DISCLOSURES

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Upon successful completion of this activity 1 contact hour will be awarded

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- Attending the entire CE activity;
- Completing the online evaluation;
- Submitting an online CE request.

Your certificate will be sent via email

If you have any questions about this CE activity, contact Michelle Daugherty at mdaugherty@cardeaservices.org or (206) 447-9538

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Disclosures

Robbie Goldstein was a consultant for Advance Medical. No other planners or presenters of this CE activity have any relevant financial relationships with any commercial entities pertaining to this activity.

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Trans & Gender Affirming Care ECHO:
Gender Affirming Hormones for Adults and Adolescents

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Medical Director, MGH Transgender Health Program

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HARVARD MEDICAL SCHOOL

TRANSGENDER HEALTH PROGRAM
MASSACHUSETTS GENERAL HOSPITAL

Obtaining informed consent for hormone therapy is an important task to ensure that patients understands the benefits and risks

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3. Age of majority in a given country/state/jurisdiction

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The criteria for hormone therapy are as follows:

1. Persistent, well documented gender dysphoria
2. Capacity to make a fully informed decision and to consent to treatment
3. Age of majority in a given country/state
4. If significant medical or mental health concerns are present, they must be reasonably well controlled

Standards of Care for the Health of Transsexual, Transgender, and Gender Nonconforming People. The World Professional Association for Transgender Health. 7th Ed. 2016.

Medical conditions are not a contraindication to gender affirming hormone therapy, but should prompt referral to Endocrinology

TABLE 11. Medical conditions that can be exacerbated by cross-sex hormone therapy

Transsexual female (MTF): estrogen
Very high risk of serious adverse outcomes
Thromboembolic disease
Moderate to high risk of adverse outcomes
Macroprolactinoma
Severe liver dysfunction (transaminases >3 × upper limit of normal)
Breast cancer
Coronary artery disease
Cerebrovascular disease
Severe migraine headaches
Transsexual male (FTM): testosterone
Very high risk of serious adverse outcomes
Breast or uterine cancer
Erythrocytosis (hematocrit >50%)
Moderate to high risk of adverse outcomes
Severe liver dysfunction (transaminases >3 × upper limit of normal)

Hembree WC, Kittens P, Delemarre-van de Waal HA, Gooren LJ, Meyer WJ 3rd, Spack NP, Tangpricha V, Montori VM. "Endocrine treatment of transsexual persons: an Endocrine Society clinical practice guideline." *J Clin Endocrinol Metabl*. 2009.

Most physical changes occur over the course of 2 years; the amount of physical change and the exact timeline can be highly variable

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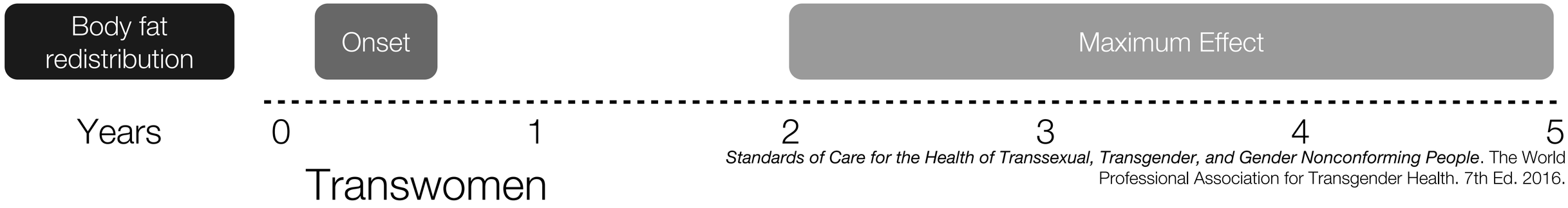

Transwomen

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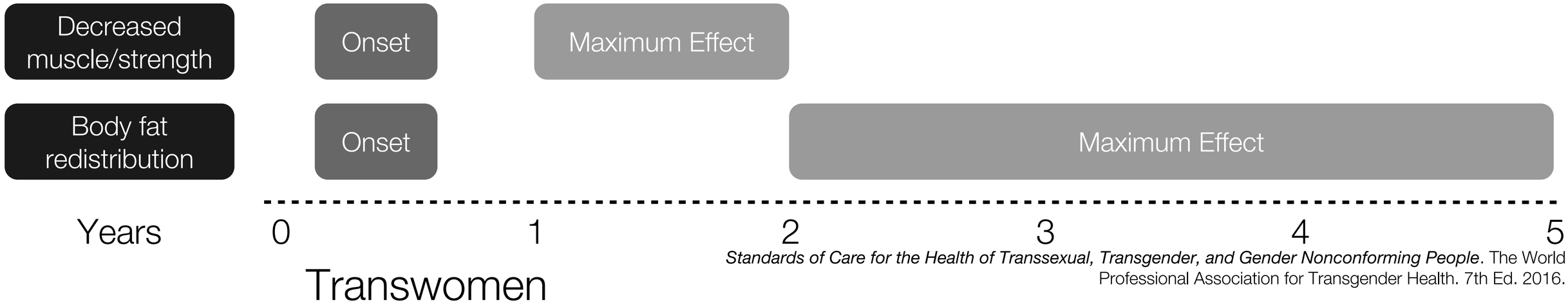

