

MEMORANDUM

DATE: December 12, 2006
TO: Interested parties
FROM: Tom Waddell Health Center Transgender Team

We are happy to give you the most recent revision of our protocols. We are currently working under these protocols and have found them useful. Please review them. We would greatly appreciate your feedback as they are under regular review and revision. Please pass on this memo and protocols to others who are interested, and feel free to contact us if you have questions or comments.

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Tom Waddell Health Center
Protocols for Hormonal Reassignment of Gender

Revised 12/12/06

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I Introduction

Patients presenting to medical care with gender identity issues may require hormonal treatment to effect physical and physiological changes to make their bodies more congruent with their self-image. Standards for who is appropriate for treatment are outside of the scope of this document. In the last decade, the stringent (and for many, impossible) criteria that dominated the access to hormonal therapy is evolving to less rigid standards to reflect the social and economic realities of transgender individuals. The approach at TWHC has been to attempt to find a balance to address patients' health needs by providing excellent health care informed by harm reduction principles.

The purpose for writing these protocols is to share our experience with health providers and their patients on the best practices for prescribing hormones for patients with gender identity issues. These guidelines are based on the available evidence and our experience in treating over 1200 patients over the past 12 years. Unfortunately, studies of hormonal reassignment of gender have been few, and there is significant uncertainty in medical practice. It is therefore of utmost importance that we inform our patients of the risks and benefits of treatment, and of the aspects of treatment in which uncertainty exists.

I.A Background

Tom Waddell Health Center (TWHC) is a large community health center and health care for the homeless program operated by the San Francisco Department of Public Health (SFDPH). The mission of TWHC is to provide comprehensive health care for homeless people and other severely underserved individuals in our community. TWHC and the SFDPH operate under a harm reduction philosophy of care. Our aim is to optimize our patients' health and functioning and assist them in reducing harm in their lives. Health care is delivered using a comprehensive interdisciplinary team.

In November of 1994 TWHC established Transgender Tuesdays. The San Francisco Health Department acted in response to a combination of eagerness on the part of Tom Waddell Health Center and the concurrent urging of several allied community organizations (including the Tenderloin AIDS Resource Center, Brothers' Network, Asian AIDS Project—now API Wellness Center, Proyecto Contra-Sida Por Vida, FTM International) and individual community transgender activists.

The rationale that led to the creation of a clinic specifically for the transgender person: There exists a large group of individuals self-identified as transgenders who are at high risk for HIV transmission, are homeless or nearly homeless, and who are also in need of general primary care services. This group has historically been averse to accessing medical services for a number of reasons, including: prior negative experience in clinic settings, expectation of discriminatory treatment, the requirement of psychiatric treatment and, in some cases, reticence to reveal illegal occupational activities or undocumented immigration status.

Yet many in this group actively pursued hormones on a regular basis. A number obtained them on the street (often illegally imported) or from a few unscrupulous medical providers who administered drugs but did not monitor their patients' health or provide preventive services or treatment for other serious health conditions. Invasive procedures such as silicone-like injections

were available underground, in cases creating severe local tissue damage.

Transgender Tuesdays, our primary care transgender clinic, takes place on a weekday evening so as to be accessible to commercial sex workers and others in our inner-city Tenderloin location. Staffing includes registered nurses, nurse practitioners, physicians, eligibility workers, social workers, medical assistants, and volunteers. Our target population is underserved, self-defined transgender people (residents of San Francisco). We do not require patients to present documentation attesting to their transgender status. All prospective patients meet first with our nurse team leader who assesses health needs, identifies high-risk patients (e.g. those with immediate illness or homelessness) and orients and educates patients about how the clinic works. San Francisco residents are seen regardless of income and are placed on a low fee or free sliding scale if they meet poverty guidelines. Patients with private insurance or uninsured people from out of county may be directed to other sources of medical care. Preliminary blood tests are done as part of a standard intake and two follow up visits are scheduled—a psychosocial intake interview with a social worker and an initial medical provider visit.

We clarify that we are not a surgery clinic, nor do we provide psychiatric approval for surgery, and that hormones will not be prescribed on a first visit. Rather, that we are a Primary Care clinic, available for all general medical needs. We discourage outside hormone or “silicone” purchase or use, but do not turn patients away due to such use.

