach TM, Rescorla LA. *Manual for the ASEBA Adult Forms & Profiles*. Burlington, VT: University of Vermont, Research Center for Children, Youth, & Families; 2003
 31. Achenbach TM, Edelbrock CS. *Manual for the Child Behavior Checklist and Revised Child Behavior Profile*. Burlington, VT: University of Vermont, Department of Psychiatry; 1983
 32. Cohen-Kettenis PT, Owen A, Kaijser VG, Bradley SJ, Zucker KJ. Demographic characteristics, social competence, and behavior problems in children with gender identity disorder: a cross-national, cross-clinic comparative analysis. *J Abnorm Child Psychol*. 2003;31(1):41–53
 33. Statistics Netherlands. Landelijke Jeugdmonitor. In: Ministerie van Volksgezondheid, Wetenschap en Sport, ed. Den Haag, Heerlen: Tuijtel, Hardinxveld-Giessendam; 2012
 34. Arrindell WA, Heesink J, Feij JA. The Satisfaction With Life Scale (SWLS): appraisal with 1700 healthy young adults in The Netherlands. *Pers Individ Dif*. 1999;26(5):815–826
 35. Murad MH, Elamin MB, Garcia MZ, et al. Hormonal therapy and sex reassignment: a systematic review and meta-analysis of quality of life and psychosocial outcomes. *Clin Endocrinol (Oxf)*. 2010;72(2):214–231
 36. Smith YL, Van Goozen SH, Kuiper AJ, Cohen-Kettenis PT. Sex reassignment: outcomes and predictors of treatment for adolescent and adult transsexuals. *Psychol Med*. 2005;35(1):89–99
 37. Ross MW, Need JA. Effects of adequacy of gender reassignment surgery on psychological adjustment: a follow-up of fourteen male-to-female patients. *Arch Sex Behav*. 1989;18(2):145–153
 38. Lawrence AA. Factors associated with satisfaction or regret following male-to-female sex reassignment surgery. *Arch Sex Behav*. 2003;32(4):299–315
 39. Grossman AH, D'Augelli AR. Transgender youth and life-threatening behaviors. *Suicide Life Threat Behav*. 2007;37(5):527–537
 40. Garofalo R, Deleon J, Osmer E, Doll M, Harper GW. Overlooked, misunderstood and at-risk: exploring the lives and HIV risk of ethnic minority male-to-female transgender youth. *J Adolesc Health*. 2006;38(3):230–236
 41. Toomey RB, Ryan C, Diaz RM, Card NA, Russell ST. Gender-nonconforming lesbian, gay, bisexual, and transgender youth: school victimization and young adult psychosocial adjustment. *Dev Psychol*. 2010;46(6):1580–1589
 42. McGuire JK, Anderson CR, Toomey RB, Russell ST. School climate for transgender youth: a mixed method investigation of student experiences and school responses. *J Youth Adolesc*. 2010;39(10):1175–1188
 43. Cohen-Kettenis PT, Schagen SE, Steensma TD, de Vries AL, Delemarre van de Waal HA. Puberty suppression in a gender-dysphoric adolescent: a 22-year follow-up. *Arch Sex Behav*. 2011;40(4):843–847
 44. Steensma TD, McGuire JK, Kreukels BP, Beckman AJ, Cohen-Kettenis PT. Factors associated with desistence and persistence of childhood gender dysphoria: a quantitative follow-up study. *J Am Acad Child Adolesc Psychiatry*. 2013;52(6):582–590
 45. Kreukels BP, Cohen-Kettenis PT. Puberty suppression in gender identity disorder: the Amsterdam experience. *Nat Rev Endocrinol*. 2011;7(8):466–472
 46. Wechsler D. *Wechsler Intelligence Scale for Children: Manual*. 3rd ed. San Antonio, TX: The Psychological Corporation; 1997
 47. Wechsler D. *Wechsler Adult Intelligence Scale (WAIS-III)*. 3rd ed. Dutch version. Lisse, Netherlands: Swets and Zetlinger; 1997
 48. Wechsler D, Kort W, Compaan EL, Bleichrodt N, Resing WCM, Schittkatte M. *Wechsler Intelligence Scale for Children (WISC-III)*. 3rd ed. Lisse, Netherlands: Swets and Zetlinger; 2002

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ATTACHMENT MT-11

This is the attachment marked 'MT-11' referred to in the witness statement of Associate Professor Michelle Telfer dated 1 July 2019.



Chest reconstructive surgeries in transmasculine youth: Experience from one pediatric center

Maja Marinkovic & Ron S. Newfield

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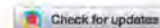
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Chest reconstructive surgeries in transmasculine youth: Experience from one pediatric center

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ABSTRACT

Background: For many trans males, having chest reconstruction is a very important part of the transitioning process. Guidelines from WPATH and the Endocrine Society suggest 16 to 18 years old as an acceptable age for this surgical intervention. In clinical practice, the decision depends on factors such as a person's desires, insurance coverage, and availability of local surgical experts. We present data about chest reconstructive surgeries in transgender youth from a Pediatric Gender Management (GeM) clinic.

Methods: For this retrospective, observational study, data were collected from GeM clinic patients seen from 10/1/2011 to 1/31/2017. All subjects consented or assented to being included in an IRB-approved clinical database.

Results: Of 210 patients from our clinic, 167 consented to being added to an institutional review board-approved database and followed prospectively. The average age at the initial visit was 15.2 years (range, 4.7–20.9). Among consenting subjects, 55 were trans females, 108 were trans males, and four identified as nonbinary. Fourteen subjects had chest reconstruction with the mean age being 17.2 years (range, 13.4–19.7); three subjects were under age 16. For five subjects, including the youngest one, insurance paid for the procedure. All participants but one were receiving testosterone treatment. Per the surgeons' preferences, testosterone was usually not temporarily stopped prior to the procedure. Six subjects had the procedure done locally; others sought surgical care out of the town, state, or country. All subjects were very satisfied with the aesthetics of the surgical outcome. The self-reported complication rate was low. Many more GeM clinic patients wish to have breast/chest surgery but lack of insurance coverage makes the surgery cost prohibitive.

Conclusion: For many trans males, chest reconstructive surgery is an integral part of the transition process. Patients' age at the time of surgical procedure varies greatly; some have chest surgery before age 16. In the United States, chest reconstruction surgery is usually not covered by insurance. Therefore, many patients seeking surgical care are forced to pay out of pocket.

