ultimately make it impossible for an adolescent to try to live in accordance with their gender identity during the evaluation. It is important that the adolescent's needs for assistive devices or aids are assessed and that the authorities offer aids that enable the adolescent to try to live in accordance with their gender identity.

Recommendation on assistive devices

> Following an individual assessment, but no sooner than the preliminary diagnosis of gender dysphoria is made, healthcare services should provide adolescents with aids to facilitate their living in the social role that corresponds to their gender identity.

Reasons for the recommendation

Background: The fact that the body reflects the gender registered at birth can make it difficult for an adolescent to be perceived by others in accordance with their gender identity. Aids that can help include bindings used to hide the breasts or penis, wigs, breast prostheses and various types of penile prostheses.

The expected benefit (purpose) of the measures is to facilitate adolescents who want to live in accordance with their gender identity, and to contribute to an increased quality of life for the individual.

Possible risks: One possible risk is that the measures, if offered too early in the education process, may risk entrenching a gender identity that is not grounded in the individual. This risk can be mitigated by offering aids after a preliminary diagnosis of gender dysphoria at the earliest, and after an individual assessment. The assessment team also needs to alert the adolescent to the fact that regular binding of breasts and penis can have negative physical consequences and help to prevent these consequences should the adolescent choose to use these devices.

The knowledge about expected benefits and risks is based on experience, gathered from the experts who participated in the guidelines work and publications describing young people's experiences of using aids (i.e., binders) [73, 74]. The National Board of Health and Welfare concludes that the scientific evidence on the expected benefits and risks of the measures is likely to be insufficient. See separate appendix *Knowledge base with methods description.*

Benefit/risk balance: The National Board of Health and Welfare deems that the expected benefits of these measures outweigh their risks and that the need for the measures is great.

Hormonal treatment for gender dysphoria in adolescents

This section includes updated recommendations about treatment with gonadotropin-releasing hormone analogue (GnRHa) and gender-affirming hormone treatment, as well as decision support to guide treatment decisions.

Content and extent

This section focuses on fundamental aspects and ethical considerations. For medical issues, reference is made to consensus-based guidelines for endocrine treatment of gender incongruence in adolescents [55]. This refers to issues of evaluation of physical health, testing, preparations and dosing, monitoring, and transition to adult care. Other hormonal treatments such as progestins (low and moderate dosages) and combined contraceptive pills are mentioned but not described in detail.

Basic conditions for hormonal treatment

The National Board of Health and Welfare's assessment is that both GnRH analogue treatment and gender-affirming hormone therapy may be offered under certain basic conditions, which are described in more detail below. Conditions (criteria) specific to each treatment are then described in connection with the specific recommendation.

In the context of research

The National Board of Health and Welfare's assessment is that treatment with GnRH analogues and sex hormones for adolescents with gender dysphoria should be provided within the framework of research. Until a research study with ethically tested inclusion and treatment criteria is in place, the National Board of Health and Welfare's assessment is that the treatment can be provided in accordance with the updated recommendations and criteria in the guidelines. In terms of the research questions that need to be answered, the National Board of Health and Welfare refers to the knowledge gaps for the area of care listed in the SBU database. For more information, see *New recommendations for hormonal treatment - basis and consequences.*

Thorough diagnostic evaluation

Recommendations for conducting the child psychiatric and diagnostic assessment are described in the section *Evaluation of gender incongruence in children and adolescents*. The evaluation places stringent requirements on the psychiatric,

psychological, and psychosocial assessments, and must be tailored to the medical, psychological, and social circumstances of the adolescent.

Multidisciplinary assessment

The decision to initiate GnRH analogue or gender-affirming hormone therapy must be based on a balanced multidisciplinary assessment that considers the adolescent's whole situation. At a minimum, the decision needs to be taken jointly by the multidisciplinary team responsible for the child psychiatric and diagnostic assessment and the pediatric endocrinologist responsible for physical health considerations (For further information, see *Evaluation of gender incongruence in children and adolescents*).

Support and consent from guardians

Legal clarifications of children's right to self-determination and the responsibility of guardians are provided in the National Board of Health and Welfare's bulletin, *Children seeking health care*, number 8/2020. As a starting point, it is the guardian who has the right and obligation to decide on matters of health care for the child. However, as the child grows older and more mature, the child's wishes must increasingly be taken into account. A child may be considered mature enough to decide alone on his or her own about specific care or treatment if he or she can assimilate the relevant information and understand the consequences of the decision. However, considerable maturity is required for a child to be able to contemplate more extensive treatments and interventions.[37]

According to the Gender Dysphoria Registry's 2020 annual report, a consensus between the adolescent, guardians, and health care providers is a prerequisite for offering treatment with GnRH analogue and/or gender-affirming hormone treatment [75]. This treatment should be viewed in the light of the pervasive and lifelong consequences of treatment for the individual.

The support and involvement of guardians is also important for adherence to treatment and for the overall psychosocial situation of the adolescent.

Information that enables an informed decision

Health care providers should seek to achieve the best possible shared understanding with the patient on important issues of care and treatment. A prerequisite for this is that the patient is well informed about his or her health condition and the different

[37] Cf. prop. 2013/14:106 p. 119

treatment options that may be available based on the patient's life situation and personal circumstances.[38]

Legal provisions in the healthcare system's obligation to provide information are set out in Section 3 of the Patient Act. When the patient is a child, the child's guardian must also be informed.[39] The preparatory work for the Patient Act states that in order to be able to make an informed decision, one of the requirements is that the patient should receive scientifically based information about the advantages and disadvantages of the various treatment options for the condition in question. Furthermore, it states in situations where the patient's treatment regimen includes the possibility of waiting before initiating interventions, the patient must also be informed about this, along with the possible consequences of a decision to wait. This information should be provided as early as possible in the care process.[40]

There is no section in health legislation that explicitly states that health care has an obligation to also provide information about the uncertainties and gaps in the knowledge base. However, such information is considered necessary from an ethical and moral perspective, to enable patients and caregivers to make informed decisions [16]. Such information can also be considered consistent with the legal requirements of objectivity and impartiality in public administration.[41]

The responsible pediatric endocrinologist should provide information about the treatment to the child and guardians early in the diagnostic evaluation and then repeatedly, based on the needs that arise as the evaluation progresses (See also *Evaluation of gender incongruence in children and adolescents*).

Assessment of expected benefit-risk for individual

For each individual adolescent, the expected benefits of the treatment in question need to have been made clear, and the benefits must be assessed to outweigh the risks. The expected benefits and risks of not providing the treatment also need to have been made clear and considered [16]. When healthcare is provided to children, the best interests of the child must be carefully considered (Section 1, Section 8 of the Patient Act).[42]

The provision of GnRH analogues to adolescents with gender dysphoria under certain conditions is a practice that has emerged in the Netherlands in recent decades.

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[38] Prop. 2013/14:106 p. 72.

[39] Chapter 3, Section 3 of the Patient Act.

[40] Prop. 2013/14:106 p. 48.

[41] See Chapter 1, Section 9 of the Instrument of Government (RF) and Section 5 of the Administrative Procedure Act (2017:900).

[42] See further the section on the <Child rights perspective> in the <Introduction> chapter.

Important cornerstones in the development of the "Dutch protocol" have been the clear distress of some adolescents at the onset of puberty and the observation that gender dysphoria was rarely amenable to psychotherapy for these adolescents [76-78]. The importance of applying caution when treating with GnRH analogues is reflected, among other things, in the criteria that the gender incongruence should have started in childhood, persisted until puberty, and that the onset of puberty should have caused clear distress [5, 79].

According to literature reviews by SBU and NICE [2, 80, 81], it is currently not possible to draw firm conclusions about the efficacy and safety of GnRH analogue and gender-affirming hormone therapy for adolescents with gender dysphoria (See separate appendix *Knowledge base with methods description*).

The expected benefits and possible risks of the treatments are described in the following sections.

