was similar between TW and CW (p=0,7284) and different in the comparison TWvsCM (p=0,0325). In TW group, the median of blood glucose was 84 mg / dL, HBA1c 5.1%, total cholesterol 146 mg / dL, HDLc 43 mg / dL, LDLc 89 mg / dL and triglycerides 81.5 mg / dL. In the comparison with other groups, there was no difference from the statistical point of view. It is necessary to emphasize the HDLc of TW (43 mg/dL) which was exactly the same of CM (p>0,999) and lower than CW (60 mg/dL)(p=0,0720). Systolic Blood Pressure (SBP)(mmHg) of TW (126±13) was higher than that of CW (95±11;p<0.001) and equal to that of CM (115±9;p=0.1489). Regards Diastolic Blood Pressure (DBP) (mmHg), the medians of TW, CW and CM were 80, 60 and 80, respectively, and in the comparison TWxCW p = 0.0070 and TWxCM p> 0.9999. **Discussion:** Youth TW (16.3 ± 1.4 yo) taking an average estradiol dose of 1.5 ± 1.0 mg/day, with an average AGHT duration of 12.3 ± 9.9 months matched to controls on age and BMI did have higher HDL than CW and TW participants were more insulin resistant than CM. About SBP of that youth TW (107 ± 12), it was lower than CW 113 ± 7 (p>0,05) and CM 116 ± 8 (p<0,001). Other previous study showed that after 6 months of estradiol use, in doses ranging from 2 to 8 mg daily glucose enhanced 6 mg/dL (from 86 to 92) as well as TC from 170 to 178 mg/dL, HDLc from 50 to 54 mg/dL, TGL from 102 to 115 mg/dL, and LDL did not change (93), while a systematic review and meta-analysis showed increased only in TG levels. SBP and DBP increased on average of 7,2 mmHg and 5,7 mmHg, respectively. **Conclusion:** Metabolic findings observed after the first few months of TW GAHT appear to remain at long term, except for HDLc. SBP and DBP appear to increase in the long term, after a drop initially observed.

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Case Report: Invasive Endometrial Cancer in a Trans Man and Risk of Testosterone Therapy

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Background: Only one case of uterine cancer in a trans man on testosterone is noted in literature prior to this case. No clinical evidence nor guidelines exist regarding testosterone therapy for this subset of patients.
Clinical Case: A 41-year-old trans man was seen by Gynecology for vaginal bleeding, with work-up revealing thickened endometrium and biopsy with endometrial adenocarcinoma. Testosterone therapy was held, and patient underwent total hysterectomy with BSO and bilateral pelvic/aortic lymph node dissection. Pathology demonstrated stage IIIA invasive adenocarcinoma, endometrium type with focal squamous differentiation, low grade. The tumor extended into the endocervical stroma with small metastasis to one ovary. He received adjunct pelvic radiation and sandwich chemotherapy with carboplatin and taxol. Concurrently, he was referred to Endocrinology for management of hormone replacement therapy (HRT). He originally started weekly testosterone injections and anastrozole at an outside facility in 2016 and underwent bilateral mastectomy in 2017. Testosterone was held perioperatively and during chemoradiation, for a total duration of 9 months. The patient experienced worsening gender dysphoria during this time. Discussion was held on goal to restart HRT in the setting of a theoretical risk of testosterone conversion to estradiol with increased risk of cancer recurrence; thus, patient initially chose to delay re-initiation of HRT. Following the completion of chemotherapy, he started on low-dose (30mg) weekly IM testosterone with plans for continued monitoring of testosterone and estradiol levels.
Conclusion: Research is needed in monitoring the effects of testosterone therapy on reproductive organs in patients assigned female at birth, and whether anastrozole therapy has protective effects for estrogen-driven cancers. Further, guidance is needed on monitoring of uterine lining in trans men and whether this should be standard of practice.

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Development of Hip Bone Geometry in Transgender Adolescents Resembles the Experienced Gender if GnRHa Treatment Is Started in Early, but Not Late, Puberty

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Bone geometry can be described in terms of periosteal and endocortical growth and is partly determined by sex steroids. Periosteal and endocortical apposition are thought to be regulated by testosterone and estrogen, respectively. Gender-affirming hormone (GAH) treatment with sex steroids in transgender people might affect bone geometry. However, in adult transgender people no change in bone geometry during GAH was observed. In this study, we investigated changes in bone geometry among transgender adolescents using a gonadotropin-releasing hormone agonist (GnRHa) and GAH prior to achieving peak bone mass. Transgender adolescents treated with GnRHa and subsequent GAH at our center before the age of 18 years were eligible for inclusion. Participants were grouped based on their Tanner stage at the start of GnRHa treatment and divided into early, mid, and late puberty groups. Hip Strength Analysis software calculating subperiosteal width (SPW) and endocortical diameter (ED) was applied to dual-energy X-ray absorptiometry scans performed at start of GnRHa and GAH treatments, and after ≥ 2 years of GAH treatment. Mixed model analyses were performed to study differences over time. Data were visually compared with reference values of the general population retrieved from the literature. A total of 322 participants were included, of whom 106 trans women and 216 trans men. In both trans women and trans men participants resembled the reference curve for SPW and ED of the experienced gender, but only when GnRHa was started during early puberty. Those who started during mid- and late puberty remained

within the reference curve of the gender assigned at birth. A possible explanation might be sought in the phenomenon of programming, which conceptualizes that stimuli during critical windows of development can have major consequences throughout one's lifespan. Therefore, this study adds insights into sex-specific bone geometry development during puberty of transgender adolescents treated with GnRHa, as well as the general population.