KEYWORDS

Adolescent; barriers; mastectomy; transgender; transition

For many trans males, chest-contour appearance is a defining factor of their male physique. A majority of transgender males use various methods of binding breasts prior to having male chest reconstructive surgery. The methods for binding include layering of sport bras and using commercial binders, ace wraps, and even tape. Binders often restrict normal physical activity and can cause respiratory dysfunction (difficulties breathing, shortness of breath), reflux, dermatosis, and skin infections.

For many trans males, having chest reconstruction, referred to in lay terms as “top surgery,” is an important surgical procedure in the transitioning process.

However, this and other surgical treatments are often not covered by insurance plans in the United States, especially for youth. There are various surgical options available for chest reconstruction, as previously described by many surgical experts (Monstrey et al., 2008; Cregten-Escobar, Bouman, Buncamper, & Mullender, 2012; Walter, Diedrichson, Scholz, Arens-Landwehr, & Liebau, 2015; Kääriäinen, Salonen, Helminen, & Karhunen-Enckell, 2017) and details of these procedures are outside the scope of this manuscript. The type of surgical procedure employed depends on the size of the breast and adipose tissue that has to be removed. The techniques may vary slightly among surgical experts

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across different centers. For smaller breast size, keyhole (semicircular incision), transareolar or peri-areolar (concentric circular) approaches are common. For larger breast size, procedures include double (transverse) incision with or without free nipple graft when a larger amount of tissue is removed and nipple reposition is required. Current guidelines from the World Professional Association for Transgender Health (WPATH) (Coleman et al., 2012) and the Endocrine Society (Hambree et al., 2009) suggest 16 to 18 years as a suitable age for this surgical intervention, after the person has had an appropriate assessment by a mental health professional. In clinical practice, however, the decision depends on factors such as insurance coverage, patients' desires, and availability of local surgical experts. We present data about chest reconstructive surgeries in transgender youth from the Gender Management (GeM) clinic at Rady Children's Hospital. Unlike some European countries that have one or two large centers that have endocrinologists, mental health providers, and surgeons all working together in the same multidisciplinary clinic, many clinics in the United States are similar to our institution, where we rely on outside mental health providers and surgeons who are often out of town or out of state. This type of set-up can pose challenges, and it is therefore relevant to present this experience.

Methods

This is a retrospective, observational study. Data for this study were collected from patients who attended the GeM clinic from 10/1/2011 to 1/31/2017. All subjects gave consent when appropriate (ages 7–17 years) into an IRB approved clinical database. The male chest reconstructive surgeries were performed between June 2013 and January 2017 in 14 transgender adolescents and young adults from the GeM clinic at Rady Children's Hospital. Consent to publish photographs was obtained.

Surgical outcome satisfaction was assessed by asking study subjects to rate the aesthetic outcome of the procedure on a Likert-type linear scale from 1 to 5, with 1 being the lowest satisfaction and 5 being the highest. A similar scale has been used by other authors to demonstrate simple outcomes (Kaariainen et al., 2017).

Results

Out of 210 patients seen at the GeM clinic since October 2011, 167 consented to be added to an institutional-review-board-approved endocrine database and

are followed prospectively. The average age at the initial clinic visit was 15.2 years (age range, 4.7–20.9 years). Among consenting subjects, 55 are trans females (33%), 108 trans males (65%), and four are (natal females) identified as nonbinary (2%). The predominance of trans males is consistent with recent data published from other large centers (Aitken et al., 2015).

Prior to 2013 our clinic volume was low. Since 2013 our patient population has dramatically increased, with more than 30 new referrals in 2013 and more than double that in each of the subsequent years. With the increase in our volume, we started to encounter more patients who requested and were able to get chest surgeries done. Only one subject from this cohort had his initial visit before 2013.

Fourteen subjects (12 Caucasian, 1 Hispanic, and 1 African American) out of 108 trans males had chest reconstructive surgery done between June 2013 and January 2017 at an average age of 17.2 years (range 13.4–19.7 years), with three subjects being under 16 years of age (Table 1). Two additional patients from our clinic had chest reconstruction; however, due to a lack of surgical data from one and a recent surgery date without long-term follow up for the other, they were not included in the study. We have two patients who had breast reduction only, as their parents were not supportive of a complete mastectomy, social transition, or gender affirming hormone treatment. To better assess how many additional patients from our clinic wished to have chest reconstruction, we reviewed charts and the letters provided by patients when starting hormone treatment. Out of the remaining 90 trans males from the cohort, 13 did not require surgery due to an early pubertal suppression; one died; 10 were seen only once because their parents/guardians did not approve any form of treatment or transition and, therefore, their surgical plans were not assessed. Fifty-six (85%) out of 66 remaining subjects expressed a desire to undergo chest reconstructive surgery. In addition, among the four nonbinary subjects, two reported a desire for chest reconstruction.

Even though parents of five of the 14 study subjects (36%) reported childhood onset of gender dysphoria, the average age of presenting to the GeM clinic was 16 years (range 12.3 to 19) and all 14 were in advanced puberty (Tanner stage 5). All subjects had support for the surgery from their parents/guardians. In most cases, a supporting letter from the treating pediatric endocrinologist was not requested. Although testosterone use prior to surgery is suggested (but not

Table 1. Data on 14 subjects from our cohort who had male chest reconstructive surgery (mean age 17.2 years).

Patient	Initial visit age (years)	Onset of GD	T start age (years)	Surgery age (years)	Medications at the time of surgery	Other medical conditions	Additional medications (at last visit)
1	17.9	A	18.0	18.2	T	None	None
2	16.4	C	17.7	19.7	T	Anxiety, acne	Multivitamin, off T
3	15.2	C	15.3	16.4	T	Anxiety, acne	Adapalene cream
4	16.7	C	16.9	17.0	T	Anxiety, Asperger syndrome, ADHD	None
5	16.5	A	16.7	17.7	T	Anxiety, acne, depression, Hashimoto's thyroiditis	Sertraline Vitamin D
6	15.9	A	16.6	17.1	T	Depression	Iron
7	12.3	A	13.9	13.4	GnRHa	Marked obesity, bipolar d/o	Lamotrigine Lurasidone, T
8	19.0	C	19.2	19.3	T	Anxiety, depression	None
9	16.1	C	16.3	18.3	T	Obesity, bipolar d/o	None
10	15.5	A	15.7	15.8	T	Depression, acne	Adapalene, Sertraline
11	15.0	A	14.9	15.8	T	Depression, Hashimoto's thyroiditis, ADHD	Lamotrigine, Levothyroxine Lisdexamfetamin Melatonin Vitamin D
12	16.6	A	17	18	T	Bipolar d/o	n/a
13	15.4	A	15.5	16.8	T	Depression, anxiety	Escitalopram
14	15.3	A	15.9	17.5	T	Depression, acne	Tretinoin cream
Mean age	16.0		16.4	17.2			

Abbreviations: A = adolescent presentation; C = childhood presentation; T = testosterone; GD = gender dysphoria; GnRHa = gonadotropin releasing hormone agonist; d/o = disorder

required) per current guidelines (Coleman et al., 2012; Hembree et al., 2009), only seven subjects had been taking testosterone for 1 year or longer prior to surgical intervention and the youngest subject in the study was being administered only injectable gonadotropin-releasing hormone (GnRH) agonist. The average time of testosterone treatment prior to the surgical intervention was 9.6 months (range, 1–24 months). Apart from one adolescent (subject #1), all had a history of depression, anxiety, or both; 10 subjects had a prior history of self-harm (cutting). Additional subjects' data are presented in Table 1.