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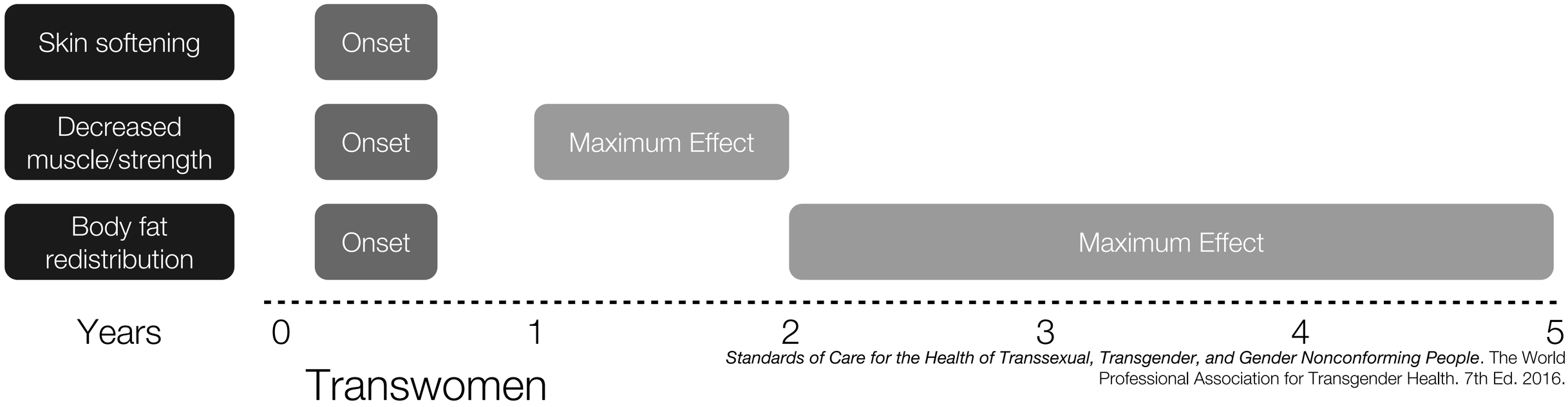

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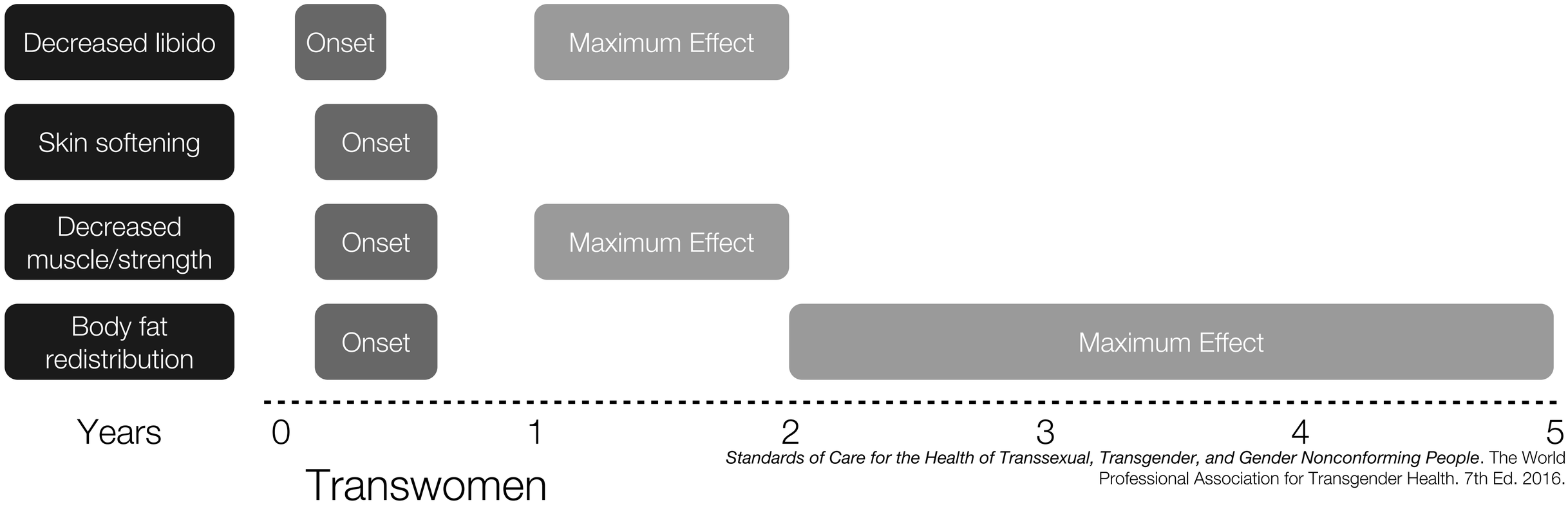