Prescribing hormones is at the discretion of the medical provider and is based on medical history, physical exam, lab test results and review of nursing and psycho-social assessments. A patient’s ability to give informed consent is required prior to starting treatment. At times if there is a question of a patient’s ability to give informed consent further evaluation may be necessary. Willingness to enter into comprehensive primary health care and keeping appointments is also required.

In addition to regular visits with a Primary Care provider, clients may take advantage of on-site auxiliary services including: urgent care, acupuncture, massage therapy, the transgender library and an ongoing peer support group with supervision by our social worker. At times, researchers are on-site providing an opportunity for patients to participate in research studies.

I.B Our Practice after Twelve Years

In the early 1990s we knew of no other public-funded transgender care clinic, which has thankfully changed. In the 12 years since its inception, our transgender clinic has seen nearly 1200 patients, with over 400 currently active. Of these, 80% are male-to-female; nearly 20% are female-to-male.

Originally targeted to the MTF homeless transgender population, our clinic also attracts transgendered people from different socioeconomic backgrounds. Most patients, although originally attracted primarily to the hormone prescription, discover early the importance of having a place where their medical needs are a priority and the staff is sensitive to their gender status.

The clinic is providing a main essential service: we attempt to decrease HIV transmission and its

health consequences by increasing the access to care.

The known doctors who prescribed hormones in our community without monitoring are no longer here, having retired or lost their market. Unfortunately, silicone injections in the underground still occur; the providers of the service travel through different cities, where there is always a demand. *(See Section V.B.)*

As transgender issues have become better known across the nation—though not yet seen as mainstream—Primary Care increasingly comes to include gender issues. Our team meets and collaborates with a number of other public and non-profit local clinics that now also provide hormonal reassignment of gender therapy and communicate with similar agencies nationally. Based on our experience, we feel that any clinic practicing Primary Care can provide these basic services to reach this underserved and still somewhat hidden community.

While media attention is increasingly focused on visible transgendered members of various communities, the amount of social support, legal resources, medical research and, most grievously, legitimate employment opportunities, remain severely limited.

II Treatment Principles

II.A Understanding Patients' Perspectives

The term “transgender” is not a pathological one, but one of self identification, describing a number of identities that do not conform to the anatomical gender of birth. Being transgender does not imply pathology, but individuals who live with a high degree of distress/disconnection around their gender image can be diagnosed within the realm of gender identity disorders.

Patients request hormone therapy in order to:

- reaffirm their individual sense of gender (gender identity), and
- develop physical characteristics that enable the demonstration of that identity (gender expression).

For each patient, the decision to come to our TG clinic is a major and possibly life-changing event.

- Many patients have done research about the therapies or already know other transgender persons using hormones. Most are definitively clear in their decision and have thought about it for years. Usually they are very specific in what they want or need from therapy. For example:
- Many present with the desire of a full transition, hoping for maximum doses of hormonal treatment as fast as possible.
- Others want to proceed slowly in order to have more control of the effects.
- Some MTF (male to female) want to maintain erections, while others want to eliminate them.
- Some FTM (female to male) want to express an androgynous or “gender queer” identity; others' goals are to develop a strong male identity.
- Some patients have access and choose from different surgical interventions.
- Some patients want surgery but don't have the access.
- Some patients don't want surgery.

Exploring needs or desires helps medical providers to individualize treatment and identify the patient's perceptions of the possibilities and limitations of treatment. Patients often have unrealistic expectations; education about what to expect from treatment is imperative in the first visits.

Each patient needs to understand the effects and the potential risk of therapy and must be able to make informed decisions.

II.B Health Care Providers' Perspectives

Overall, the clinician wants optimal health and good quality of life for their patients. Like other

marginalized groups, TG patients may present with history of trauma, with resentment against institutions, and with multiple vulnerabilities.

With a non-judgmental approach, the medical provider should work with the patient in order to achieve the following desired outcomes:

- Increased trust and ability to overcome previous negative experiences in medical systems.
- Adherence to advice regarding lab tests, office visits etc.
- Discussion of harm reduction regarding substance use, sexual practices, occupational sex work.
- HIV testing and access to treatment. (*See Section II.F.*)
- Patient benefits by supportive comprehensive primary care.
- Serve as a link between the patient and social, medical, psychological and educational opportunities of mainstream society.