Insurance coverage for the procedure was not available for most of the subjects. As depicted in Table 2, insurance had paid for only 5 of the 14

subjects services. Interestingly, for the youngest subject who had had the procedure performed without our referral at 13.4 years old, his insurance covered the procedure. Generally, testosterone was not temporarily stopped prior to the procedure as per the surgeons' decision. Only six subjects (43%) had the procedure done locally; others sought care out of town (4/14), state (3/14), or country (1/14), as shown in Table 2. The cost of the procedure ranged from \$5,000 to \$10,175 for those who paid out of pocket. Only four subjects qualified for a keyhole procedure, while the other 10 subjects did not qualify due to larger breast size. This is not surprising, given that these subjects presented themselves to the clinic at an advanced pubertal stage.

Table 2. Types of surgical interventions, related complications, and patient satisfaction rating. Complications were uncommon and satisfaction rate was high. For most subjects, insurance did not cover the procedure. Satisfaction rate: 1 = lowest; 5 = highest.

Patient	Procedure type	Surgical complications	Location of surgery	Insurance coverage	Satisfaction rate (1–5)
1	Double incision	Keloid	Davie, FL	Self-pay	5
2	Double incision	Small fluid collection	Tijuana, Mexico	Self-pay	5
3	Keyhole	Fluid collection, required a second drain	San Diego, CA	Covered	4.5
4	Double incision	Keloid	San Francisco, CA	Self-pay	5
5	Double incision	None	San Francisco, CA	Covered	"very happy"
6	Double incision	Keloid, hematoma due to drain blockage	Philadelphia, PA	Self-pay	4.5
7	Double incision	None	San Diego, CA	Covered	5
8	Double incision	None	San Diego, CA	Self-pay	5
9	Double incision	None	San Diego, CA	Covered	4.5
10	Keyhole	None	Thousand Oaks, CA	Self-pay	5
11	Double incision	None	San Diego, CA	Self-pay	5
12	Double incision	None	San Francisco, CA	Self-pay	5
13	Keyhole	None	San Diego, CA	Covered	5
14	Keyhole	None	Annapolis, MD	Self-pay	5

All subjects reported high personal satisfaction with the surgical outcomes in terms of aesthetics and comfort. All subjects were pleased that postoperatively they no longer needed a binder. The average satisfaction score was 4.9/5 (Table 2). Though we were unable to capture detailed qualitative data, the subjects and their families reported improvement in depression and anxiety after the procedure in almost all cases. Out of 10 subjects whose depression-screening scores are available, assessed through Patient Health Questionnaire-9 or PHQ-9 screen (Kroenke, Spitzer, & Williams, 2001) in the postsurgical period, only one (subject #11) continued to have high depression scores. This data was not available on all subjects, as our institution only added PHQ-9 to our electronic medical record system 2 years ago. The complication rate (self-reported by the subjects and their families) was relatively low, with 5/14 having hypertrophied scar tissue (keloid) and/or a small and temporary fluid or blood collections (Table 2). None of the subjects experienced serious adverse effects such as nipple necrosis or infection. Most subjects had decreased or complete loss of sensation in the surgical and nipple area. Figures 1–3 show postoperative images of surgical outcomes in three of our subjects and their satisfaction rating. All depicted cases were lean, as were the majority of subjects in this group. Subjects with a higher body-mass index (BMI) declined to be photographed.

All subjects in this study were available for a prospective, though relatively short-term, follow-up (average 1.6 years; range 0.1–3.6 years). The clinical course for most subjects has been uneventful. Although reportedly not regretting having the procedure done, subject #2 stopped testosterone treatment about two months after the surgery (at age 19.8 years). Following the surgery, the subject did not feel as elated as other trans males described. About 7 months after the surgical procedure, the subject requested assistance with the gender mark and name change back to

female. This study subject was lost for follow-up and unfortunately, additional data are not available. Subjects #4 and #6 underwent bilateral ovariectomy and hysterectomy at ages 18.6 years and 18.7 years, respectively, (for subject #4 the surgery was not covered by his insurance) and both subjects declined fertility preservation. Subject #7 continued on GnRH agonist until he was started on testosterone treatment at age 13.9 years. GnRH agonist was stopped at the family's request due to a concern that the medication was contributing to his rapid weight gain. All other subjects continued on testosterone treatment and had no significant events in the follow-up period.

Discussion and conclusion

A chest reconstructive surgery is an essential part of transitioning for many trans males. Information about these types of procedures being done in young adolescents and the psychological or surgical outcomes of the procedure have not been previously published. In our pediatric group, the patient's age at the time of the surgical procedure varied greatly, with some subjects seeking and receiving surgical treatment at an age younger than suggested by the current guidelines (Coleman et al., 2012; Hambree et al., 2009). Those youngest patients and their parents strongly believe that the early surgery was advantageous and they pursued surgical care. In our study, most surgeons did not request a referral letter from the treating physician. For that reason, for some of the cases reported, we found out about the surgery only after the procedure had been completed. In all cases, a letter from the mental health provider was required by the surgeons in order to perform the procedure, as per WPATH recommendation (Coleman et al., 2012).

Adult data show good surgical outcomes in terms of satisfaction with the procedure, positive impact on patients' lives, self-confidence, and social interactions (Nelson, Whallett, & McGregor, 2009; Berry, Curtis, &



Figure 1. Photographs of the surgical outcome. Subject #2, double incision, satisfaction rated 5/5.



Figure 2. Photographs of the surgical outcome. Subject #3, keyhole procedure, satisfaction rated 4.5/5.