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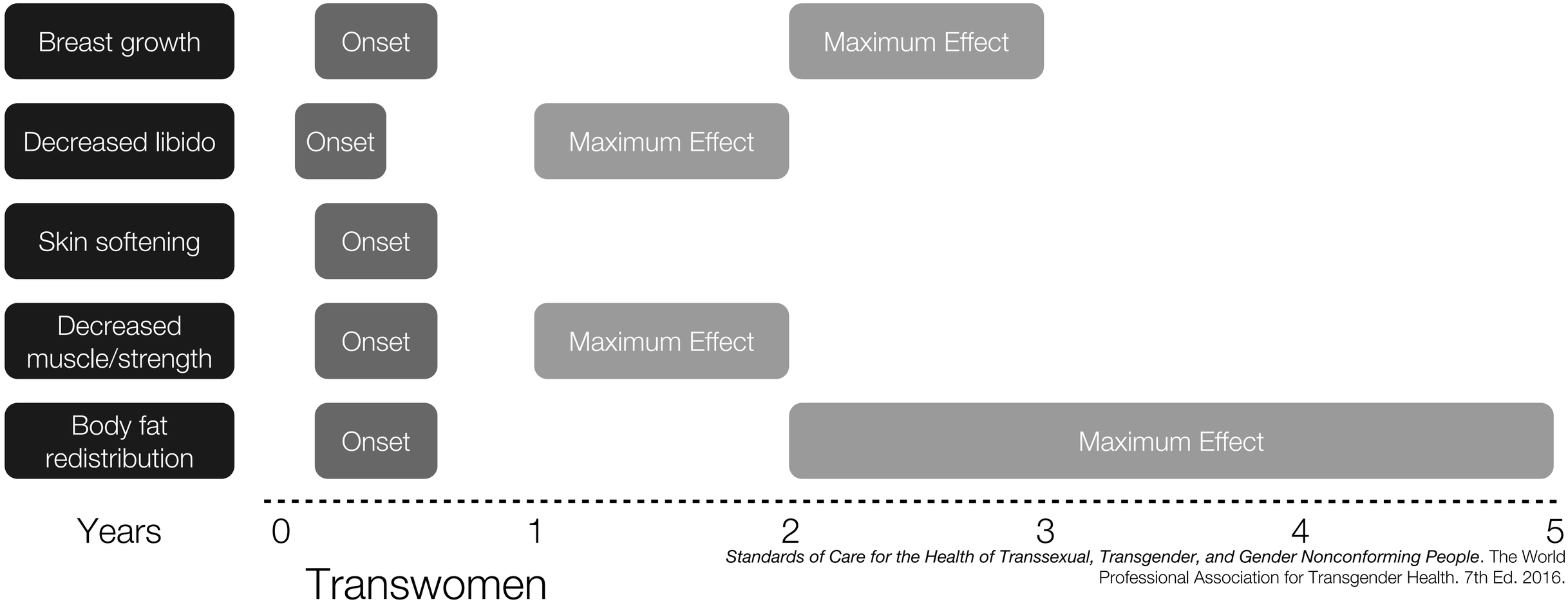