II.C Initial Visit

Initial visits include:

- Nurse initial screening intake*. All prospective patients meet first with our nurse team leader who assesses health needs, identifies high risk patients (e.g. those with immediate illness or homelessness) and orients and educates patients about how the clinic works)
- Psychosocial intake*. *See Section IV.*

** Medical providers who would like copies of our intake interview forms can contact the TWHC Transgender Clinic charge nurse.*

- Baseline labs: CBC with differential, liver panel, renal panel, glucose, hepatitis B total core antibody, hepatitis B surface antibody, hepatitis C antibody, VDRL (every six months), lipid profile, prolactin level, GC and Chlamydia (every six months)
- Review health care maintenance including: immunizations, TB screening, safety and safer sex counseling, and HIV testing
- Address medical problems as needed
- Discuss patient's goals and expectations for therapy
- Review side effects, risks and benefits of hormone therapy and obtain informed consent
- Prescribe medications and follow patients per protocols

II.D Follow-Up Visits

At every visit:

- Assess for desired and adverse effects of medication
- Check weight, blood pressure

- Review health maintenance
- Directed physical exam as needed

See also the lab monitoring guidelines for specific hormonal therapies.

II.E Consent

The use of medications for gender reassignment is off-label. There are potentially life-threatening complications. The medical provider should obtain a signed consent indicating agreement to and understanding of treatment from the patient. The medical provider may decrease or hold therapy when she/he decides that the risk exceeds the benefits.

II.F HIV Disease

After the initiation of our clinic in 1994, multiple epidemiological studies had been published reaffirming the high prevalence of the disease in the MTF transgender population in different geographical areas around the globe.

Biological women whose HIV infections are detected early and receive appropriate treatment survive as long as HIV-infected men. Although several studies have shown HIV-infected women to have shorter survival times than men, this may be because women are less likely than men to be diagnosed early. Our experience tells us that this may also be the case for transgender women, but there are no studies available to make a conclusive statement.

HIV is not a contraindication or precaution for any of our protocols. While drug-drug interactions may occur, we know of no specific dangerous interactions.

Treatment with hormones is frequently an incentive for patients to address their HIV disease. Providers of care for transgender people should enhance their HIV expertise, and vice versa.

Every visit should be an opportunity to assess for risks and review with the patient prevention strategies.

III Treatment Modalities for Gender Transitioning

Hormones such as estrogen, progesterone and testosterone are steroids produced by the following endocrine glands: ovaries, testes and adrenals, under the direction of the hypothalamus/pituitary system in the brain. During pubescence these increasing hormone levels circulate in the bloodstream and attach to receptor sites on target cells of tissue/organs. All three of these sex hormones are present in men and women in varying level. If target cells are activated by these increased hormone levels secondary sexual characteristics are expressed such as beard growth and breast development. Tissue that is not activated remains latent. The basis of transgender hormone therapy is the manipulation of these hormones to create the desired body effect by activating target cells of latent yet responsive tissue/organs resulting in feminization or masculinization of the individual. In addition to the female hormones estrogen and progesterone (which in very high doses possess anti-androgen = anti-testosterone effect), anti-androgen therapy is often added to the male-to-female medical regimen to reduce the need/risks of such high doses of female hormone. Anti-androgen therapy will decrease testosterone to normal or lower than normal female levels. Testosterone is the agent for female-to-male hormonal transition.

III.A MTF Hormonal Therapy

May include either one or combination of anti-androgen and female hormonal therapy.

III.A.1 Antiandrogen Therapy

Anti-androgen therapy includes antiandrogen drugs, GnRN (gonadotropin-releasing hormone) agonists, and bilateral orchiectomy.

III.A.1.a Antiandrogen Drugs

III.A.1.a.i Spironolactone

Spironolactone is our treatment of choice due to safety and availability.

Spironolactone: Dosing

- Typical spironolactone starting dose: 25mg-50mg twice a day
- Typical spironolactone dose: 50mg twice a day
- Maximum dose spironolactone: 200mg twice a day

Spironolactone: Gender-Related Effects

- Suppression of testosterone production/activity
- Decreased facial and body hair growth
- Decreased progression of male pattern baldness
- Decreased libido
- Decreased erections

- Mild breast growth
- Decreased BPH

Spironolactone: Contraindications

- Renal insufficiency
- Serum potassium greater than 5.5 meq/L

Spironolactone: Adverse Effects

Adverse effects have been very rare in our experience.