Treatment with GnRH analogue

Treatment with gonadotropin-releasing hormone analogues has been used since the early 1980s to slow puberty in children with *central precocious puberty* (CPP), i.e., pubertal development that starts before 8 years of age in girls and before 9 years of age in boys. GnRH analogue is also used in various conditions that inhibit growth during adolescence, and in gender dysphoria in adolescents [82].

Endogenous puberty in boys and girls is well described in the literature, including by Nordic research groups, in terms of the gradual increase in sex hormone levels and the timing of these changes [83-93]. Pubertal development is usually considered to have ended when the person reaches their final height. Continued masculinization and feminization of the body occurs for several years after puberty.

Expected benefit of the treatment

Treatment with a GnRH analogue for gender dysphoria is primarily aimed at lowering the distress associated with the development of puberty and reducing the risk of poor mental health. The goal of treatment is to prevent the body from physically developing in a direction that is not consistent with gender identity. If treatment is initiated in early puberty, it also reduces the risk of developing (more or less irreversible) sexual characteristics that are difficult to change or eliminate later in life such as voice pitch, height, hips, jaw and face features and facial hair. In this way, the aim is also to make it easier for the person to be perceived in accordance with their gender identity by the environment, and to contribute to a better quality of life. The need for subsequent hair removal, speech therapy,[xviii] and gender-affirming surgery is thus reduced.

Even in later puberty (Tanner stage 4-5), treatment aims to reduce the distress associated with endogenous development, lower the risk of poor mental health, and to inhibit further masculinization and feminization of body shapes and body composition (further growth of breasts and hips, respectively, additional body hair, roughening of features and lowering of voice, and growth of chest, feet, and hands). Another purpose in later puberty is to reduce the emotional stress that often accompanies erections and menstruation.

Finally, the treatment aims to reduce distress that may facilitate further exploration of gender identity during the course of the evaluation, and thus also has a diagnostic purpose.

Possible side effects and risks of the treatment

In both early and late puberty, weight gain is a common side effect of GnRH analogue. For adolescents who are already severely overweight, treatment may further increase the risk of future health problems and worsen the prospects for possible future gender-affirming surgery (see *Physical health consideration* below).

Withdrawal symptoms such as hot flashes can occur if levels of sex hormone are high enough when treatment with GnRHa is started and are relatively common among adolescents in late puberty. Decreased energy levels and low mood may occur [94]. Decreased sex drive may be noticed when treatment is started after completed puberty.

Available treatment studies and clinical experience suggest that menstruation in girls treated with CPP returns on average one year after treatment ends, but it may take as long as two years. Longer time to menstruation at discontinuation or after completion of treatment can be expected if treatment is started before menarche has occurred [95]. The few, small studies of boys with CPP suggest that testosterone levels and testicular volume are recovered one year after completion of treatment, and that full pubertal development may be reached by late teenage years [96]. These findings are also consistent with sperm recovery in studies of "contraceptive pills for men" in which GnRH analogues were used in combination with high (supraphysiological) doses of testosterone [97].

For young people treated with GnRH analogues in early puberty, there are clear difficulties in offering fertility preservation, especially for young people registered female at birth who have not yet had menarche [98-100]. For young people in early puberty and those registered male at birth, reportedly there are experience-based difficulties producing semen samples for freezing. Descriptions related to fertility preservation are given in the section *Sexual and reproductive health*.

Absence of sex hormones over a long period of time can lead to a risk of reduced bone mineralization and, in the long run, increased risks of osteoporosis and bone fracture in adulthood. No certain conclusions about the risks can be drawn at this

stage from the existing scientific evidence (See the separate appendix *Knowledge base with methods description*).

The extent to which height growth is affected has not yet been studied systematically and is largely dependent on the physical development of the adolescent. If treatment is started early in the development of puberty then remaining height growth will be delayed. Final height is only reached when sex hormone levels have been sufficiently high for a sufficiently long time, and the growth zones are closed. This can be positive or negative for the adolescent and must be considered on an individual basis.

The absence of sex hormones over a long period of time can lead to a risk of negative effects on cognitive development. No certain conclusions about the risk can be drawn from existing scientific evidence (See the separate appendix *Knowledge base with methods description*).

Delayed puberty in gender dysphoria causes the adolescent to be physically and psychologically out of sync with his or her peers.

When treatment is started in early puberty, it results in stunted penile growth, and the growth of the scrotum decreases. Any vaginal construction in adulthood may therefore need to be carried out using methods other than what is currently considered the "gold standard" (constructing a vagina using only skin from the penis).

Finally, if the adolescent does not go through puberty, there is a possible risk that treatment with GnRH analogues may consolidate a gender incongruence that could have proven to be transient over time [31].

Recommendation

Treatment with GnRH analogues for adolescents with gender dysphoria should be provided in the context of research. Until a research study with ethics board approved inclusion and treatment criteria is in place, it is the National Board of Health and Welfare's assessment that treatment with GnRH analogue may be given in exceptional cases, in accordance with the updated criteria in the medical guidelines.

Reasons for the recommendation

At present, no certain conclusions can be drawn about the efficacy and safety of this treatment for young people with gender dysphoria based on existing scientific evidence. There is a small number of studies and most have small numbers of participants and lack comparison groups. For further information, see separate appendix *Knowledge base with methods description.*

For population of adolescents with gender dysphoria as a whole, the National Board of Health and Welfare currently concludes that the risks of treatment with a GnRH analogue are likely to outweigh the benefits of treatment. The basis for this assessment is presented in the section *New recommendations for hormonal treatment - basis and consequences*. The basis for the recommendation to provide treatment with GnRH analogues in the context of research is also presented in the section *New recommendations for hormonal treatment - basis and consequences*.

The basis for the criteria in the guidelines for young people who have reached Tanner stage 3 is experience-based knowledge documented in scientific publications of the "Dutch protocol" [5, 7, 79, 101], the clinical experience of the participating experts and ethical considerations.

The basis for excluding young people in Tanner stage 2 in the recommendation, who are covered under the "Dutch protocol", is the assessment of the participating experts that the adolescent needs time to be exposed to endogenous puberty before starting treatment, which is in line with ethical considerations.

The criteria used in the guidelines for young people who have reached Tanner stage 4-5 are based on the experience of the participating experts.

For information about how experience-based knowledge was gathered and otherwise implemented, see the separate appendix *Knowledge base with methods description*.

Decision support - guidance on treatment decisions

Criteria to consider for adolescent in Tanner Stage 3

- Basic conditions of thorough diagnostic evaluation, multidisciplinary decision-making, consent from guardians, provision of information, and expected benefit/risk assessment are met.
- The adolescent has a stable psychosocial situation and there are no factors that obscure the certainty of the clinical assessments (neuropsychiatric or intellectual disability, untreated psychiatric problems including suicidal risk and trauma, substance use).
- Gender incongruence has existed since childhood and gender identity has remained stable over time.[43] There is a lack of evidence about how long gender incongruence should have existed; a UK publication from 2021 has set the limit at a minimum of 5 years [102].
- The onset and progression of puberty has brought clear suffering.
- DSM-5 diagnostic criteria for gender dysphoria (302.85) are met.

[43] The Dutch protocol was developed for young people with binary (“cross-gender”) gender identities.

- The adolescent should be between 12 and 15 years old. In a Dutch publication reflecting the "Dutch protocol", treatment with GnRH-analogue was started on average at 14.75 years of age (SD=1.92, range 11.3-18.6) [103]. During the guidelines update process, comments were received both that 12 years is too low a cut-off, and that treatment with extended follow-up may in exceptional cases be justified before the age of 12.

Criteria to consider for adolescents in Tanner stage 4-5

Treatment with GnRH analogue for adolescents whose gender incongruence or gender dysphoria does not appear in childhood but only at puberty is not described in publications of the "Dutch protocol." In the experience of the participating experts, the treatment can in some cases be deemed to be of great benefit, particularly for young people registered male at birth whose masculinization in later puberty makes it very difficult to pass as an adult.

In Sweden, for young people registered female at birth, progestins (low and moderate dosages) and combined contraceptive pills have in recent years become a first-line choice over GnRH analogues.