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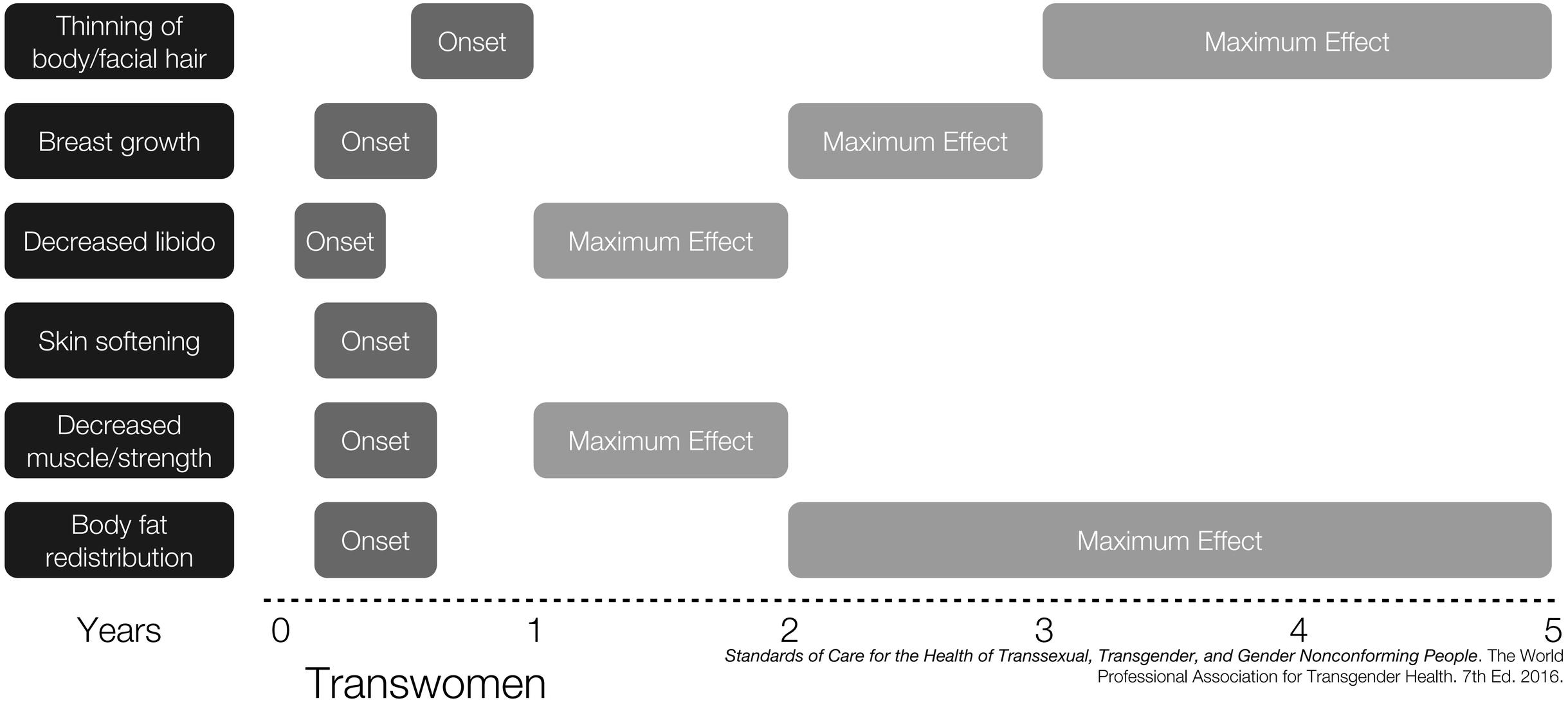

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A combination of estrogen and anti-androgens is the most commonly used regimen for feminization in transgender women

Table 3
Recommended antiandrogen dose

Drug	Initial Dose (mg/d)	Maximum Dose (mg/d)	Comments
Spironolactone	100	400	Usually divided into twice daily dosing. Pills come in 25, 50, or 100 mg doses and can be titrated up as tolerated. Taking earlier in day may prevent urinary frequency during night.
Finasteride	1	5	Pills come in 1 or 5 mg.
Dutasteride	0.5	0.5	—

Wesp LM, Deutsch MB. "Hormonal and Surgical Treatment Options for Transgender Women and Transfeminine Spectrum Persons." *Psychiatr Clin North Am.* 2017.

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~~Finasteride~~	~~1~~	~~5~~	~~Pills come in 1 or 5 mg.~~
~~Dutasteride~~	~~0.5~~	~~0.5~~	~~—~~
Leuprolide	3.75mg/mo		Can transition to 11.25mg q3 months

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A combination of estrogen and anti-androgens is the most commonly used regimen for feminization in transgender women

Table 2
Options for 17-beta estradiol

Formulation	Initial Dose	Maximum Dose	Comments
Transdermal	100 μg	400 μg	Patches only come as 100 μg, so if maximum dose is required, more than 1 patch must be worn. Frequency of patch change is brand/product dependent, but usually once per week.
Oral/sublingual	2–4 mg/d	8 mg/d	May be divided into twice daily dosing. Sublingual absorption usually takes 10–15 min.
Estradiol valerate IM	20 mg intramuscularly every 2 wk	40 mg intramuscularly every 2 wk	Concentration may be 20 mg/mL or 40 mg/mL. Vial sizes vary. May divide dose into weekly injections to avoid cyclical symptoms.
Estradiol cypionate IM	2.5 mg intramuscularly every 2 wk	5 mg IM every 2 wk	Concentration usually 5 mg/mL.

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A combination of estrogen and anti-androgens is the most commonly used regimen for feminization in transgender women

Table 4
Common laboratory monitoring for feminizing hormone therapy

	Comments	Baseline	Quarterly During First Year of Therapy	Yearly	As Needed Based on Medical History and Clinician Discretion
BUN/Cr/K^+	Used to monitor for adverse effects of spironolactone.	X	X	X	X
Estradiol	—	—	X	—	X
Total testosterone	Some clinicians may also monitor bioavailable testosterone	—	X	—	X
Lipids	—	—	—	—	X
Hemoglobin A1c or glucose	—	—	—	—	X
Prolactin	—	—	—	—	X