- Mild diuretic
- Hyperkalemia
- Increased excretion of sodium, calcium, chloride
- Impotence/decreased libido

Spironolactone: Drug Interactions

Avoid using concomitantly with digoxin, ACE inhibitors, potassium-sparing diuretics, AT II receptor antagonists.

Spironolactone: Monitoring Labs

Electrolytes, BUN, and creatinine at baseline, 2 months after starting or increasing dose, and every 6 months after establishing stable dose.

III.A.1.a.ii Finasteride

Finasteride (Propecia 1mg or Proscar 5mg) is an agent which inhibits the intracellular enzyme responsible for converting testosterone to its potent form DHT (5 alpha-dihydrotestosterone). It may be used alone or in combination with spironolactone.

Finasteride is used to treat BPH by causing the prostate to reduce in size, and because of this it can reduce PSA levels by 50% even if there is underlying prostate cancer. It is therefore very important to monitor with biopsy and/or not use this agent if underlying cancer is suspect. This drug appears to be relatively safe, and along with the effects of its anti-androgen qualities it is notable for improving male pattern baldness.

Typical doses are 5-10 mg daily.

III.A.1.a.iii Other Agents

Other anti-androgen drugs include Androcur (cyproterone acetate) and flutamide. They appear to have more toxicity and are not universally obtainable.

III.A.1.b GnRH Agonists

GnRH agonists include nafarelin acetate, goserelin acetate, and leunrorelin acetate. These agents

reduce gonadal androgen production by desensitizing the pituitary with GnRH. The principal advantage with these agents is that they are generally fully reversible in their effect in adolescents (making them useful where there is desire to stall changes of puberty), and they do not carry risk of thromboembolic disease.

III.A.1.c Bilateral Orchiectomy

Bilateral orchiectomy might be beneficial for those intolerant of other anti-androgen therapy. Advantages include a much-reduced need for hormones since approximately 90% of testosterone comes from testicular source. Disadvantages include: irreversibility and shrinkage/potential scarring of scrotal tissue, which could pose problems for the SRS surgeon since scrotal tissue is used to give depth to the neovagina.

There are differences of opinion whether anti-androgen drugs (including spironolactone and other above agents) should be used after bilateral orchiectomy and/or male-to-female SRS. We agree with the idea that adrenal androgens, about 10% of total testosterone, left postop are necessary for normal body function. After orchiectomy or SRS, usually a maintenance dose of estrogen is needed.

III.A.2 Estrogen Therapy

Estrogens are the primary hormones used for feminization. Adverse effects from estrogen therapy including increased risk of death are well-documented, and patients should be fully informed of possible risk. Nevertheless, these drugs are extremely useful and have been used with relative safety. Despite our high-risk population, we have rarely seen severe adverse effects. Numerous classes of estrogens have been used for gender reassignment. There is a thriving illicit market for these drugs and many patients have been taking them on the streets without medical monitoring. Patients frequently take estrogens from several classes and have a misconception that “more is better.” Education is essential to avoid adverse outcomes and optimize effect.

Common prescribed estrogens we use for reassignment of gender include:

- conjugated estrogens (Premarin)
- estradiol valerate tablets (Estradiol, Estrace)
- estrogen transdermal (Estroderm, Climara, Alora, Vivelle)
- estradiol valerate injection

General Concepts when Prescribing Estrogens

- All estrogens increase the risk of thromboembolism and prolactinoma. These risks are dose-dependent, controlling for other risk factors.
- All estrogens work on the same receptors and should have similar effects at equipotent doses. Nevertheless, there are patient-specific variations and preferences in response to dose and type of estrogen.
- Non-oral forms, including sublingual, transdermal and injectable, have the advantage of avoiding first pass through liver metabolism and may be the preferred form for all especially patients who are older, have underlying liver disease and have elevated lipids.

- Oral preparations have the advantage of being easy to titrate or stop in case of adverse effects; injectable forms may stay present in the body for four weeks or longer.
- Response to treatment is extremely variable. Younger age and less body hair are predictable factors of a more satisfactory outcome.
- Estrogen doses can be reduced to a minimum dose after Gender Reassignment Surgery (GRS) or after maximum feminization is evident, which is usually after two years of high-dose treatment.
- Stop all estrogens two weeks prior to any major surgery or other immobilizing event, and resume one week after or upon resumption of mobility.
- Add aspirin 81-325 mg for all patients at risk of thromboembolism (cigarette smoker, age greater than 40, obese, cardiac risk factors) and consider aspirin for all patients without contraindication.