If treatment with GnRH analogue is offered at Tanner stage 4-5 as described above, then

- the basic prerequisites of thorough diagnostic evaluation, multidisciplinary decision-making, consent from guardians, provision of information, and expected benefit/risk assessment have been met
- DSM-5 diagnostic criteria for gender dysphoria (302.85) are met
- the adolescent, for ethical reasons, must have a stable psychosocial situation and there are no factors that obscure the certainty of the clinical assessments (neuropsychiatric or intellectual disability, untreated psychiatric problems including suicidal risk and trauma, substance use).

Criteria relating to the process

- Treatment with GnRH analogue requires that psychosocial support enabling open exploration of gender identity is provided in parallel. For further information, see sections *Support for young people and their families* and *Evaluation of young people with gender incongruence*.
- Treatment with GnRH analogue is initiated for a limited time. There is no evidence to indicate the maximum duration of treatment. A maximum period of 2-3 years has been mentioned during the update process.
- Adolescents and guardians have been informed about the possibilities, limitations, and uncertainties of fertility preservation measures, as well as about different gender-affirming treatments.
- Growth rate and expected final height are monitored during treatment, and follow-up is otherwise adjusted based on physical health considerations.

- Adolescents and guardians understand that adolescents sometimes choose to discontinue treatment (e.g., because their gender identity changes or because of side effects), that healthcare services sometimes deem that treatment must be discontinued (e.g., if absolute bone density decreases during treatment), and that treatment is not a promise of gender-affirming hormone treatment.

Physical health considerations and possible contraindications

- physical disease with risk of osteoporosis (DXA measurement before starting treatment, consultation with treating physician)
- ongoing cortisone treatment (assessment based on indication, dose, and duration of treatment, DXA measurement before starting treatment, consultation with treating physician)
- being severely overweight (watchful waiting, guidance on dietary habits and support for weight loss is provided as early as possible in the contact)
- other physical disease and ongoing treatments, e.g., malignant disease, catabolic conditions with significant loss of muscle mass (watchful waiting until the condition is stabilized consultation with treating physician).

Gender-affirming hormone treatment

Gender-affirming hormone treatment involves the administration of sex hormones to develop secondary sex characteristics in a feminizing direction (for those registered male at birth), or in a masculinizing direction (for those registered female at birth). When administered to adolescents with gender dysphoria who have not undergone full pubertal development due to previous puberty-suppressing treatment, gender-affirming hormone treatment is intended to induce pubertal development in accordance with one's gender identity. Hormone replacement with estrogen or testosterone often continues for life.

The treatment regimen differs for adolescents vs adults with gender dysphoria [55]. For adults, treatment starts at the full doses of testosterone and estrogen, respectively, while adolescents start treatment at lower doses that are gradually increased. As the dose of the cross-sex hormone is increased, GnRH analogue may be given in parallel to block the endogenous sex hormone.

Adults registered male at birth will continue to need medicines that inhibit the secretion of sex hormones by the congenital gonads, as long as the testicles are not surgically removed. Such "testosterone blockade" for adults is usually achieved with an anti-androgen drug. Adults registered female at birth do not usually need a similar drug in the future, as testosterone itself is often an effective block to estrogen production.

Expected benefit of the treatment

The aim of gender-affirming hormone treatment is to change the body to better reflect the person's gender identity, thereby reducing gender dysphoria and improving quality of life. The effects of treatment are dose-dependent and vary from person to person [104]. For adolescents registered female at birth, the following physical effects of testosterone treatment are expected [105]:

- lowered voice
- increased facial and body hair
- loss of ovulation and menstruation
- reduced breast tissue
- enlarged clitoris
- increased muscle mass
- reduced proportion of subcutaneous and body fat.

Androgenic alopecia (hair loss) can occur after long-term treatment with testosterone [104]. The androgenic effects on voice, facial and body hair become permanent after approximately six and 12 months of treatment, respectively [104]. Any effects on jaw, height and body proportions are irreversible, with the degree of effect depending, among other things, on the physical development of the adolescent at the start of treatment.

For adolescents registered male at birth, the following physical effects of estrogen treatment are expected [105]:

- breast growth
- reduced erectile function and sexual desire
- reduced testicle size and sperm production
- softer skin
- reduced (not eliminated) facial and body hair
- redistribution of body fat and increased ratio of body fat to muscle mass.

It takes about two years before maximum breast growth is achieved [104]. If treatment is stopped, some breast growth will remain permanent. Any effect on body height is irreversible, with the degree of effect depending on the physical development of the adolescent at the start of treatment.

Possible side effects and risks of the treatment

Oily skin and acne are side effects that can occur mainly during the first six months of testosterone treatment [104]. "Chafing" problems of a growing clitoris may also occur. Individuals registered male at birth may experience decreased sex drive resulting from estrogen treatment (due to the reduced testosterone levels) [105].

Gender-affirming treatment with both testosterone and estrogen has negative effects on reproductive ability. The extent of the effects and the extent to which reproductive

function can be restored if treatment is discontinued are currently unknown [105]. There is no guarantee that an adolescent undergoing fertility preservation will be able to become a genetic parent in the future either. For further information, see *Sexual and reproductive health.*

Individuals registered male at birth who are treated with estrogen are at increased risk of venous thrombosis [104, 105] (See also below on *Physical health considerations*).

Finally, there is a risk that the person may later wish to discontinue or reverse the effects of the treatment, for example because the effects were not as expected or because the person has changed their perception of their gender identity [3].

Recommendations

> Gender-affirming hormone treatment with testosterone or estrogen for adolescents with gender dysphoria should be provided in the context of research. Until a research study with ethics board approved inclusion and treatment criteria is in place, it is the National Board of Health and Welfare's assessment that gender-affirming hormone therapy can be given in exceptional cases, in accordance with the updated criteria in the guidelines.

Reasons for the recommendation

At present, no certain conclusions may be drawn about the efficacy and safety of the treatment for young people with gender dysphoria based on existing scientific evidence.

The studies are few in number, most have small numbers of participants and lack comparison groups. See further the section *Knowledge-base* in appendix 4.

For the group of adolescents with gender dysphoria as a whole, the National Board of Health and Welfare currently deems that the risks of cross-sex hormone therapy are likely to outweigh the benefits of the treatment. The basis for this assessment is presented in the section *New recommendations for hormonal treatment - basis and consequences*.

The basis for the recommendation to provide gender-affirming hormone treatment in the context of research is also presented in the section *New recommendations for hormonal treatment - basis and consequences*.

The basis for the decision support criteria is the evidence-based knowledge documented in scientific publications of the "Dutch protocol" [5, 79, 101], the clinical experience of participating experts, and ethical considerations. For information about how experience-based knowledge was obtained and

implementation in general, see the separate appendix *Knowledge base with methods description*.

Decision support - guidance on treatment decisions

Criteria to consider relating to the adolescent

- Basic prerequisites for thorough diagnostic evaluation, multidisciplinary decision, consent from guardians, provision of information, and risk/benefit assessment have been met.
- The adolescent has a stable psychosocial situation and there are no factors that obscure the certainty of the clinical assessments (neuropsychiatric or intellectual disability, untreated psychiatric problems including suicidal risk and trauma, substance use).
- Gender incongruence has existed since childhood. Gender identity has been stable over time and unchanged during treatment with GnRH-analog.[44]
- DSM-5 diagnostic criteria for gender dysphoria (302.85) are met.
- The adolescent has started to live socially in accordance with their gender identity.
- The adolescent demonstrates mental maturity, including a knowledge and understanding of the outcomes expected from gender-affirming hormone treatment, and from possible future gender-affirming surgery as well as the medical and social risks of the treatments.
- The adolescent is at least 16 years old.

Criteria relating to the process

- The adolescent and guardians are aware of the risk that reproductive capacity may be negatively affected by the treatment, and of the conditions for procurement of gametes for freezing.
- The adolescent understands that fertility preservation does not guarantee that they will be able to become a genetic parent in the future.
- Where fertility preservation measures are possible, the adolescent has been offered such measures.
- The adolescent understands the importance of adherence to treatment and that in adulthood there will be a need for continued regular contact with the endocrinologist and physical health examinations if necessary.