Davies, 2012; van de Grift et al., 2016), but data from the adolescent population is lacking. In our cohort, all 14 subjects were very satisfied with the appearance of the chest after the procedure as they reported on a subjective, linear scale. Parents and subjects self-reported improvement in psychosocial functioning after the surgery, and this is consistent with the limited data from PHQ9 scores available on 10/14 subjects. In nine out of 10 subjects who had undergone depression screening in the postsurgical period, depression had improved or was resolved. Many subjects described the surgical procedure as a “life-changing event.” Even the 19-year old patient (Subject #2), who later on stopped testosterone treatment and decided to “detransition,” reported contentment with the surgical outcome and had not requested breast implants by the time of the last follow-up. We were unable to get a psychological assessment or continue follow-up as the subject stopped attending our clinic. This subject presented with gender dysphoria in childhood and had full support from family and peers. Per clinical records, the subject was attracted to females prior to the “detransitioning,” while after “detransitioning” became more attracted to males and had a boyfriend. It is unclear whether this contributed to the subject’s wish to “detransition,” as change in sexual orientation has also been described in transgender individuals who do not “detransition” (Auer, Fuss, Höhne, Stalla, & Sievers, 2014). Data about “detransitioning” after surgical treatment is particularly sparse and it is very important to report and learn from this and similar cases. We did not find a

difference in surgical complication rates or patient satisfaction among subjects who had receiving testosterone treatments for a year or longer prior to surgery compared to those who had not, but this is based on a rather small sample size.

Insurance coverage for our study subjects was most often not available and many patients are unable to get necessary treatment unless they pay out of pocket. The decision to seek surgical care out of town, out of state, or even out of the country was based on the subjects’ (and their families’) personal preference. The cost of the treatment, convenience in regard to post-operative follow-up care and peer recommendations were the key factors that influenced their choices. In our experience, the decision to undergo male chest reconstructive surgery and the timing of it is driven by the patients’ and parents’ preferences, parental approval of the surgery, socioeconomic status (ability to pay out of pocket), availability of insurance coverage, and availability of experienced surgeons. Many more (85% of those eligible) adolescents and young adults in our GeM clinic wish to have male chest contouring surgery, but the lack of insurance coverage makes it cost prohibitive. Some of the local surgeons accept commercial but not federally funded insurances. Therefore, many of our patients are unable to get the necessary treatment unless they are able to finance it themselves.

Another noteworthy finding from our data is the predominance of trans males in our GeM clinic, which is contrary to 20th-century data but similar to what



Figure 3. Photographs of the surgical outcome. Subject #4, double incision, satisfaction rated 5/5.

has been recently observed in large clinics in Amsterdam and Toronto (Aitken et al., 2015).

To our knowledge this is the first published study reporting data on chest reconstructive surgeries in transmasculine adolescents. The limitations of our study are the small number of subjects, the relatively short follow-up period, and the lack of an objective, comprehensive measure of the subjects' satisfaction and/or change in psychological status before and after the procedure. Nevertheless, the value of our study is in reporting that in this geographic area, patients (with their parents' support) are requesting and receiving surgical interventions at a younger age than is written in the current guidelines (Coleman et al., 2012; Hembree et al., 2009), sometimes without a referral letter from the treating endocrinologist. The satisfaction with the aesthetics of the surgical treatment in our study group was high and the surgeries appear to have a positive impact on patients' lives. For some transmasculine youth with a high level of chest dysphoria, having a chest reconstructive surgery, we speculate, may reduce their dysphoria and the risk of suicide, and therefore, having an earlier surgery may be beneficial. Having a decentralized delivery of care and variable insurance coverage, as it is in the United States, may result, in some cases, in a discrepancy between what the medical doctor prescribing hormonal therapy may recommend and what patients are able or wish to do. Readiness for surgical treatment was not dependent on having been on testosterone treatment for any specific amount of time but rather on the patient's maturity and strong desire for having the surgery. Surgical interventions in adolescents should not be taken lightly and should take into account their maturity level and ability to consent or assent to such a significant surgery. Some institutions involve an ethicist in these decisions. Larger, multicenter studies with long-term follow up and international collaboration are necessary to gather data about surgical practices and outcomes in youth. Additionally, continued advocacy is vital for securing improved insurance coverage for this and other fundamental procedures that are medically necessary for transgender individuals.

References

- Aitken, M., Steensma, T. D., Blanchard, R., VanderLaan, D. P., Wood, H., Fuentes, A., ... Zucker, K. J. (2015). Evidence for an altered sex ratio in clinic-referred adolescents with gender dysphoria. *Journal of Sexual Medicine*, 12, 756–763.
- Auer, M. K., Fuss, J., Höhne, N., Stalla, G. K., & Sievers, C. (2014). Transgender transitioning and change of self-reported sexual orientation. *PLoS One*, 9(10), e110016.
- Berry, M. G., Curtis, R., & Davies, D. (2012). Female-to-male transgender chest reconstruction: A large consecutive, single-surgeon experience. *Journal of Plastic and Reconstructive Aesthetic Surgery*, 65(6), 711–719.
- Coleman, E., Bockting, W., Botzer, M., Cohen-Kettenis, P., DeCuypere, G., Feldman, J., ... Zucker, K. (2012). Standards of care for the health of transsexual, transgender, and gender-nonconforming people, version 7. *International Journal of Transgenderism*, 13(4), 165–232.
- Cregten-Escobar, P., Bouman, M. B., Buncamper, M. E., & Mullender, M. G. (2012). Subcutaneous mastectomy in female-to-male transsexuals: A retrospective cohort-analysis of 202 patients. *Journal of Sexual Medicine*, 9(12), 3148–3153.
- Hembree, W. C., Cohen-Kettenis, P., Delemarre-van de Waal, H. A., Gooren, L. J., Meyer, W. J., III, Spack, N. P., Tangpricha, V., & Montori, V. M. (2009). Endocrine treatment of transsexual persons: An Endocrine Society clinical practice guideline. *Journal of Clinical Endocrinology and Metabolism*, 94(9), 3132–3154.
- Kääriäinen, M., Salonen, K., Helminen, M., & Karhunen-Enckell, U. (2017). Chest-wall contouring surgery in female-to-male transgender patients: A one-center retrospective analysis of applied surgical techniques and results. *Scandinavian Journal of Surgery*, 106(1), 74–79.
- Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2001). The PHQ-9. Validity of a brief depression severity measure. *Journal of General Internal Medicine*, 16(9), 606–613.
- Monstrey, S., Selvaggi, G., Ceulemans, P., Van Landuyt, K., Bowman, C., Blondeel, P., Hamdi, M., & De Cuypere, G. (2008). Chest-wall contouring surgery in female-to-male transsexuals: A new algorithm. *Plastic and Reconstructive Surgery*, 121(3), 849–59.
- Nelson, L., Whallett, E. J., & McGregor, J. C. (2009). Transgender patient satisfaction following reduction mammoplasty. *Journal of Plastic and Reconstructive Aesthetic Surgery*, 62(3), 331–334.
- Van de Grift, T. C., Kreukels, B. P., Elfering, L., Özer, M., Bouman, M. B., Buncamper, M. E., Smit, J. M., & Mullender, M. G. (2016). Body image in transmen: Multidimensional measurement and the effects of mastectomy. *Journal of Sexual Medicine*, 13(11), 1778–1786.
- Wolter, A., Diedrichson, J., Scholz, T., Arens-Landwehr, A., & Liebau, J. (2015). Sexual reassignment surgery in female-to-male transsexuals: An algorithm for subcutaneous mastectomy. *Journal of Plastic and Reconstructive Aesthetic Surgery*, 68(2), 184–191.