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Effect on Kidney Function During Gender Affirming Hormonal Treatment in Transgender Individuals

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Background: Accurate interpretation of laboratory values with sex-specific reference ranges presents a challenge in transgender individuals on gender affirming hormone therapy (GAHT). Creatinine (Cr), the most common marker used for kidney function, varies significantly with body mass and composition. Both Modification of Diet in Renal Disease (MDRD) and Chronic Kidney Disease Epidemiology Collaboration (CKD-Epi) equations account for sex in estimating glomerular filtration rate. GAHT can effect Cr values in 2 potential ways: 1) by causing changes in muscle mass and body fat redistribution as early as 3 months after GAHT initiation and 2) by direct effects of sex hormones on kidney function. Previous studies have shown Cr values approaching affirmed gender identity as early as 6 months when on GAHT without mention of sex steroid levels. In this study we sought to describe the changes in serum Cr after initiation of GAHT in an effort to better understand expected changes and interpretation of lab data in TG individuals.
Methods: A retrospective chart analysis on all adult TG patients initiated on GAHT at our institution from January 2011 to 2020 was completed. We reviewed demographics, baseline health information, body mass index, and lab values including Cr, sex hormone levels, A1C, and fasting blood glucose. Lab values were obtained prior to GAHT, at the start of GAHT, at 3, 6, and 12 months after GAHT. Matched pair testing was conducted with sex steroid levels and Cr values in transgender men (TM) on testosterone and transgender women (TW) on estradiol in order to compare the median pre GAHT Cr to median Cr levels at 3, 6, and 12 months.
Results: 84 TW with a median age of 30 and 24 TM with a median age of 23 were included for analysis. TW and TM had a low rate of existing kidney disease (4.9%, 0%), diabetes mellitus (4.8%, 0%), and hypertension (10.8%, 4.5%) respectively. TW on GAHT achieved a goal estradiol level (≥100 pg/ml) at a rate of 37.3%, 51.7%, and 71.1% and suppressed testosterone to a goal level (<60ng/ml) at a rate of 44.4%, 54.7%, and 76.5% at 3, 6, and 12 months respectively. There was no significant change in Cr values at 3 months, but significantly decreased on average by -0.07 (p<0.001) at 6 months, and by -0.09 (p<0.001) at 12 months. TM on GAHT achieved a goal testosterone level (≥240 ng/dl) at a rate of
64.3%, 80.0%, and 72.3% at 3, 6, and 12 months respectively. Cr values increased significantly on average by 0.14 (p=0.036) at 3 months, by 0.21 (p=0.004) at 6 months, and by 0.15 (p=0.003) at 12 months.
Conclusions: In TW on GAHT, clinicians can consider using affirmed gender Cr reference ranges as early as 6 months. Similarly in TM on GAHT, affirmed gender Cr reference ranges can be used as early at 3 months. It remains to be seen whether changes in Cr levels reflect changes in sex steroid levels or sex steroid direct effects. Additionally, research is needed to determine if change in Cr levels reflect true changes in GFR.

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First Evidence of Cardiopulmonary Adaptation to Physical Effort in Transgender Women After Long-Term Hormone Therapy: A Cross-Sectional Study

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Introduction: Cisgender men (CM) and women (CM) present different acute cardiopulmonary (CP) adaptation to effort. The smallest arteriovenous difference in oxygen (O2) and cardiac output (CO) in CW determine a lower maximum VO2 (VO2max) than CM. CP capacity adaptation to effort of TW undergoing gender-affirming hormone therapy (GAHT) was not yet reported. **Objective:** To evaluate CP capacity of TW in long-term GAHT. **Methods:** A cross-sectional study was carried out with 8 TW (average age of 34.0 ±4.8 yo), 8 CM and 8 CW matched on age, body mass index and activity level. All TW were non-gonadectomized subjects and were in estrogen [transdermal estradiol (n=2), oral estradiol (n=3) and conjugated estrogen (n=3)], plus cyproterone acetate (n=8) therapy in an average time of 15.6 ±8.7 years. Body composition was assessed by InBody 720, and participants' level of physical activity by IPAQ (International Physical Activity Questionnaire) short form. Total testosterone (ng/dL) levels of TW, CW and CM were 83,5 (12,0;637,0), 20,5 (12,0;41,0) and 480,5 (264,0;843,0), respectively. Hemoglobin levels of TW, CW and CM were 14,2 (13,5;14,9), 14,35 (12,8;14,7) and 15,35 (14,0;18,2), respectively. Everyone performed a CP exercise testing on a treadmill with an incremental effort. **Results:** Mean VO2max (L/min) in the group of TW was 2648±575.5, of CW 2128±394.0 and of CM 3235±554.0 (TWvsCW p=0.1311; TWvsCM p=0.0806; CWvsCM p=0.009). Free fat mass (FFM) of TW was 55.56±6.88 kg, CW 38.98±4,09 kg, and CM 64,98±6,29 kg (TWvsCW p<0,0001; TWvsCM p=0,024; CWvsCM p<0,0001). Analysis of VO2max/FFM (L/min/kg), TW´s rate was 46.6±6.2, CW´s was 54.6±8.4 and CM´s was