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[44] The Dutch protocol was developed for young people with binary ("cross-gender") gender identity. A pressing issue is to clarify the conditions under which adolescents with non-binary gender identity can be offered hormonal treatment in the context of research.

- Psychosocial support is offered when needed during treatment, for example, for changes in social interactions with the environment, or to manage mood swings and other side effects of medication. Sexual health counselling may also be needed (See the section *Sexual and reproductive health*).

Physical health considerations and possible contraindications

Some risks or medical conditions may be exacerbated by gender-affirming hormone treatment. Healthcare providers need to take these into account before starting hormone treatment. For example, for people registered male birth, it is important to consider thromboembolic risk and the risk of breast cancer before treatment with estrogen. For people registered female at birth, erythrocytosis and effects on the liver are important conditions to consider prior to testosterone treatment. For further information, see the SBU literature review (2022) on hormone therapy for adults with gender dysphoria [106].

Surgical treatment

Unlike aesthetic plastic surgery, surgical procedures for gender dysphoria are reconstructive in nature since they are performed on medical grounds. The procedures aim to adapt the body to the individual's gender identity, reducing the psychological distress caused by gender dysphoria and helping the individual to achieve a level of functioning as comparable as possible to that of cis-persons.

In light of comments received about a draft version of this section, the National Board of Health and Welfare would like to begin by describing the work that formed the basis for the update. The 2015 guidelines on the care of children and adolescents [1] contained recommendations on five different gender-affirming surgical procedures that required consideration: mastectomy, breast augmentation with implants, reduction of the larynx, liposuction of the hip, and facial surgical procedures.[45] In preparation for the update, the National Board of Health and Welfare identified the extent to which the five procedures have been performed for gender dysphoria before age 18, their expected benefits and risks, and the scientific and experience-based knowledge available when the recommendations were revised. The results of the survey for the five interventions and the ethical evaluation that was carried out are presented in the separate appendix *Knowledge base with methods description*.

Overall ethical analysis

As with gender-affirming hormone treatment, gender-affirming surgical procedures have profound and, in some cases, lifelong consequences for the individual. Many of the uncertainties that have prompted the agency's more restrictive recommendations on hormonal treatment for underage patients also apply to a great extent to gender-affirming surgical procedures.[46] The National Board of Health and Welfare's principal conclusion when revising the evidence base is that gender-affirming surgical procedures should not be performed before the age of 18.

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[45] See the chapter <*Introduction*> regarding age limits for gender affirmation treatments

[46] See the chapter <New recommendations for hormonal treatment - basis and consequences>

Ethical analysis of mastectomy and other procedures

The abovementioned survey revealed that 85 operations were performed before the age of 18 for the indication of gender dysphoria between 2004 and 2021; 84 of these are mastectomies and one was breast augmentation with implants.

Mastectomy involves the surgeon removing breast tissue to give the chest a masculine appearance. Often the surgeon also needs to adjust the size and position of the nipples.[47]

Participating experts have pointed out that the benefits of mastectomy may outweigh the risks of the procedure even in the case of a minor, particularly for those with a high level of breast-related distress and who have started gender-affirming hormone treatment with testosterone. The development of secondary sex characteristics such as beard growth and deep voice may in these cases cause difficulties in passing in accordance with the gender identity and cause additional suffering for the individual. A similar risk/benefit ratio has not been assessed for breast augmentation with implants or the other procedures included in the 2015 guidelines (See the appendix *Knowledge base with methods description*). Based on this background, the National Board of Health and Welfare has developed a recommendation and decision support for mastectomy procedures for gender dysphoria before the age of 18, but this has not been done for the other surgical procedures included in the 2015 guidelines.

Expected benefits of mastectomy

Mastectomy is often the first and sometimes only surgical procedure that people registered female at birth choose to undergo. The expected benefits of mastectomy are improved quality of life in terms of reduced personal suffering (gender dysphoria), increased ability to participate in social contexts and activities, and an increased ability to be perceived by others in accordance with one's gender identity. A qualitative study [107] found that for young trans-masculine people, breasts evoke strong negative emotions such as depression, anxiety, shame, and self-loathing. The dysphoria leads to avoidance of social contexts, can cause difficulties in carrying out daily activities such as schoolwork and makes it difficult to participate in physical exercise. The option of binding the breasts may enable participation in social contexts but is less effective in sports. Binding can also have negative physical consequences and has not been found to reduce gender dysphoria by itself [74, 107].

[47] Other indications for mastectomy are breast cancer and increased risk of breast cancer.

Possible side effects and risks of mastectomy

Serious complications that can occur include necrosis of nipples or residual breast tissue. Aesthetic problems such as asymmetries of the chest itself or the nipples may also occur, as well as visible scars that can sometimes widen. General surgical complications such as bleeding and infection may occur.

In the experience of the participating surgeons, the risk that it will not be possible to breastfeed a child after the procedure is high, but the magnitude of the risk varies depending on the surgical method used. Nipple sensation is adversely affected by transplantation and often disappears completely.

Finally, relating to gender dysphoria, there is a risk that the person may later wish to reverse the effects of the treatment, for example because of a change in their perception of their gender identity [3], and that this is not deemed possible to prioritize or to implement properly by the health care system. The feasibility of reversing the effects of mastectomy with breast implants for an individual case can only be predicted once the mastectomy has healed and other medical factors are known. General plastic surgical considerations are that previous scarring of skin in the surgical area, poorer tissue quality, and the risk of tissue deficit together impair the chances of successful tissue expansion. Reduced and displaced nipples will usually not be able to be repositioned without a further tissue deficit, which adversely affects the shape of the breasts. All in all, this makes it very difficult to achieve a good result with implants after mastectomy with nipple grafting.

Recommendation

> Mastectomy for adolescents with gender dysphoria should be carried out within the framework of research. Until a research study with ethically tested inclusion and treatment criteria is established, the National Board of Health and Welfare's assessment is that mastectomy can be offered in exceptional cases, for adolescents who meet the updated guidelines criteria for gender-affirming hormone treatment.

Reasons for the recommendation

At present, no definitive conclusions can be drawn about the efficacy and safety of mastectomy for young people with gender dysphoria based on existing scientific studies. For further information, see *Knowledge base with methods description.*

For the population of adolescents with gender dysphoria as a whole, the National Board of Health and Welfare currently deems that the risks of mastectomy are likely

to outweigh the benefits of the procedure. The basis for this assessment is presented in the introduction to this section.

The basis for the recommendation to offer mastectomy before age 18 in the context of research is the need to improve knowledge about the outcomes of treatment. Given the new knowledge and uncertainties described in previous sections, there is also a need to ensure that all relevant information is communicated to guardians and young people, and that consent is obtained before treatment is provided.

The basis for the decision support criteria is the evidence-based knowledge documented in scientific publications of the "Dutch protocol" [5, 6, 108, 109], the clinical experience of participating experts, and ethical considerations. See the separate appendix *Knowledge-base with methods description*. The documented, step-by-step approach of the Dutch protocol - where puberty-suppressing treatment, gender-affirming hormones and surgical interventions have been offered to adolescents according to clearly described criteria and where follow-up over time is documented - represents the best available knowledge and should therefore be used.

As for testosterone treatment more generally, according to the experience of the experts involved, it has relatively little impact on the plastic surgery outcome of mastectomy. However, according to the participating experts, it cannot be excluded that a period of hormone treatment for people with small to medium-sized breasts may reduce breast volume sufficiently to allow mastectomy to be performed in a way that leaves less scarring. Another reason for waiting until the testosterone has had time to take effect is to allow the person to adjust to the changes brought about by the hormone treatment. These conditions are highly variable and the benefit of waiting needs to be weighed against the suffering caused to the individual when the effects of hormone treatment become noticeable, and the breasts are difficult to conceal.

Adolescents who meet the criteria for hormone therapy but are unable to start it for any reason also need to be offered mastectomy if the other conditions are met.