Royal Commission into
Victoria's Mental Health System

ATTACHMENT MT-12

This is the attachment marked 'MT-12' referred to in the witness statement of Associate Professor Michelle Telfer dated 1 July 2019.

Chest Reconstruction and Chest Dysphoria in Transmasculine Minors and Young Adults

Comparisons of Nonsurgical and Postsurgical Cohorts

Johanna Olson-Kennedy, MD; Jonathan Warus, MD; Vivian Okonta, MPH; Marvin Belzer, MD; Leslie F. Clark, PhD, MPH

IMPORTANCE Transmasculine youth, who are assigned female at birth but have a gender identity along the masculine spectrum, often report considerable distress after breast development (chest dysphoria). Professional guidelines lack clarity regarding referring minors (defined as people younger than 18 years) for chest surgery because there are no data documenting the effect of chest surgery on minors.

OBJECTIVE To examine the amount of chest dysphoria in transmasculine youth who had had chest reconstruction surgery compared with those who had not undergone this surgery.

DESIGN, SETTING, AND PARTICIPANTS Using a novel measure of chest dysphoria, this cohort study at a large, urban, hospital-affiliated ambulatory clinic specializing in transgender youth care collected survey data about testosterone use and chest distress among transmasculine youth and young adults. Additional information about regret and adverse effects was collected from those who had undergone surgery. Eligible youth were 13 to 25 years old, had been assigned female at birth, and had an identified gender as something other than female. Recruitment occurred during clinical visits and via telephone between June 2016 and December 2016. Surveys were collected from participants who had undergone chest surgery at the time of survey collection and an equal number of youth who had not undergone surgery.

MAIN OUTCOMES AND MEASURES Outcomes were chest dysphoria composite score (range 0-51, with higher scores indicating greater distress) in all participants; desire for chest surgery in patients who had not had surgery; and regret about surgery and complications of surgery in patients who were postsurgical.

RESULTS Of 136 completed surveys, 68 (50.0%) were from postsurgical participants, and 68 (50.0%) were from nonsurgical participants. At the time of the survey, the mean (SD) age was 19 (2.5) years for postsurgical participants and 17 (2.5) years for nonsurgical participants. Chest dysphoria composite score mean (SD) was 29.6 (10.0) for participants who had not undergone chest reconstruction, which was significantly higher than mean (SD) scores in those who had undergone this procedure (3.3 [3.8]; $P < .001$). Among the nonsurgical cohort, 64 (94%) perceived chest surgery as very important, and chest dysphoria increased by 0.33 points each month that passed between a youth initiating testosterone therapy and undergoing surgery. Among the postsurgical cohort, the most common complication of surgery was loss of nipple sensation, whether temporary (59%) or permanent (41%). Serious complications were rare and included postoperative hematoma (10%) and complications of anesthesia (7%). Self-reported regret was near 0.

CONCLUSIONS AND RELEVANCE Chest dysphoria was high among presurgical transmasculine youth, and surgical intervention positively affected both minors and young adults. Given these findings, professional guidelines and clinical practice should consider patients for chest surgery based on individual need rather than chronologic age.

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The last decade has seen an unprecedented number of youth presenting for care related to gender dysphoria at gender-specific clinics and centers around the United States, Canada, and Europe.^{1,2} Transmasculine youth (those assigned a female sex at birth who have a gender identity along the masculine spectrum) who have undergone an endogenous female puberty and subsequent breast development commonly experience significant discomfort with the presence of breasts (chest dysphoria). Many but not all of these youth desire surgical intervention to achieve a flatter chest contour. This procedure involves a double mastectomy with downsizing and regrafting of the nipple areola complex or a minimally invasive procedure that spares the nipple.³

As an interim strategy prior to chest surgery, many youth bind their chest in order to achieve a flatter, more masculine appearance. In a recent study of 1800 adults, Peitzmeier et al⁴ report an exhaustive list of negative health outcomes related to the practice of binding. These included pain, rib fractures, light-headedness, weakness, skin infection, and others.

There are no measures that capture the discomfort and subsequent consequences of chest dysphoria. The purpose of this study was to develop a measure that captures the distress associated with having a feminine chest contour (breasts) experienced by minors (persons younger than 18 years) and young adults (those aged 18 to 25 years) with a masculine gender identity, understand the association with chest surgery, and determine if there are differences in this association between young adults and minors. These results may serve to inform the practice of health care professionals with lingering concerns about potential complications, patient regret, and lawsuits, particularly for minors.

Surgical interventions for transgender individuals undergoing phenotypic gender transition have been considered an integral part of the transitioning process from as far back as the 1950s.⁵ Dissatisfaction with primary and secondary sex characteristics aligned with the chromosomes and gonads one has, rather than one's gender of identity, is a fundamental characteristic of gender dysphoria.⁶ While surgical procedures are not desired by all individuals with transgender experience, these procedures are commonly sought in order to bring the physical body into better alignment with the experienced gender.⁷ Satisfaction rates across studies of adult transmasculine individuals undergoing chest reconstruction are 97%, and regret is present in less than 1% of transmasculine patients.⁸ Hormone therapy and surgery have been found to be medically necessary to diminish gender dysphoria.^{7,9} Few data have been published concerning the outcomes of these procedures among minors, despite the growing numbers of youth presenting for care.¹

Most transmasculine youth are accessing care after or near completion of breast development, necessitating surgical intervention for those who wish to have a masculine-appearing chest contour. Because pubertal development of people who are assigned female at birth may begin as early as 8 or 9 years of age, completion of puberty is plausible even as young as 12 years.