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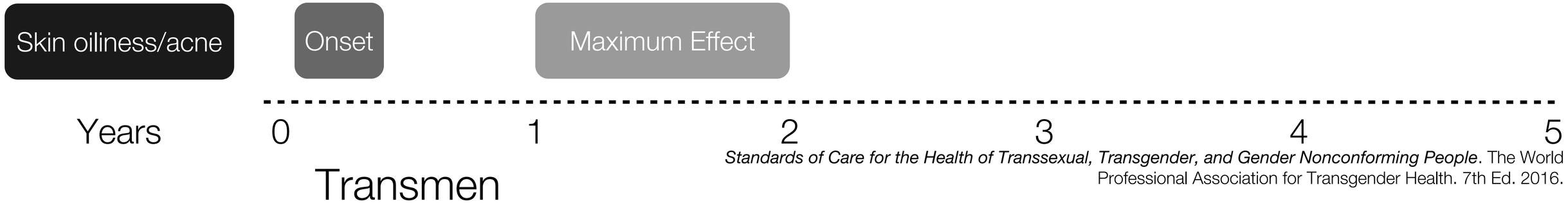

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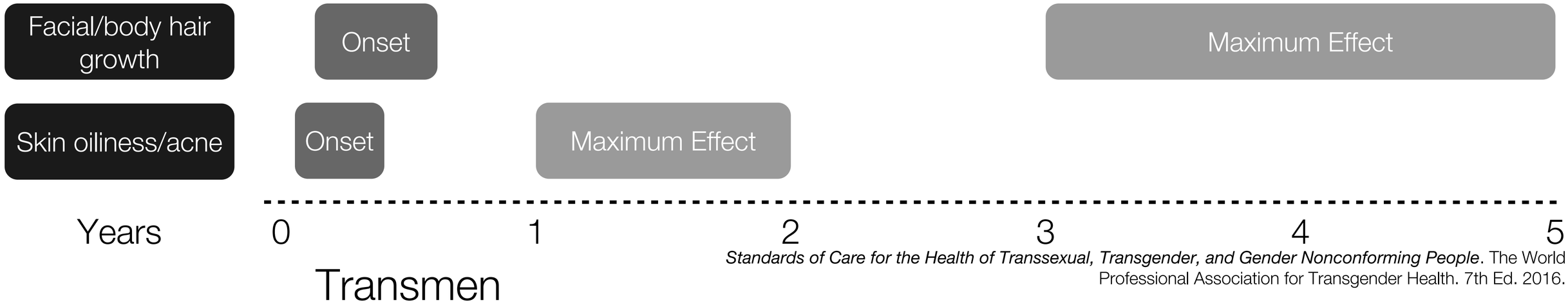

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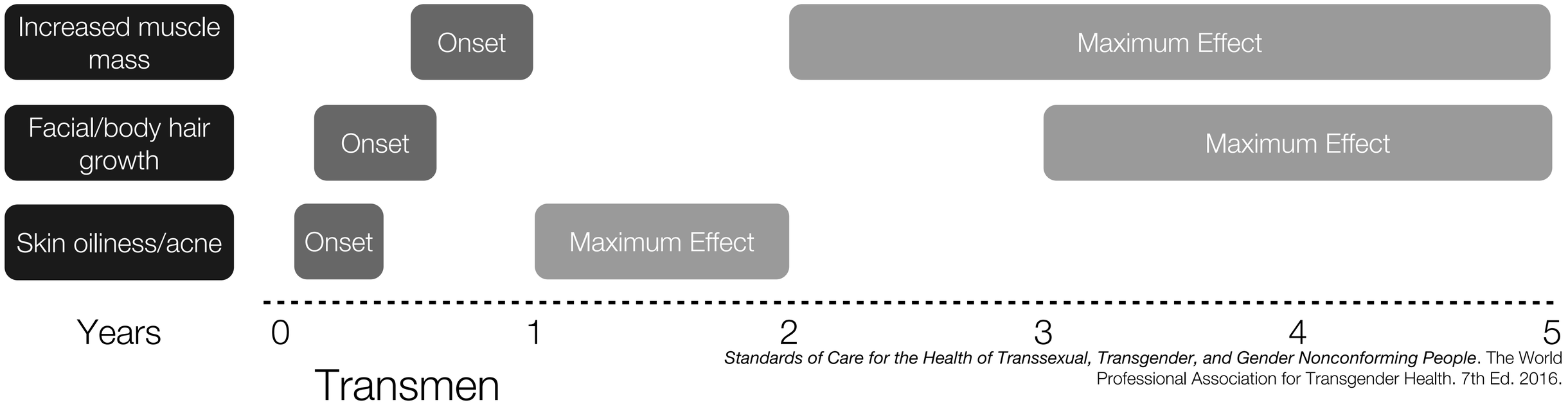