Dosing

Medication	Post-menopausal replacement dose	Gender reassignment dose	Approximate cost (retail) for commonly dispensed form
conjugated estrogens (Premarin)	0.625 mg po QD	Starting: 1.25-2.5mg/d Average: 5mg/d Maximum: 10mg/d	\$30 (for 30 of 0.625 mg tablets)
estradiol	1 mg po QD	Starting: 2-3mg Average: 4mg Maximum: 8mg/d	\$8 (for 30 of 1mg estradiol tablets) \$35 (for 30 of 1mg micronized estradiol [Estrace] tablets)
estradiol valerate for injection (Delestrogen)	10 mg q2wks IM	Starting: 20-40mg IM q2wks Average: 40mg IM q2wks Maximum: 40-80 mg IM q2wks	\$60 (for 10mg/ml, 5ml vial) \$95 (for 20mg/ml, 5ml vial) \$150 (for 40mg/ml, 5ml vial)
estradiol patch	0.05mg/d dermal (0.5-1.0mg patches to be changed once-twice/week)	Starting: 0.1-0.2mg/d Average: 0.2-0.3mg/d Maximum: 0.3mg/d	Prices vary according to once weekly or twice weekly; cost of TG dose is about \$80-120/mo

Estrogens: Contraindications

- Presence of estrogen-dependent cancer
- History of thromboembolism or severe thrombophlebitis

Estrogens: Precautions

Hyperlipidemia, diabetes, cigarette smoking, hepatitis, alcoholic liver disease, renal insufficiency, migraine, seizure disorder, retinopathy, obesity, coronary artery disease, valvular heart disease, congestive heart failure or other cardiac dysfunction, any condition causing tendency to thrombosis, strong family history of breast cancer or other estrogen dependent tumor.

Note: Attempt to control all above conditions prior to starting estrogen therapy. Consider lower doses for these patients.

Estrogens: Expected Gender-Related Effects

- Breast development
- Redistribution of body fat
- Softening of skin
- Suppression of testosterone production
- Possible improved mood/improved impulse control
- Shrinkage of testes/testicular atrophy
- Decreased libido

Estrogens: Adverse Effects

Deep venous thrombosis, pulmonary embolism, other thromboembolism, thrombophlebitis, hypertension, impotence, prolactinoma, diabetes, nausea/vomiting, migraine/headache, gallbladder disease, abnormal liver function tests, mood disorder/depression, melasma (skin darkening), acne, lipid abnormalities, hypertriglyceridemia, increased risk of heart attack, increased risk of breast cancer, hepatitis, stroke, increased risk of other cancers.

Estrogens: Drug Interactions

See Section VI.

Estrogens: Lab Monitoring

Baseline: liver panel, renal panel, lipid profile, prolactin level*, glucose.

Recheck 1-2 months after starting, 3 months after changing dose, and every 6 months after establishing stable dose.

* Prolactin levels: serum prolactin level correlates well with pituitary activity and prolactin is likely to be significantly increased for a long period (greater than 1 year) prior to an adenoma becoming autonomous and enlarging. Elevated prolactin levels frequently decrease spontaneously. Therefore:

- If prolactin is less than 25, continue to monitor per protocol.
- If prolactin is 25-40, confront patient about outside sources of extra estrogen (usually injections) and encourage patient to cease these. Continue to monitor per protocol.
- If prolactin is greater than 40, decrease estrogen dose by 1/2 or ask patient to stop estrogens, recheck 6-8 weeks.
- If prolactin is greater than 100, stop all estrogens and retest in 6-8 weeks.
- If continues high consider MRI of pituitary. If prolactin level is falling, restart estrogen at lower dose and monitor every 6-8 weeks.
- Be aware that common antipsychotics can increase prolactin levels.

Testosterone level: used selectively and rarely but may be appropriate for patient not showing

expected demasculinization after 6-12 months on maximum anti-androgen.

Estrogen levels are not useful.