National guidelines regarding surgical interventions for minors are outlined in the World Professional Association for Transgender Health Standards of Care, version 7.⁹ These guidelines recommend that adolescents defer genital surgery until

Key Points

Question Is chest dysphoria (distress about breasts) more common among transmasculine youth who have not had chest reconstruction compared with those who have undergone this surgery?

Findings In this cohort study, chest dysphoria was significantly higher in the nonsurgical vs postsurgical cohort. Among the nonsurgical cohort, 94% perceived chest surgery as very important; among the postsurgical cohort, serious complications were rare, and 67 of 68 reported an absence of regret.

Meaning Professional guidelines and clinical practice should recommend patients for chest surgery based on individual need rather than chronologic age.

the age of consent, but acknowledge that individual minors might be candidates for chest reconstruction. Despite this acknowledgment, many insurance plans continue to impose a mandatory age requirement of 18 years for chest surgery, as well as the use of testosterone for a full year prior to surgery to ensure the best results. While breast tissue does tend to atrophy with the use of testosterone, this effect is only partial.¹⁰ The adolescent section of the Standards of Care, version 7, recommends 1 year of testosterone use prior to chest surgery, but specifically states elsewhere that "hormone therapy is not a pre-requisite" for surgery.^{9(p59)} It leaves unclear why the recommendation is in place for adolescents but not for adults. The recommendation to omit the requirement of hormone administration acknowledges that there are individuals who desire chest surgery but do not wish to undergo hormone therapy for phenotypic gender transition.^{9,11}

This study was undertaken to determine if chest reconstruction diminishes chest dysphoria and if it should be considered a medically necessary intervention for both transmasculine minors and young adults. Additionally, in providing data on the experience of youth younger than 18 years, we hope to inform future revisions of existing guideline recommendations regarding transgender minors seeking surgical interventions to help mitigate gender dysphoria.

Methods

Practice Setting

The Center for Transyouth Health and Development at Children's Hospital Los Angeles has been serving the medical and mental health needs of transgender adolescents and young adults since 1993. At the time of this study, the center was serving 818 gender-nonconforming and transgender youth. Of the youth in care, 384 (46.9%) were assigned the female sex at birth; 93 youth (24.2%) had undergone chest reconstruction surgery before the study commenced.

Consent Procedures

The research study was approved by the Children's Hospital Los Angeles institutional review board. One or more parents or legal guardians provided consent for eligible minors. All participants provided verbal consent before completing the survey.

Study Eligibility

Youth in the nonsurgical group and the postsurgical group were considered eligible to complete the survey if they were 13 to 25 years old, assigned female at birth, identified their gender as something other than female, were able to read and understand English, and were able to provide consent.

Youth were included in the nonsurgical group if they had not undergone chest reconstruction surgery and had chest tissue consistent with female development. Prepubertal youth and those who had been administered puberty-blocking medications early in development were ineligible.

Youth were included in the postsurgical group if they had undergone chest reconstruction surgery. All participating youth who had undergone chest reconstruction surgery had done so after obtaining referral letters from medical and mental health professionals as required by the surgeons and insurance plans. The process by which individual mental health professionals assess readiness for surgery varies across practices. The common goal of health care professionals is to assure that patients have the capacity to provide consent and are fully informed about the mechanics, recovery, and irreversible nature of the surgery.

Study Recruitment and Data Collection

Participants were recruited from the youth visiting the Center for Transyouth Health and Development for routine gender-related care between June 2016 and December 2016. A total of 52 patients (13.5%) were ineligible to participate in this study because they did not have chest tissue as a result of being either prepubertal or having taken puberty-blocking medications early in development. The remaining 332 transmasculine youth in active care were considered eligible for the study. All transmasculine youth who met study inclusion criteria and came for visits during this time were approached to participate. Nonsurgical youth outnumbered postsurgical youth in active care at the clinic by a ratio of 3.5:1, and to survey as many postsurgical youth as possible, study staff attempted to contact via telephone all postsurgical youth who had not visited the clinic during the enrollment period. Two postsurgical youth refused the survey, and 24 (26%) could not be contacted. Of those who could not be contacted, 12 had no working phone number, 7 did not respond to 3 messages left, and 5 agreed to participate but could not coordinate a time. Telephone calls and clinic visits during the study period yielded 68 (72%) completed surveys from postsurgical participants.

To obtain a sample of youth without surgery, we recruited until a comparable number of surveys were completed during the window of clinical visits. None of the youth who had not undergone surgery who were approached refused to participate.

The 10-minute survey collected demographic information, characteristics of surgery, and chest dysphoria. No incentive was provided for survey completion. Study data were collected and managed using Research Electronic Data Capture electronic data capture tools, which are hosted at the Southern California Clinical and Translational Science Institute.¹²

Development of the Chest Dysphoria Scale

To develop the Chest Dysphoria Scale, 21 survey items were generated that queried multiple aspects of chest dysphoria

based on clinical experience of the first author over the past 11 years of delivering clinical care for transgender youth in a large, urban, hospital-based gender clinic. To establish face validity from the community perspective, the scale was reviewed by a small number of transmasculine youth and transmasculine adults who evaluated whether the questions captured elements of chest dysphoria effectively, used appropriate language, and was otherwise generally acceptable. The scale includes items related to physical functioning, including hygiene and exercise, intimate partnerships and dating, being perceived as a member of a gender other than their gender of identity, and disruption of future plans. Items such as "I avoid bathing/showering in order to avoid seeing my chest," and "I avoid seeking medical care because of my chest" were scored using a Likert scale, from 0 (never) to 3 (all the time). The complete Chest Dysphoria Scale is displayed in Table 1.

A principal components extraction method by an oblique (oblimin) rotation yielded a single factor comprised of 17 items (eigenvalue, 11.1). The same factor structure emerged when analyses were conducted with nonsurgical and postsurgical cohorts separately. After imputing the mean of all completed items in place of missing values, the 17 items yielded a composite score ranging from 0 to 51, with higher scores indicating greater chest dysphoria. Missing data were minimal (<5%) for all items. Data with mean imputations were used to calculate the α and also for subsequent analyses involving the Chest Dysphoria Scale. Results of tests for internal consistency suggest high reliability (Cronbach α for postsurgical patients, .79; Cronbach α for nonsurgical patients, .89). See Table 1 for information about the 4 items dropped from the scale.