Decision support - guidance on treatment decisions

Criteria to consider relating to the adolescent

- Basic prerequisites for thorough diagnostic evaluation, multidisciplinary decision, consent from guardians, provision of information, and risk/benefit assessment have been met. Clarifications on multidisciplinary assessment and information provision specific to mastectomy are provided at the end of the section.
- The adolescent has clear suffering linked to the breasts.

- The adolescent meets the guidelines criteria for gender-affirming hormone treatment (See *Gender-affirming hormone treatment - decision support*).
- In order to prevent the remaining mammary gland from growing and requiring a secondary operation, it is desirable that breast development is completed at the time of the mastectomy.

Criteria relating to the process

- The plastic surgeon has made sure that the adolescent has understood what the procedure entails and has realistic expectations of the results. As part of this, the surgeon has shown images of post-mastectomy surgical results in which the physical conditions match those of the patient as closely as possible, and which include both good and suboptimal results.
- In accordance with general plastic surgery considerations in public health, a BMI ≤ 30 and non-smoking before the procedure is recommended, to reduce the risk of complications during the healing process and for optimal plastic surgery outcomes. When justified, weight loss and smoking cessation have been supported prior to surgery.
- If the medical history has revealed risk for heritable breast cancer, the adolescent has been informed that the risk is not completely eliminated after the procedure, and that self-examination for breast cancer can sometimes be made more difficult due to scarring. In cases of a strongly increased risk of breast cancer, an in-depth oncological assessment is needed. The mastectomy will then be more complete than is usual in cases of gender dysphoria and is performed generally in the same way as a prophylactic mastectomy for cis-women.[48]

Physical health considerations and possible contraindications

- bleeding disorders, obesity, and smoking
- ongoing pregnancy or attempt to become pregnant
- other serious illness that increases the risk of complications
- medical conditions that pose an increased risk during surgery/anesthesia.

Multidisciplinary assessment

Unlike the diagnostic and child psychiatric evaluation and the hormonal treatment of gender dysphoria, mastectomy is not included among the care measures defined as

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[48] The current version of *Good Care of Adults with Gender Dysphoria* (2015) recommends general breast cancer screening only for people registered female at birth who have intact breasts (pp 80–81).

national highly specialized care, but shall remain with the regions.[49] Forms of collaboration between the national units and surgical units in the home regions need to be developed to allow multidisciplinary assessments for this intervention for both adolescents and adults with gender dysphoria—a process that to date has often been lacking, according to participating surgeons. Continuity of contact, where surgeons and teams familiarize themselves with one another's assessments, is described as crucial to building a trusting, collegial network where indications and specific patients may be discussed.

For example, private health care providers who receive a request to perform mastectomy must assess whether the desired operation is part of a gender-affirming treatment (and thus is to be considered as healthcare with the relevant regulation in HSL, PSL, PL), [xix] or whether it is desired for purely aesthetic reasons. In the latter case, the procedure is instead regulated by the act (2021:363) on aesthetic surgical procedures and aesthetic injection treatments and is then not allowed before age 18. However, even in such a case, other requirements apply, including the requirements in the HSL[xx] that the procedure must be conducted in such a way that the requirements of Good Care are met and that the PSL[xxi] apply (see §§ 5 and 6). Based on the requirement in Section 6, Section 1 PSL that healthcare personnel must perform their work in accordance with science and proven experience, and that a patient must be given expert and caring treatment that meets these requirements, it is very reasonable that private health care providers who have not examined the patient themselves consult the evaluation team in order to decide whether mastectomy should be offered as part of gender-affirming care.[50]

Information that enables an informed decision

Provisions describing the healthcare system's information obligations may be found in Section 3 of the Patient Act. The person providing the information must, to the extent possible, ensure that the recipient has understood the content and significance of the information provided (Section 3, Section 7 of the Patient Act). When the patient is a child, the child's guardians must also be informed.[51] See also the corresponding text section in the section on *Hormonal treatment for gender dysphoria in adolescents*.

The adolescent needs to be informed about the operation with sufficient time to be able to consider and reflect on it. It is important that there is enough time for the discussion with the plastic surgeon. This may also mean that the information

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[49] https://www.socialstyrelsen.se/globalassets/sharepoint-dokument/dokument-webb/ovrigt/nationell-hogspecialiserad-vard-konsdysfori-beslut.pdf

[50] Please note that there may be rules about confidentiality and secrecy that must be considered here.

[51] Chapter 3, Section 3 of the Patient Act.

sometimes needs to be given on repeated occasions. At the consultation, the adolescent and guardians are given information about:

- different surgical techniques in relation to the adolescent's individual characteristics
- advantages and disadvantages of each technique
- typical risks and potential complications of the different techniques.

At this consultation, it is also important to discuss the operation itself and give the adolescent the opportunity to ask questions and discuss aftercare in detail.

As young adults sometimes detransition and wish to reverse the effects of the operation [3], surgeons also need to clarify that it is not possible to determine in advance what the medical conditions for restoring the effects of mastectomy with breast implants will be in an individual patient's case, and whether such surgery will be offered to the individual as part of public healthcare.

Sexual and reproductive health

Sexual and reproductive health is a state of physical, emotional, psychological, and social well-being in relation to all aspects of sexuality and reproduction, and not merely the absence of disease, dysfunction, or injury [110].

Discussions about sexuality take place in several situations during the evaluation of adolescents with gender dysphoria; for example, in connection with exploring gender identity and while providing information about how treatment with sex hormones can affect issues such as sexual desire. An adolescent who is about to start hormonal treatment should also be informed about how the treatment may affect their chances of becoming a genetic parent in the future (See also *Hormonal treatment for gender dysphoria in adolescents*).

In addition, adolescent may have their own needs for sexology counselling, depending in part on their level of maturity and whether they have begun to engage in sexual relations. Some adolescents feel comfortable discussing their sexuality with others. Others do not, which is important to respect. The treating professional needs to be open to discussing sexology issues without forcing the adolescent to talk about them.

Sexology counseling and treatment

Adolescents with gender dysphoria may need to discuss their sexuality with a professional, such as a sexologist or other person with sexology competence. As with other adolescents, there is a wide range of sexual identities, sexual practices, and sexual problems among adolescents with gender dysphoria. Issues of sexuality specific to people with gender dysphoria may include management of gender dysphoria in a sexual relationship and changes in sexual orientation or sexual preferences as part of the exploration of gender identity. Other examples of topics to be addressed in sexology counselling and treatment may include:

- relationships and emotions
- violence and sexual abuse
- what characterizes good romantic or sexual relationships, such as being affirmed in one's gender identity
- sexual dysfunction
- how unwanted pregnancy can be prevented
- that hormonal contraceptives may be a treatment option for people who primarily experience menstruation dysphoria
- that cross-sex hormone treatment is not a safe contraceptive method
- how to prevent the transmission of HIV and other sexually transmitted diseases
- information about HPV vaccination.

Adolescents who are about to start or have started hormonal treatment may need to discuss the effects this may have on sexual function and desire. The biological changes brought about by the treatment may require support around the ability to feel pleasure and to enjoy sexuality.

Discussing sexuality and sexology issues with adolescents with gender dysphoria places special demands on professionals. It is essential to use respectful and inclusive language based on the terms preferred by the adolescent if there are such preferences, or to suggest alternatives if the adolescent feels uncomfortable with traditional expressions.

When working with adolescents, it is particularly important that the professional shows sensitivity to and has competence in responding to experiences of sexual vulnerability, which may be more common among transgender people than among Swedish adolescents in general [33].

If sexology expertise is lacking within the team, or if these issues are not given sufficient attention during the evaluation or gender-affirming treatment, the adolescent should be referred to alternative care services, such as a sex and sexuality clinic with specific expertise in dealing with people with gender dysphoria. This may also offer the possibility of a gynecological or andrological check-up and testing, the procedures that require a special approach from the treating provider. Local youth centers may also have staff with sexology expertise. In larger towns, there may be clinics that work specifically with people who have had sex for compensation or who have lived with other forms of sexual vulnerability.

Recommendation

> Healthcare services should offer sexology counselling and treatment to adolescents with gender dysphoria.