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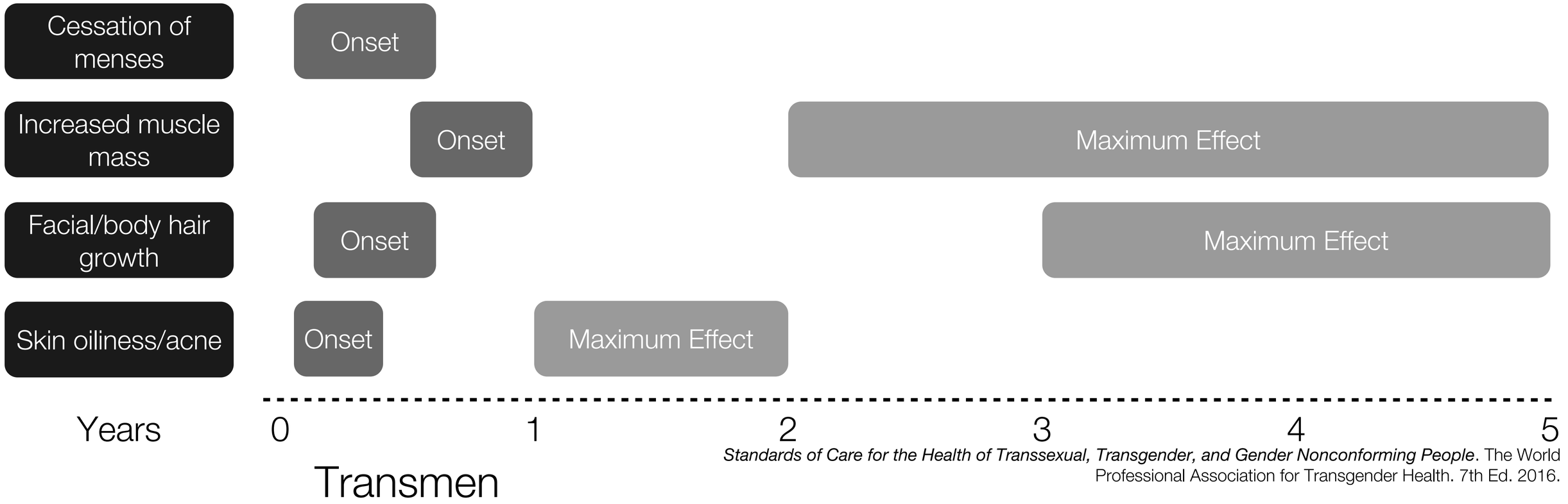

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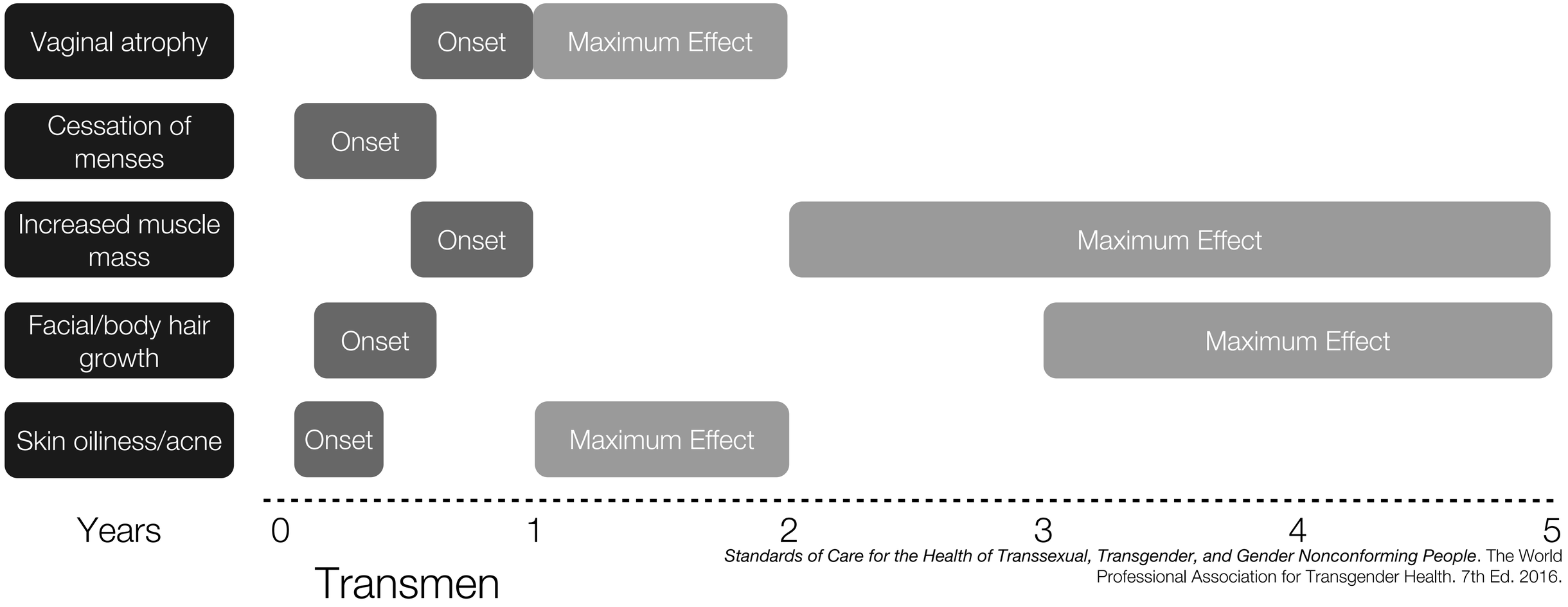