Statistical Analysis

Descriptive characteristics for both nonsurgical and postsurgical cohorts were summarized. The ages of respondents were stratified by age for binary analyses (<18 years and ≥ 18 years). In the nonsurgical cohort, the analysis was dichotomized based on age at the time of survey, and in the postsurgical cohort, the analysis was based on age at time of chest surgery. To examine the utility of the 1 year taking testosterone prior to surgery recommended by insurance plans, a simple linear regression model was used to evaluate the relationship between duration of time taking testosterone and chest dysphoria scores in nonsurgical cohort respondents. Results were expressed as regression coefficients with 95% confidence intervals. Analyses were conducted using IBM SPSS Statistics, version 17.0 (IBM Corporation).

Results

Descriptive Characteristics

At the time of survey, the mean (SD) age of postsurgical participants was 19 (2.5) years (range, 14-25 years). The length of time between survey and chest surgery varied from less than 1 year to 5 years (Table 2). The mean (SD) age at chest surgery in this cohort was 17.5 (2.4) years (range, 13-24 years), with 33 (49%) being younger than 18 years. Of the 33 postsurgical participants younger than 18 years at surgery, 16 (48%) were 15

Table 1. Chest Dysphoria Scale (Final Version)

Item	Patients Endorsing Item, No. (%) ^a	
	Nonsurgical Patients (n = 68)	Postsurgical Patients (n = 68)
Items included in the final scale		
I like looking at my chest in the mirror	7 (10)	57 (84)
Taking a shower/bath is difficult because I have to see my chest	40 (59)	1 (2)
I avoid going to the beach and/or swimming in public places because of my chest	55 (81)	7 (10)
I get gendered as female because of my chest	24 (35)	1 (2)
Dating/forming intimate partnerships is more difficult because of my chest	34 (50)	1 (2)
Physical intimacy/sexual activity is difficult because of my chest	41 (60)	2 (3)
I have struggled to make future plans because of my chest	39 (57)	1 (2)
I avoid exercise because of my chest	32 (47)	1 (2)
I avoid shopping/buying clothing because of my chest	21 (31)	0 (0)
I avoid seeking medical care because of my chest	9 (13)	1 (2)
I feel like my life hasn't started because of my chest	40 (59)	1 (2)
I avoid swimming in private places because of my chest	44 (65)	2 (3)
I have to buy/wear certain clothes because of my chest	54 (79)	0 (0)
I sleep with a binder on at night	11 (16)	0 (0)
I avoid using locker rooms because of my chest	53 (78)	5 (7)
I worry that people are looking at my chest	57 (84)	7 (10)
I participate in life less than others because of my chest	41 (60)	1 (2)
Additional items not included in final scale		
Thinking about my chest does not get in the way of daily activities	13 (19)	40 (59)
My chest does not get in the way of attending school/work	15 (22)	42 (62)
I avoid bathing/showering in order to avoid seeing my chest	11 (16)	0 (0)
I bind my chest in the daytime	60 (88)	0 (0)

^a Frequencies and corresponding percentages represent combine responses of "frequently" and "all the time."

years or younger (Figure). At the time of survey, the mean (SD) age of participants without surgery was 17 (2.5) years (range, 13-23 years), with 39 (57%) being younger than 18 years.

Emotional and Physical Features of Postsurgical Cohort

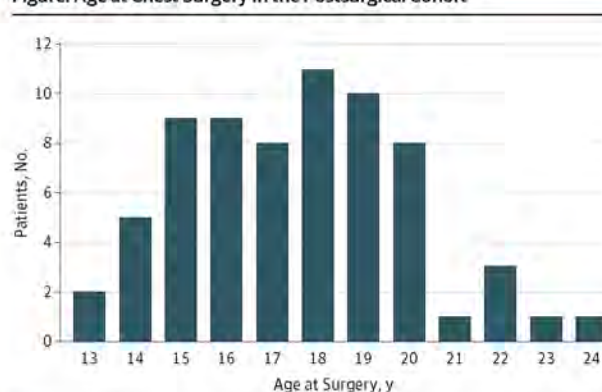
All postsurgical participants (68 of 68; 100%) affirmed the statement, "It was a good decision to undergo chest reconstruction." Sixty-seven of 68 postsurgical respondents reported no regret about undergoing the procedure. Only 1 participant (who was older than 18 years at the time of surgery) reported experiencing regret "sometimes." The most common complications reported following chest surgery were temporary and permanent loss of nipple sensation (40 of 68, or 59%, and 22 of 68, or 32%, respectively; permanency was assessed as continuation of the condition from surgery to the

Table 2. Descriptive Characteristics of Nonsurgical and Postsurgical Cohorts

Characteristic	No. (%)	
	Postsurgical Patients (n = 68)	Nonsurgical Patients (n = 68)
Age range (at time of survey), y	14-25	13-23
Age, mean (SD), y	18.9 (2.5)	16.9 (2.5)
Length of time since surgery, y		
<1	20 (29)	NA
1	20 (29)	NA
2	19 (28)	NA
3	4 (6)	NA
4	4 (6)	NA
5	1 (2)	NA
Hormone related descriptive characteristics		
Currently taking testosterone?	66 (97)	59 (87)
Age at start of testosterone, mean (SD), y	16.3 (2.1)	16.4 (2.0)
Length of time taking testosterone, y		
<0.5	6 (9)	27 (46)
0.50-1	3 (4)	11 (19)
1-2	19 (29)	15 (25)
>2	38 (58)	6 (10)

Abbreviation: NA, not applicable.

Figure. Age at Chest Surgery in the Postsurgical Cohort



Graph includes all study participants who had undergone chest reconstruction (n = 68).

time of survey collection), loss of sensation in other areas of the chest (28 of 68; 41%), and unequal chest appearance (9 of 68; 13%) (Table 3). There were no statistically significant differences in complication rates reported between those younger than 18 years vs those 18 years or older at the time of surgery. Mean (SD) chest dysphoria scores among postsurgical participants were 3.3 (3.8) and were not significantly associated with length of time between surgery and survey, complication rates, or age group (minors vs those 18 years or older). Items from the Chest Dysphoria Scale indicating functional limitations were rarely endorsed (Table 1).