Reasons for the recommendation

According to the National Board of Health and Welfare's recommendation, the healthcare system should offer individualized sexology counselling and treatment to adolescents with gender dysphoria who want it. Such counselling or treatment should be adapted over time and take into account the unique social and medical conditions of the adolescent.

The scientific evidence is insufficient to assess the efficacy and safety of the measure. According to the experience of the participating experts, the measure contributes to an improved quality of life while not entailing any direct risks.

It is important that the counselor is a professional with specialist knowledge in the field. Where possible, counselling should be provided by the evaluation or treatment team. Otherwise, the adolescent should be referred to clinics and practitioners with experience and knowledge of the issues involved and of gender dysphoria. The local youth center is often a valuable resource in this context. In larger towns, there are sometimes clinics that work specifically with people who are or have been sexually vulnerable.

Fertility preservation measures

Fertility preservation is offered to people at risk of fertility problems related to medical treatment. These are usually various cancer treatments but also include other treatments, such as gender-affirming hormonal treatment for gender dysphoria.

In the section *Hormonal treatment for gender dysphoria in adolescents*, it is stated that one criterion for offering GnRH analogue is that the adolescent and guardian have been informed about the possibilities, limitations, and uncertainties of fertility preservation (See below *Fertility preservation that may be relevant for adolescents*). In order to offer gender-affirming hormone treatment with testosterone or estrogen to adolescents with gender dysphoria, the following criteria related to fertility should be met:

- The adolescent and the guardians are aware of the risk that reproductive capacity may be negatively affected by the treatment, and of the conditions for the procurement of gametes for freezing.
- The adolescent understands that fertility preservation is not a guarantee of becoming a genetic parent in the future.
- Where fertility preservation measures are possible, the adolescent has been offered such measures.

Information that enables an informed decision

According to the Patient Act, a patient must be given information about aspects such as their state of health, the methods available for evaluation, care and treatment, the expected course of care and treatment, significant risks of complications and side effects, aftercare, and methods of preventing illness or injury. When the patient is a child, the information must also be given to the child's guardians.

It is, therefore, important that adolescents with gender dysphoria and their caregivers are informed and counseled about the impact of puberty blockers and cross-sex hormones on the adolescent's future fertility before initiating hormone treatment. That also includes information about the possibilities and current limitations of healthcare services to help people become genetic parents.

Impact of GnRH analogue treatment on fertility

Available treatment studies and clinical experience suggest that menstruation in girls treated with *central precocious puberty* (CPP i.e., puberty onset before 8 years of age in girls and before 9 years of age in boys) returns on average one year after GnRH analogue treatment is discontinued but may take as long as two years. Longer time to menstruation at discontinuation or after completion of treatment can be expected if treatment is started before menarche has occurred [95]. The few existing small studies of boys with CPP suggest that testosterone levels and testicular volume is recovered one year after completion of treatment, and that full pubertal development is attained by the late teenage years [96].

Impact on fertility of treatment with gender-affirming hormone

In adolescent and adults, sperm quality (e.g., number, motility) seems to be negatively affected by cross-sex hormone treatment [98-100, 111]. A 2021 Swedish study also shows that sperm quality in trans women who have received gender-affirming hormone treatment is worse than in trans women who have not received such therapy [112].

Suspension of hormone treatment seems to be able to restore sperm quality, but there is no clear evidence to say how long the suspension should be. Based on the fact that the formation of mature sperm in spermatogenesis in cis men takes about three months, a systematic review suggests this as the minimum-time limit for the interruption of cross-sex hormone therapy, in order to avoid adverse effects [100].

Furthermore, cross-sex hormone treatment with testosterone seems to have a negative impact on egg follicle maturation [111]. The length of time before menstruation returns after cessation of testosterone treatment appears to vary [99, 100]. The extent to which the effect of testosterone on reproductive organs and function is reversible or irreversible is unclear in the current state of knowledge, although there are self-reported cases where the effect appears to be reversible. However, information from longer-term follow-up is lacking [113].

Fertility preservation measures that may be relevant for young people

Fertility preservation in the context of gender-affirming hormone treatment is described in several systematic reviews [98-100, 111, 113], for further information see the separate appendix *Knowledge base with methods description*. It concerns different ways of obtaining and preserving gametes for possible future use in assisted conception. These procedures may also be relevant for young people.

For young people treated with GnRH analogues in early puberty, there are clear difficulties in offering fertility preservation, especially for those registered female at birth who have not yet had menarche [98-100]. According to the experts involved in the development of the guidelines, there are often both psychological and physiological difficulties for young people registered male at birth to produce semen samples for freezing.

Even when gametes can be procured, other conditions need to be in place later to achieve a pregnancy, such as a partner and/or a donor of opposite gametes, and access to various assisted conception methods. Retrieved gametes must be fertilized, an embryo created and developed and successfully implanted in the uterus. Assisted conception also involves legal provisions that may have an impact on the possibility of using procured gametes in practice (See separate section below). There is no guarantee that a person who has undergone fertility preservation treatment will be able to become a genetic parent in the future.

Sperm retrieval in the context of gender-affirming hormone treatment

For persons registered male at birth, sperm freezing is the most established fertility preservation measure [98-100, 111, 113] and may also be relevant for young people in the context of gender-affirming hormone treatment. A basic prerequisite for the possibility of sperm freezing is that the person has reached puberty and, normally, that the person is able to provide a sperm sample through masturbation [98-100].

Sperm can be preserved and frozen before, during, or after a certain period of suspension of treatment with cross-sex hormones [100, 111, 112]. A suspension of gender-affirming treatment may however produce undesirable masculinizing effects [100]. For young transwomen, there may be concerns about having to pause the gender-affirming treatment as well as psychological barriers to masturbating to produce sperm [98].

Egg retrieval in the context of gender-affirming hormone treatment

For people registered female at birth, it is possible to retrieve and freeze unfertilized eggs for possible later use in assisted conception. This may also be relevant for teenagers (after menarche) in the context of gender-affirming hormone treatment.

For example, freezing unfertilized eggs can be done in women who have cancer and where treatment could be harmful to the ovaries and eggs, or due to gender-affirming treatment. In Sweden to date, there have been relatively few unfertilized eggs that were frozen, and later thawed, fertilized, and transferred (in 2019, there were about 100 embryo retransfers, of which a dozen resulted in birth) [114]. According to a 2019 Swedish study [115], the trend among teenagers offered fertility preservation

for various medical reasons is that increasing numbers are opting for egg retrieval and freezing.

The egg retrieval procedure is an established practice for cis-women undergoing in vitro fertilization (IVF). The treatment is demanding, including stimulation with hormones, transvaginal ultrasound, and transvaginal retrieval of eggs from the ovaries. The treatment can potentially be perceived as even more challenging in trans men, and it may reinforce gender dysphoria [100, 116]. The same may be true for people with non-binary gender identity.

Egg retrieval can take place before testosterone treatment, or after a certain period of time off from the treatment [98-100, 111, 113]. However, a break in ongoing testosterone treatment may contribute to increased gender dysphoria in trans men, so early egg retrieval before starting any cross-sex hormone treatment may be preferable [111].

One option to discuss with young people registered female at birth before the initiation of gender-affirming hormone therapy, is the possibility of suspending testosterone treatment later in life in order to go through pregnancy. Trans men can potentially choose to undergo pregnancy either before or after testosterone treatment [99, 100].

Experiences of hormonal stimulation and egg retrieval among trans men

In a 2017 Swedish study [116], 15 trans men aged 19-35 years were interviewed about experiences of fertility preservation (hormonal stimulation and extraction of eggs for freezing). For people who needed to interrupt their testosterone treatment, this could be seen as draining and mentally stressful, as they felt, among other things, that their bodies became more feminine and their voices higher. People who experienced menstrual bleeding after discontinuing testosterone treatment found this to be one of the most difficult parts of fertility treatment, as the bleeding reminded them of something they did not want to be a part of (the gender they had left behind). A majority of the study participants reported that hormonal fertility treatment made them feel less comfortable with their bodies and that the treatment increased their gender dysphoria. Gynecological examinations, especially with transvaginal ultrasound, were perceived as uncomfortable situations because people felt that they were presenting themselves to others as women. The use of the wrong pronouns by the healthcare staff in this situation, referring to them as women, and the mention of gender-specific words such as egg and vagina were also perceived negatively. The same study also described different strategies that participants used to cope with the treatment, such as focusing on the purpose (i.e., the possibility of having genetic children in the future) and getting support from relatives during the treatment [116].