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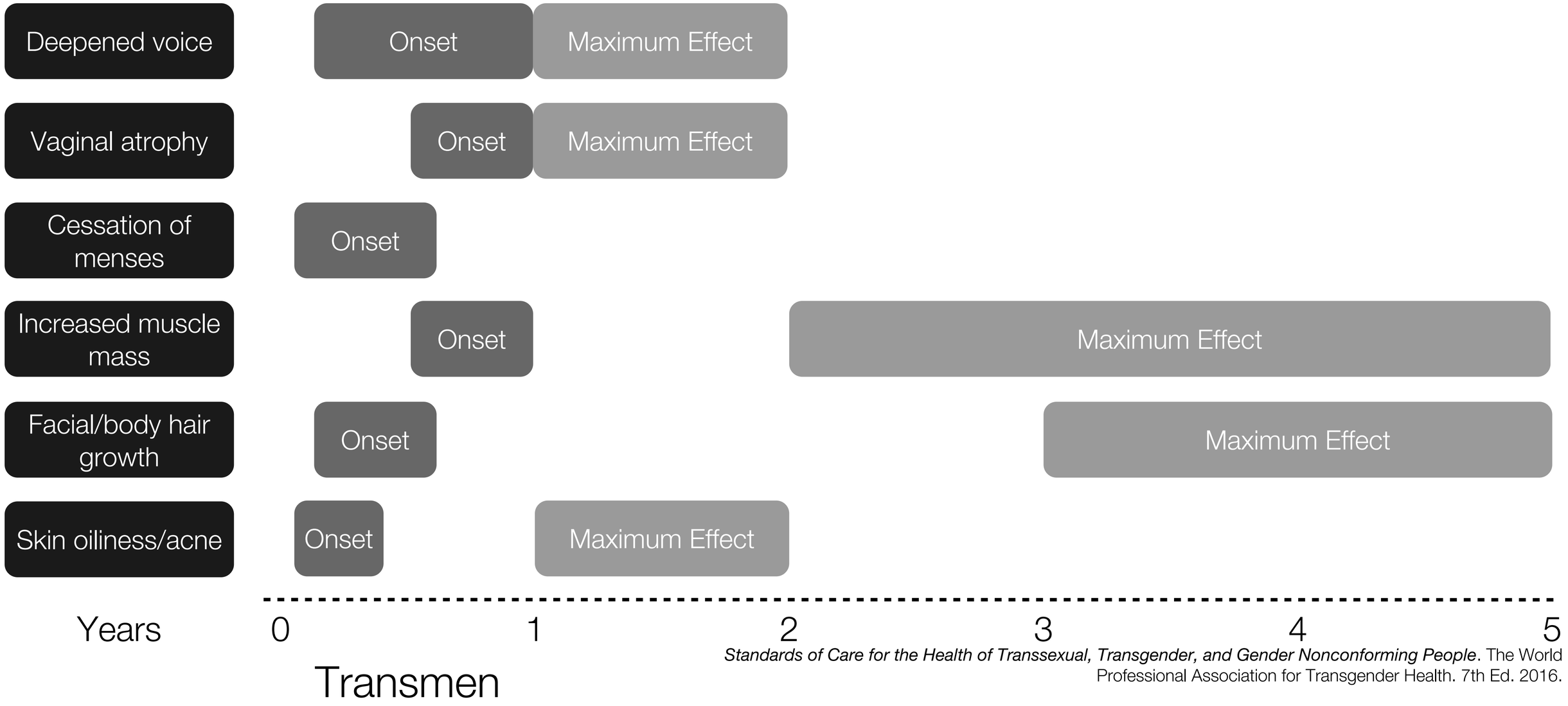

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Administration of testosterone alone is enough to suppress estrogen levels and cause masculinization

Androgen	Initial – low dose[b]	Initial - typical	Maximum - typical[b]	Comment
Testosterone Cypionate[a]	20 mg/week IM/SQ	50mg/week IM/SQ	100mg/week IM/SQ	For q 2 wk dosing, double each dose
Testosterone Enthanate[a]	20mg/week IM/SQ	50mg/week IM/SQ	100mg/week IM/SQ	"
Testosterone topical gel 1%	12.5-25 mg Q AM	50mg Q AM	100mg Q AM	May come in pump or packet form
Testosterone topical gel 1.62%[d]	20.25mg Q AM	40.5 – 60.75mg Q AM	103.25mg Q AM	"
Testosterone patch	1-2mg Q PM	4mg Q PM	8mg Q PM	Patches come in 2mg and 4mg size. For lower doses, may cut patch

Guidelines for the Primary and Gender-Affirming Care of Transgender and Gender Nonbinary People. Center of Excellence for Transgender Health. UCSF. 2nd Ed. 2016.