Nonsurgical Cohort

Interest in chest reconstruction among respondents was high, with nearly 70% responding to the question, "How important

Table 3. Complications of Chest Reconstruction Surgery

Complication	Participants, No. (%) (n = 68)
Temporary loss of nipple sensation	40 (59)
Loss of sensation of other areas of the chest	29 (41)
Long-term loss of nipple sensation	22 (32)
Keloid (excessive) scarring	10 (15)
Unequal chest appearance	9 (13)
Postoperative hematoma	7 (10)
Postoperative pain beyond normal healing time	6 (9)
Nipple/areola(s) too large	5 (7)
Complications related to anesthesia	5 (7)

is having chest surgery to you?" with the description, "one of the most important things for [them] right now"; another 17 (25%) described it as "very important." The majority (59 of 68; 87%) were using testosterone at the time of survey (Table 2). Chest dysphoria was higher for those who had been taking testosterone longer, increasing by 0.33 points for each month taking testosterone. There were no statistically significant differences in levels of chest dysphoria by age group (minors vs those 18 years and older). For items denoting functional limitations, nearly half (32 of 68; 47%) of participants avoided exercise, 11 of 68 (16%) avoided bathing, 11 of 68 (16%) slept with a chest binder at night, and 10 of 68 (13%) avoided seeking medical care because of their chest (Table 1). Half of the participants (34 of 68) found intimate partnerships more difficult because of their chest, and 40 of 68 (59%) reported feeling that their chest interfered with making future plans for their life.

Comparison of Chest Dysphoria Scale Scores by Cohort

Possible chest dysphoria composite scores ranged from 0 to 51, with higher scores indicating greater distress. Chest dysphoria composite mean (SD) scores differed significantly between those who had not undergone chest reconstruction (29.6 [10.0]; n = 68) and those who had (3.3 [3.8]; n = 68; $P < .001$). There was no significant difference in mean chest dysphoria score between those who had surgery at ages younger than 18 years vs those who had surgery at 18 years or older.

Discussion

Concern exists among parents and professionals about surgical interventions for transgender youth, particularly those of minority age status. Professionals harbor concerns about liability in performing transgender-related surgeries that patients may potentially regret after the procedure. This study demonstrated very low rates of regret among postsurgical youth among minors as well as those 18 years and older at the time of surgery. Reported adverse effects in the postsurgical cohort were also relatively minimal.

Chest dysphoria can negatively affect the health of young transmasculine individuals. Within our cohort of youth who had not undergone surgery, substantial numbers of youth were avoiding seeking medical care because of their chests and were binding their chests frequently or all the time, including dur-

ing sleep. Youth feeling that their chest impeded life plans is an indicator of the negative effect of having an internal masculine gender identity that is at odds with the outward appearance of a female chest contour. Comparison of postsurgical and nonsurgical youth suggests that chest reconstruction had a positive effect both transmasculine minors and young adults.

Many insurance companies require continuous 12 months of testosterone use prior to undergoing chest surgery. The nonsurgical cohort in this study had been taking testosterone for periods ranging from less than 1 month to 52 months, with chest dysphoria increasing the longer their time on hormones. This finding should not be construed as an endorsement to withhold or delay testosterone initiation to avoid chest dysphoria intensity. It is unclear if the chest dysphoria increase is specific to the length of time taking testosterone or simply because of a longer waiting period between initiation of physical gender transition and surgery. The increasing chest dysphoria after testosterone treatment begins does reflect a common clinical phenomenon: a honeymoon period after testosterone initiation that quickly becomes eclipsed by the greater disparity between a more masculine presentation and a female chest contour. Clinicians should advise patients and families that chest dysphoria may increase over time after starting hormone therapy. In addition, the recommendation of many insurance companies that individuals take hormones for 12 months prior to chest surgery may create additional barriers to chest surgery and cause additional harm.

Limitations

Despite our participants being recruited from a single site, these data are likely generalizable to youth receiving care at clinic sites in similar settings: large, urban, academically affiliated clinics serving multiethnic youth. This investigation was limited by the cross-sectional research design; a prospective design collecting data on the same participants before and after surgical intervention would likely yield results more specific to the intervention of chest reconstruction.

An additional limitation of the study was the small sample size. The nonsurgical cohort was a convenience sample, recruited from those with appointments during the data collection period. There could be unknown imbalances between the nonsurgical and postsurgical cohorts that could have confounded the study findings.

Finally, the Chest Dysphoria Scale is not yet validated, and may not represent distress or correlate with validated measures of quality of life, depression, anxiety, or functioning. Our intent is to move forward with the process of validation, so that it might be useful in clinical practice.

Conclusions

In future studies, it would be informative to determine whether the outcome of either chest dysphoria or chest surgery varies with race/ethnicity, type of surgery, or gender identity (non-binary vs masculine). Future studies should consider investigating the outcome of chest dysphoria on participation and functioning in school, work, and family activities.

Given the numerous complications associated with chest binding, the negative emotional and mental effects of chest dysphoria, and the positive outcome of chest surgery demonstrated in this study, changes in clinical practice and in insurance plans' requirements for youth with gender dysphoria who are seeking surgery seem

essential. Youth should be referred for chest surgery based on their individual needs, rather than their age or time spent taking medication. Individualized, patient-centered care plans should be considered the standard of care for all transgender adolescents, and referrals should be made accordingly.

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REFERENCES

1. Spack NP, Edwards-Leeper L, Feldman HA, et al. Children and adolescents with gender identity disorder referred to a pediatric medical center. *Pediatrics*. 2012;129(3):418-425.
2. Khatchadourian K, Amed S, Metzger DL. Clinical management of youth with gender dysphoria in Vancouver. *J Pediatr*. 2014;164(4):906-911.
3. Frederick MJ, Berhanu AE, Bartlett R. Chest surgery in female to male transgender individuals. *Ann Plast Surg*. 2017;78(3):249-253.
4. Peitzmeier S, Gardner I, Weinand J, Corbet A, Acevedo K. Health impact of chest binding among transgender adults: a community-engaged, cross-sectional study. *Cult Health Sex*. 2017;19(1):64-75.
5. Benjamin H. *The Transsexual Phenomenon*. New York, NY: Julian Press; 1966.
6. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Washington, DC: American Psychiatric Association; 2013.
7. Davis SA, Melter SC. Effects of testosterone treatment and chest reconstruction surgery on mental health and sexuality in female-to-male transgender people. *Int J Sex Health*. 2013;26(2):113-128.
8. Gijs L, Braeys A. Surgical treatment of gender dysphoria in adults and adolescents: recent developments, effectiveness, and challenges. *Annu Rev Sex Resch*. 2007;18(1):178-224.
9. World Professional Association for Transgender Health. Standards of care for the health of transsexual, transgender, and gender nonconforming people, version 7. [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). Accessed February 14, 2012.
10. Berry MG, Curtis R, Davies D. Female-to-male transgender chest reconstruction: a large consecutive, single-surgeon experience. *J Plast Reconstr Aesthet Surg*. 2012;65(6):711-719.
11. Hembree WC, Cohen-Kettenis P, Delemarre-van de Waal HA, et al; Endocrine Society. Endocrine treatment of transsexual persons: an Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*. 2009;94(9):3132-3154.
12. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform*. 2009;42(2):377-381.