Legal conditions

Gametes (both eggs and sperm) can be frozen and stored for later use in fertility treatment (assisted reproduction). However, assisted fertilization can only be carried out in the Swedish healthcare system when the legal conditions for it are met. Assisted fertilization is regulated in Section 6 (insemination) and Section 7 (in vitro fertilization) of the Genetic Integrity Act (2006:351) and the National Board of Health and Welfare's regulations and general advice (SOSFS 2009:32) on the use of tissues and cells in healthcare and clinical research. There is no regulation stating how long unfertilized eggs or sperm may be kept frozen.

Since January 1, 2019, assisted fertilization with double donation is also allowed in Sweden, which means that both eggs and sperm are donated to the same recipient.

Recommendation

> Healthcare services should offer fertility preservation procedures to adolescents with gender dysphoria who are to undergo treatment that may adversely affect fertility, whenever possible based on the individual circumstances of the adolescent. This is provided on the condition that the young person requests these procedures after having received information on the impact of the treatment on fertility, its possibilities, and limitations.

Reasons for the recommendation

The procedure is primarily justified by ethical considerations and should be seen as part of providing equitable care to all patient groups undergoing treatment that may adversely affect fertility.

The scientific evidence is insufficient to assess the impact of fertility preservation procedures in terms of the rate of pregnancies or births, when offered to adolescents with gender dysphoria. However, egg and sperm retrieval for assisted fertilization is an established practice in other patient populations and can be expected to offer the possibility of genetic parenthood for people being treated for gender dysphoria as well. For further information, see the separate appendix *Knowledge base with methods description*.

Voice and communication treatment

Voice and modes of communication play a central role in how people's gender expressions are perceived. For adolescents with gender dysphoria, the voice can be a factor that makes it more difficult to be perceived in accordance with their gender identities. This can cause great distress and lead to reduced quality of life [117]. The voice sending the wrong message about gender identity and/or creating uncertainty about how others perceive an individual can lead to anxiety, insecurity, and avoidance of speaking in different contexts. Therefore, adolescents with gender dysphoria may need help to adapt and develop their voices to match their gender identities.

The needs and goals of voice and communication treatment vary between individuals. Some aim to develop their voice and communication in a feminizing or masculinizing direction to the full extent possible, while others, for example those with a non-binary gender identity, may aim to be perceived as more gender-neutral.

Considerations during evaluation and treatment

The overall goals of gender-affirming voice treatment are to reduce adolescents' voice dysphoria, enable them to speak in a way they feel is comfortable, use their voices in the situations they choose and are able to use a favorable voice technique that does not fatigue the voice.

Pretreatment assessment includes taking a history and mapping the person's voice, speech, and communication. Voice and speech are recorded according to a standardized procedure and then analyzed perceptually (via listener assessment) and acoustically. Self-assessment questionnaires are used to document the person's subjective perception of their voice, how it works and any voice problems. Individual, realistic, and relevant treatment goals are established with the person based on their needs and circumstances. When indicated, the speech therapist may refer the patient to a voice specialist for vocal cord testing.

Speech therapy is not provided until the adolescent has been assessed and diagnosed with gender dysphoria. In cases where the diagnosis is not established but is preliminary, referrals may be made by the assessment team to a speech therapist, who will then meet with the person for information and counseling. It is desirable that adolescents registered female at birth are in contact with a speech therapist before starting testosterone treatment for information and documentation of voice [118].

Speech therapists who assess and treat people with gender dysphoria should, according to Swedish experts in the field, have at least two years of experience in speech therapy and documented competence in the field of gender dysphoria [119, 120].

Speech therapy

Speech therapy for people with gender dysphoria aims to help the person achieve a voice that better corresponds to their gender identity and to prevent and reduce voice problems. Treatment goals include several aspects such as changes in vocal pitch, resonance/voice tone, intonation/ melodic phrasing, and articulation [121-125]. Indications for speech therapy are:

- When the voice of trans people registered male at birth, who want the voice to be perceived in accordance with their gender identity, is perceived as too low and the voice tone/resonance too dark. The person may also have difficulty adjusting other aspects of voice and communication. In some cases, the person already speaks in a higher/more feminine voice, but the lower/deeper voice is temporarily noticeable, e.g., raspy, or coarse when coughing or laughing.
- When the voice of a trans person who was registered female at birth and wants the voice to be perceived in accordance with the gender identity is perceived as too high-pitched and the voice tone/resonance too bright. The person may also have difficulty adjusting other aspects of voice and communication. In the case of cross-sex hormone treatment with testosterone, vocal pitch lowers. Other aspects such as resonance, intonation, and articulation are not affected. In cases where the effect on voice is not sufficient, or a person is not treated with testosterone, or a person needs support to change resonance/intonation/articulation, gender-affirming voice treatment is an option.
- When people (both transgender people registered female at birth and transgender people registered male at birth) find it tiring to use their voice in the desired way and symptoms such as voice fatigue (so-called phonasthenia) occur. The voice may sound tense, hoarse, weak, unstable, and pressured.

Content, format, and duration of the treatment

There is no standardized model for the design of gender-affirming speech therapy, but several techniques and programs have been described for adults [121-125]. Speech therapy for adolescents addresses the same aspects of voice, speech, and communication as for adults. Treatment goals are primarily concerned with changing the tone of voice, but this is not enough to make a voice consistent with gender identity. Other variables also need to be changed, such as resonance/voice tone, vocal strength, intonation/sentence melody, and articulation.

Vocal pitch depends on the rate of oscillation of the vocal cords, which gives the pitch frequency, and is measured in Hertz (Hz). An adult cis-man speaks in a vocal pitch averaging 116 Hz (+/- 15 Hz) and an adult cis-woman 188 Hz (+/-20 Hz) during reading [126]. Studies have shown that individuals registered male at birth need to raise their voice pitch to about 160 Hz for the voice to be perceived by others as a woman speaking [127].

Gender-affirming voice therapy is usually done on an individual basis and can consist of a single visit with counselling or a longer period of treatment. Shorter treatment periods may be appropriate when the person has only phonesthetic [voice fatigue] problems.

All or part of the treatment can take place via digital meetings. Group treatment may also be appropriate, usually after an initial period of individual treatment. The frequency and duration of treatment, as well as the design and goals of the treatment, are determined by the needs, circumstances, and motivation of the adolescent. A treatment period is rarely longer than the number of treatment sessions described below.

- For adolescents registered male at birth who have received GnRH analogue treatment, pubertal development in the masculine direction is halted. GnRH analogue thus prevents masculinization of the voice. In general, less adaptation of the voice is required among these adolescents. For those who have undergone a voice break and wish their voice to be consistent with their gender identity, voice treatment is often needed on a regular basis over a longer period of time, with about 10-15 treatment sessions.
- For adolescents registered gender female at birth who wish their voice to be consistent with their gender identity and who are not treated with testosterone, or where the effect of testosterone is not perceived as sufficient, voice therapy is often recommended on a regular basis with about 5-10 treatment sessions. Gender-affirming speech therapy cannot replace the effect of hormone treatment, i.e., it cannot lower the voice as much as testosterone treatment.
- For adolescents (both adolescents registered male and those registered female at birth) who are satisfied with the gender expression of their voice, but who need treatment for other voice problems, a shorter treatment period of about five treatment sessions is offered. This may be the case, for example, when adolescents registered female at birth develop problems such as hoarseness, unstable voice, or difficulty increasing vocal strength during testosterone treatment [128], or adolescents registered male at birth who have developed their voice on their own so that they are satisfied with their gender expression but become hoarse and vocally fatigued when they speak.

In all cases, adolescents are required to practice on their own between sessions with a speech therapist.

Follow-up

Follow-up takes place six months after the end of the speech therapy, and thereafter as needed.