Estrogens: Other Clinical Monitoring/Considerations

- Nicotine/cigarettes increase degradation of estrogens and increase DVT risks.
- HIV protease inhibitors increase metabolism of ethinyl estradiol.
- Many other drugs increase or decrease metabolism of ethinyl estradiol.
- Breast symptoms and breast exam every 6 months; BSE education.
- Prostate exam as in the general population. PSA may not be reliable for cancer screening. Prostate gland is not removed with SRS.
- Extremity exam for varicose veins, edema, signs of DVT every visit.
- Review history and teach warning signs of DVT/PE.
- Mammograms for patients have no clear benefits; there is no evidence that TG FTM on estrogen are at higher risk for breast cancer, although mammographic changes are dependent on time of estrogen exposure. We order mammograms to patients on estrogen for 20 years, or earlier if abnormal findings or family history of breast cancer. Consider mammograms every 1-2 years.

III.A.3 Progesterone Therapy

Medroxyprogesterone has a demonstrated anti-androgen effect at high doses but has no advantage over spironolactone. Its physiological effect is primarily on the uterus and effects on feminization are unclear. Some patients report a potentiating effect on breast growth or fat redistribution. There are also reports of androgenic effect in some patients and an adverse effect on mood (PMS-like effect) in some patients.

Medroxyprogesterone is not a routine part of our hormonal reassignment regimen but may be used in the following situations:

- As adjunct for patients on maximum estrogen doses with unsatisfactory effects.
- In patients intolerant of other drugs.

Dosing

- Typical starting doses: 2.5mg qday
- Typical dose: 5-10mg/day
- Maximum dose: 20mg qday

Other oral and injectable forms of progesterone are available

Consider cycling progesterone (i.e. 1st 10 days of the month)—patients seem to like this approach and it reduces the amount of progesterone prescribed.

Progesterone: Contraindications

Same as estrogens.

Progesterone: Precautions

Same as estrogens. Carefully review use in any patient with underlying psychiatric disorders.

Progesterone: Expected Gender-Related Effects

Enhanced estrogen feminization effects.

Progesterone: Adverse Effects

Lipid abnormalities, weight gain, edema, mood disorders depression/irritability), facial and body hair growth and coarsening.

Progesterone: Drug Interactions

Unknown.

Progesterone: Lab Monitoring

Same as estrogens.

III.B FTM Treatment Protocol

The main available treatment for hormonal reassignment for FTM patients are androgens, which usually produce satisfactory virilizing results. The entire process of virilization can take years to complete. However, in many patients, changes in voice pitch, muscle mass, and hair growth become apparent after just a few months of a regular hormonal treatment regimen.

III.B.1 Testosterone

III.B.1.a Available Forms of Testosterone and Dosing

Intramuscular Route

- testosterone cypionate: 100-400 mg IM q2-4wks
- testosterone enanthate: 100-400 mg IM q2-4 wks
- testosterone propionate: 100-200 mg IM 1-2 times/wk.

IM testosterone is released slowly from the muscle. There are variations in the plasma concentration through injection cycles, causing symptoms that may require dose or frequency changes.

Transdermal System

- Androderm patch (2.5mg/patch), 1-2 patches/day. This is a non-scrotal patch. It has the advantage of avoiding peak ups and downs in testosterone levels, thus delivering a

constant dose of hormone. This form can be an effective alternative in patients who are more sensitive to variable testosterone levels.

- Androgel (testosterone gel 1%). Avoid the use of the patch. Need to be used with caution at the possibility of exposing partners and loss of absorption.
- Testosterone ointment in petrolatum base 2-4%. Used as an adjuvant to increase concentration in local areas (face, clitoral area). Mixed results in terms of effectiveness.

Oral Preparations

(Methyl/testosterone; Oxandrolone) These are not used in our clinic. PO preparations undergo extensive liver metabolism, increasing the possibility of liver complications.

Testosterone: Contraindications

Active coronary disease, pregnancy.

Testosterone: Precautions

Hyperlipidemia, liver disease, cigarette smoking, obesity, family history of coronary artery disease, family history of breast cancer, acne, history of deep venous thrombosis, erythrocytosis.

Testosterone: Expected Gender-Related Effects

- Cessation of menses
- Voice change to a male range
- Increased hair growth on face, chest, and extremities
- Increased muscular mass and strength
- Redistribution of body fat to an android (apple) shape
- Clitoral enlargement

Testosterone: Other Effects

- Protection against osteoporosis
- Increased libido
- Increased physical energy

Note: Changes in voice range, hair follicles, and clitoral size are permanent. Other effects are reversible at the cessation of hormonal therapy.

Testosterone: Possible Adverse Effects

Increased weight, peripheral edema, acne, erythrocytosis, liver enzyme elevations, decrease in the HDL fraction of cholesterol, increased risk of cardiovascular disease, coarsening of skin, headache, emotional changes, increased aggressiveness, male pattern baldness, increased risk of breast cancer, increased risk of endometrial cancer, hypertension.

Testosterone: Drug Interactions

- Potentiation of warfarin
- In diabetic patients, blood sugar decreases, requiring adjustments in dose of hypoglycemic agents

Testosterone: Special Considerations

There is no evidence that screening with ultrasound will decrease mortality or morbidity of endometrial cancer. Patients at increased risk tend to present with symptoms at an early stage, therefore it is important for the patient to be educated and report the early symptoms (vaginal bleeding, or thin clear discharge, pelvic pain, dyspareunia).

Smoking cessation should be strongly encouraged to decrease cardiac risk factors.

Breast exams and mammograms are essential. Any post-surgical residual axillary breast tissue requires regular examination as well.

Pap smears are still important follow-up.

Assess for hypersexual behavior and safe sex practices.

IV Psychosocial Issues

Tom Waddell Health Center primarily sees homeless and marginally housed patients, but not exclusively. The rather narrow spectrum of transgendered patients we see (homeless, poor and often without family support) determines the following major psychosocial issues we address. Our experience does not necessarily reflect the broad spectrum of transgender realities.

We initially assess our patients by taking an in-depth psychosocial history. This assists us in identifying the need to refer to various services including substance abuse counseling, psychotherapy, support groups, domestic violence advocacy, or legal advocacy. We have found it important to gather information on the following topics:

- **Trauma/History of abuse:** It is quite common that our patients have a history of trauma ranging from major family and or peer rejection and teasing in childhood and adolescence, to physical, emotional and sexual abuse by family and or outsiders. Also, if our patient has a history of sex work or currently has sex to support themselves financially, they may have some trauma associated with this. Many of our immigrant patients have trauma histories regarding being transgender in their country of origin.
- **Degree of family acceptance vs. rejection of patient gender issues:** This is important as it can have a major impact on patient identity development and sense of support. It is also helpful to identify if the patient has built a support network outside of their family.
- **Substance abuse:** Many patients have long histories of using substances in order to cope with their gender issues in an unsupportive family or society. Many need harm reduction education, or support groups or substance abuse treatment.
- **History of domestic violence:** Patients may be in violent relationships. Many have an additional level of fear in leaving due to their gender identification and thought that they might be unlovable or unable to find another partner who will accept them as they are. Additionally the violent partner may be making additional threats to out the patient to friends, family or in the workplace.
- **Employment:** Identifying an employment history is important because some patients feel that they are unemployable in mainstream jobs and lean towards sex work because in their mind this is all they can do as a transgender person. Or, they may have had a great employment record, but while transitioning or post transition find it difficult to find work.
- **Mental health:** Many patients also come with diagnoses of depression, anxiety, PTSD, histories of suicide attempts and sometimes might have a thought disorder where their gender issue is entrenched in their delusional thought process. Patients may also have axis II disorders due to the effects of trauma during their identity formation in childhood. Although many patients have had negative experiences with mental health practitioners, we may encourage patients to seek treatment with transgender-friendly therapists to assist them in working through their mental health issues. While we are mindful of negative patient experiences, we also attempt to provide a supportive environment to assist patients in having successful psychotherapy experiences. Note: Assessing for past and current suicidality is an ongoing issue with our patients. It is extremely important,

particularly when prescribing testosterone.

- **Gender identity:** Each patient may have their own words or thoughts on how to define or express their gender. It is important to meet patients where they are in their gender identity at each point in time of contact. The gender continuum can be fluid, or evolve for each patient in different ways.
- **Relationships and sexuality:** In the same way that each patient identifies differently on the gender continuum, each patient will have a different degree of self-acceptance of their own gender identity. Dating histories are important as well as comfort levels with sexual self-expression at the current stage in transition. Many patients experience changes in their sexual orientation in transition which may be confusing. Patients also have varying degrees of body acceptance. It is important to discuss these issues to normalize the patient experience. Psychotherapy may be warranted around this issue.
- **Surgeries/Silicone:** It is very important to provide information to patients on the dangers of silicone injections. Many times it is during their initial contact with us that patients are considering this. We also are interested in getting information on what surgeries patients have had, what surgeries they would like to have and what changes they are perceived to make in the individual's life. Exploring reasons behind the desire for surgery can help patients think through the significance of these changes for themselves. Patients often aren't sure at what point in their transition they will feel comfortable. Sometimes this might be different than what they anticipate.
- **Support through transition:** We have found that gender transition can be quite stressful for patients. We try to monitor both how family and society is responding to the patient's transition, and the patient's time frame and expectations of passing in their new gender.