Persons registered female at birth undergoing testosterone therapy are followed for up six to twelve months after starting hormone treatment [128].

Recommendation

> Adolescents with a preliminary or confirmed diagnosis of gender dysphoria speech therapy should be offered a consultation with a speech therapist, and, if necessary, healthcare services should provide gender-affirming speech therapy treatment.

Reasons for the recommendation

A voice that is perceived as too masculine or feminine for the person to be perceived in accordance with their gender identity causes great suffering and a reduction in quality of life. Furthermore, issues related to phonasthenia [voice fatigue] can occur when the voice is used to reflect the gender identity. In these cases, healthcare services should offer a consultation with a speech therapist and, if necessary, provide speech therapy to adolescents with a preliminary or confirmed diagnosis of gender dysphoria. The condition may have been coded as F64.0, F64.8 or F64.9 according to ICD-10.

The scientific evidence is insufficient to assess the efficacy and safety of this intervention. In the experience of the participating experts, this intervention contributes to a better correspondence between vocal pitch and tone and gender identity and thus to a reduction in gender dysphoria, a reduction in vocal strain, and an improvement in quality of life, while posing no direct risks.

The effects of the treatment are reversible and the risk of phonasthenia is considered less than when people try to change their voices on their own. For further information, see the separate appendix *Knowledge base with methods description*.

Hair Removal

For adolescents with gender dysphoria registered male at birth, facial and other visible body hair can make it difficult to be perceived by others in accordance with their gender identity. It may therefore be important to get help to remove such hair permanently where possible.

Light- and needle-based hair removal methods

Today, two main methods are used to permanently reduce unwanted body hair. These are:

- Light-based methods (photoepilation): intense pulsed light (IPL) and laser.
- Needle-based methods: electrolysis, diathermy, and blending.

The goal of these hair removal methods is to destroy the hair follicles that produce unwanted hair and thus achieve permanent hairlessness. All hair follicles produce hair in cycles of growth and inactivity. Only hair follicles in the growth phase are susceptible to the damage attempted by the various hair removal methods. One course of treatment will therefore at most be able to destroy a proportion of the patient's unwanted hairs. The time between treatments depends on the length of the growth phase in the skin area in question. In clinical experience, between 5 to 10 regular treatments at least 4 to 8 weeks apart are usually required to reach all hair follicles in the treated area. The hairs that remain in the treatment area may sometimes be perceived as lighter and thinner.

Both light- and needle-based methods require a practitioner with sufficient skills and experience. This is especially true for needle epilation, which requires great craftsmanship to target the hair follicle correctly. Requirements for qualifications and professional competence of the practitioner of IPL and laser treatments are set out in the standard for aesthetic medical services[52].

Light-based methods - IPL and laser

Light-based hair removal means that the practitioner selects a wavelength of light that rapidly heats and destroys the pigment (melanin) present in the hair without affecting surrounding tissue (selective photothermolysis). Photoepilation can be done with IPL or with lasers of different wavelengths (alexandrite lasers, diode lasers, Nd:YAG

[52] 7 Standard SS-EN 16844:2017 Aesthetic medical services - Non-surgical medical procedures

lasers and ruby lasers). IPL uses a spectrum of light, while lasers use a specific wavelength. The practitioner chooses the IPL or laser and settings that are appropriate based on the patient's individual characteristics such as skin color, hair color, and hair thickness. In addition to the choice of laser type, parameters such as treatment area, pulse length, total energy, and type of cooling vary between devices and can be set manually according to the patient's individual circumstances.

With light-based methods, relatively large areas of skin can be treated in a short time. The handpiece of the device is moved over the entire area where the hair is to be removed.

Needle-based methods - electrolysis, diathermy, and blending

Needle epilation electrolysis involves inserting a thin current-carrying needle into the hair follicle for a few minutes, causing a chemical reaction and damaging the follicle. The main disadvantage is that it is a slow method; the needle has to stay in the hair follicle for a long time, sometimes several minutes, and the treatment can be painful. Often several needles are used at the same time to speed up the process.

Diathermy needle aspiration [thermolysis] involves heating body tissue with a high frequency alternating current. The practitioner inserts a current-carrying needle into the hair follicle, turns on the current and pulls out the hair with tweezers. It is a faster method than electrolysis, but with a greater risk of scarring and pigmentation.

All variants of needle epilation are relatively slow because they treat each hair individually. A common way to make electrolysis treatment faster is to mix the technique with diathermy. The treatment is called a blend and combines the efficiency of electrolysis with the speed of diathermy.

Recommendation

> Healthcare services should offer removal of hair from the face and neck, front and back of the trunk, arms, and hands to adolescents with gender dysphoria and registered male at birth, using light or needle-based methods depending on the individual's circumstances.

Reasons for the recommendation

When individuals registered male at birth have body hair that is considered to be too masculine for the individual to be perceived in accordance with one’s gender identity, it causes great suffering and reduced quality of life. In these cases, healthcare services

should offer hair removal with methods aiming at permanent hairlessness on the face and upper body (neck, front and back of the trunk, arms, and hands).

There are a limited number of controlled studies investigating the efficacy and safety of light-based and needle-based methods in comparison to no treatment, placebo, or temporary hair removal methods (e.g., shaving, plucking). The results suggest that laser treatment can reduce hair growth by up to about 50 percentage points in the short term, up to six months after completion of treatment. The results are considered to have low reliability. Other effects cannot be assessed based on the evidence, i.e., effects of laser treatment on hair growth in the long term, effects of IPL and needle-based treatment on hair growth in the short and long term, and the effects on mental health and quality of life (all methods). For further information, see the separate appendix *Knowledge base with methods description.*

According to clinical experience, light and needle-based methods provide a reduction in hair growth that is more pronounced and more lasting than other methods. In the experience of the participating experts, this intervention contributes to a reduction in dysphoria, greater opportunities for the person to be perceived in accordance with gender identity and to improved quality of life. The most common side effects for both light- and needle-based methods are mild and transient, such as pigmentation, skin redness, and swelling. Structural skin changes occur less frequently and can in rare cases become permanent. For further information, see the separate appendix *Knowledge base with methods description.*

A basic prerequisite is that the method and its implementation are adapted to the individual's circumstances. For this to be possible, both light and needle-based methods must be available at the clinics where hair removal is performed.[53]

Considerations during treatment

For people who produce androgens, it takes longer to reduce the hair coverage sufficiently in hormone-sensitive areas. It is therefore advantageous if hormone therapy with estrogen and anti-androgens (alternatively with GnRH analogue for adolescents) has been initiated before hair removal is started.

Following careful assessment of the person's conditions, the healthcare service can offer light-based or needle-based methods or a combination of these methods. To the extent appropriate in the individual case, the patient should be offered light-based methods as these are more accessible and more time- and cost-efficient than needle-

[53] Hair removal is not included among the care measures defined as national highly specialized care and will continue to be the responsibility of the regions.

based methods (See description of implementation above). To be able to remove hair using IPL or laser, it is necessary that:

- the patient has melanin in their hair follicles. Red, gray, or white hair does not respond to light-based treatment, so needle epilation needs to be used in these cases.
- the patient has less pigment in the skin than in the hair follicles. Individuals with darker, more pigmented skin are more likely to suffer from pain, pigment disturbances, and blistering of the skin when hair is treated with light-based methods.
- the dose is high enough, the practitioner has chosen the correct pulse length, there is a large treatment area, and there is adequate cooling of the skin.

Expected degree of hair removal and follow-up treatment

The aim of hair removal is to remove as much hair as possible. Hair growth can vary on different parts of the body during different periods of life. For example, hair growth on the chest and back of people registered male at birth tends to increase up to middle age. Thus, even under optimal conditions, it may be difficult to permanently maintain the achieved hairlessness.

Ongoing interventions to maintain treatment results varies between individuals and depends on the degree of biological maturity reached by the individual. After completion of treatment, there may be a need for one to several treatments per year. If an individual who had not reached full biological maturity at the time of previous treatment experiences the emergence of new hair follicles that started to produce hair in previously treated areas, more treatments may be needed.

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