These issues have become apparent to us in working with our patients over time, and we expect they will continue to evolve.

V Other Considerations

V.A Surgical Options

About 15% of our patients undergo surgical gender modification, including breast augmentation, vaginoplasty, castration, neck shaving, vocal cord surgery, etc. We encourage our patients to wait until their breasts grow to a maximum with the use of medications before deciding upon breast augmentation surgery, as breast growth without surgical intervention can achieve a satisfactory result. We assist our patients in their surgical decisions by offering education about the procedures and their effects, providing a directory of different surgical groups within the country and abroad, and facilitating pre-op requirements. Usually, our clinic follows the medical care after surgery. After castration, exogenous hormonal requirements drop significantly.

V.B Silicone and Injectable Body Molding Substances

In light of the paucity of research on this subject and the complete lack of treatment information in print, we offer our observations over the past 12 years.

In our practice we address the dangers to our patients of injecting silicone or other preparations, in their efforts to cheaply and inexpensively mold feminine body contours. We have patients who have been permanently disfigured by these injections, which often mix industrial grade silicone and/or other substances such as paraffin and oil.

Such silicone injections are easy to access and cheap. Such injections are usually performed by unlicensed practitioners who often approach male-to-female transgenders in bars or clubs. Lay practitioners often prey on transgendered persons' lack of funds to pay for surgery and offer injections at parties where multiple people receive injections.

The immediate dangers of these injections include: soft tissue infection, risk of contaminated needles transmitting disease such as HIV, hepatitis or MRSA and foreign substance reaction. The long term dangers include: recurrent inflammation, migration of the foreign matter from the injected site, disfigurement such as nodules, granulomata and pain syndromes. Treatment is palliative; there is no effective way to remove unencapsulated silicone from body tissue. Silicone injections into breast tissue make mammograms ineffective.

We see the damaging sequelae of silicone and other substances on an infrequent but regular basis. During periods of inflammation when the affected tissue is hot, red and tender we will often treat with a course of oral steroids along with antibiotic coverage. A typical course of treatment is a second-generation cephalosporin along with prednisone for a two week course.

Anecdotally, we have also noticed that sun tanning or tanning booth exposure may trigger tissue inflammation over affected body areas.

V.C Adolescents

We take care of a few adolescents in our practice. We require psychiatric evaluation and

diagnosis, ongoing psychotherapy, and family support and involvement in the process. Emancipated teenagers are not required to have parental input. Initiating hormones at a younger age has a better outcome than starting them later, but this also creates physical and physiological changes potentially irreversible in case of future regret.

VI Drug Interactions of Estrogens

Lamotrigine

Estradiol significantly reduces blood levels of **lamotrigine** (Lamictal); patients on lamotrigine should not take estradiol, in either oral or injectable forms.

Antiretroviral drugs

HIV antiretroviral drugs have been studied for interactions with the components of oral contraceptives (mostly ethinyl estradiol at low doses). There are no data on interactions with other estrogens, or at the doses we use.

Amprenavir and **fosamprenavir** are the only antiretrovirals whose concentration decreases in the presence of ethinyl estradiol. We recommend caution when using these agents, since we cannot predict the clinical effects with the high doses of estrogens used for transgender care.

Levels of estradiol and ethinyl estradiol are -

increased by:	decreased by:
astemizole	atazanavir
cimetidine	benzoflavone
clarithromycin	carbamazepine
diltiazem	dexamethasone
efivarenz	indinavir
erythromycin	kaletra
fluconazole	nelfinavir
fluoxetine	naphthoflavone
fluvoxamine	nevirapine
grapefruit	phenobarbital
indinavir	phenylbutazone
isoniazid	phenytoin
itraconazole	progesterone
ketoconazole	rifampin
miconazole	ritonavir
nefazadone	sulfamidine
paroxetine	sulfinpyrazone
saquinair	
sertraline	
triacytyleandomycin	
verapamil	