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Testosterone topical gel 1%	12.5-25 mg Q AM	50mg Q AM	100mg Q AM	May come in pump or packet form
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Testosterone patch	1-2mg Q PM	4mg Q PM	8mg Q PM	Patches come in 2mg and 4mg size. For lower doses, may cut patch

Testopel (testosterone pellets) q3 months
Aveed (testosterone undecanoate) q10 weeks

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Therapy	Comments	Baseline	3 months*	6 months*	12 months*	Yearly	PRN
Lipids	No evidence to support lipid monitoring at any time; use clinician discretion	Based on USPSTF guidelines					X
A1c or fasting glucose	No evidence to support lipid monitoring at any time; use clinician discretion	Based on USPSTF guidelines					X
Estradiol							X
Total Testosterone			X	X	X		X
Sex Hormone Binding Globulin (SHBG) **			X	X	X		X
Albumin **			X	X	X		X
Hemoglobin & Hematocrit		X	X	X	X	X	X

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Gender affirming hormone therapy is generally considered safe, although providers should be aware of specific associated risks

TABLE 2: RISKS ASSOCIATED WITH HORMONE THERAPY. BOLDED ITEMS ARE CLINICALLY SIGNIFICANT

Risk Level	Feminizing hormones	Masculinizing hormones
Likely increased risk	Venous thromboembolic disease[A] Gallstones Elevated liver enzymes Weight gain **Hypertriglyceridemia**	**Polycythemia** Weight gain Acne Androgenic alopecia (balding) Sleep apnea

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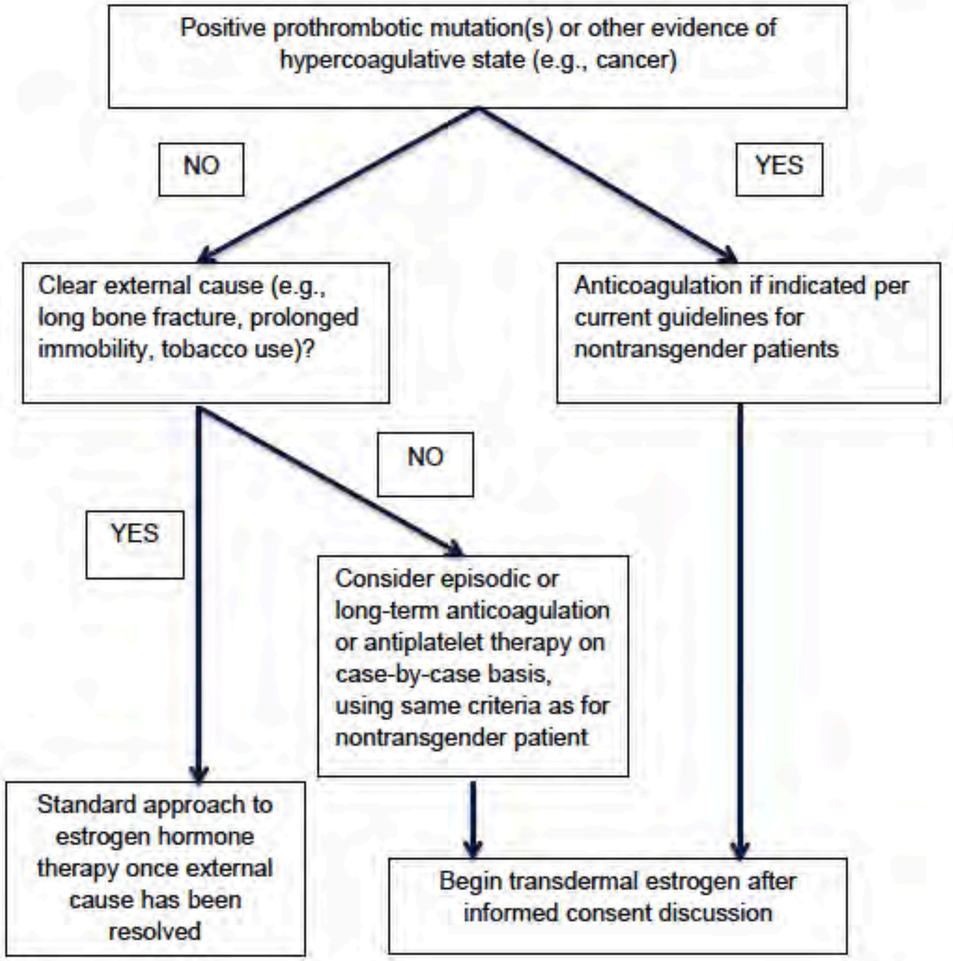
VTE history (personal or family) should prompt further evaluation prior to initiation of estradiol treatment



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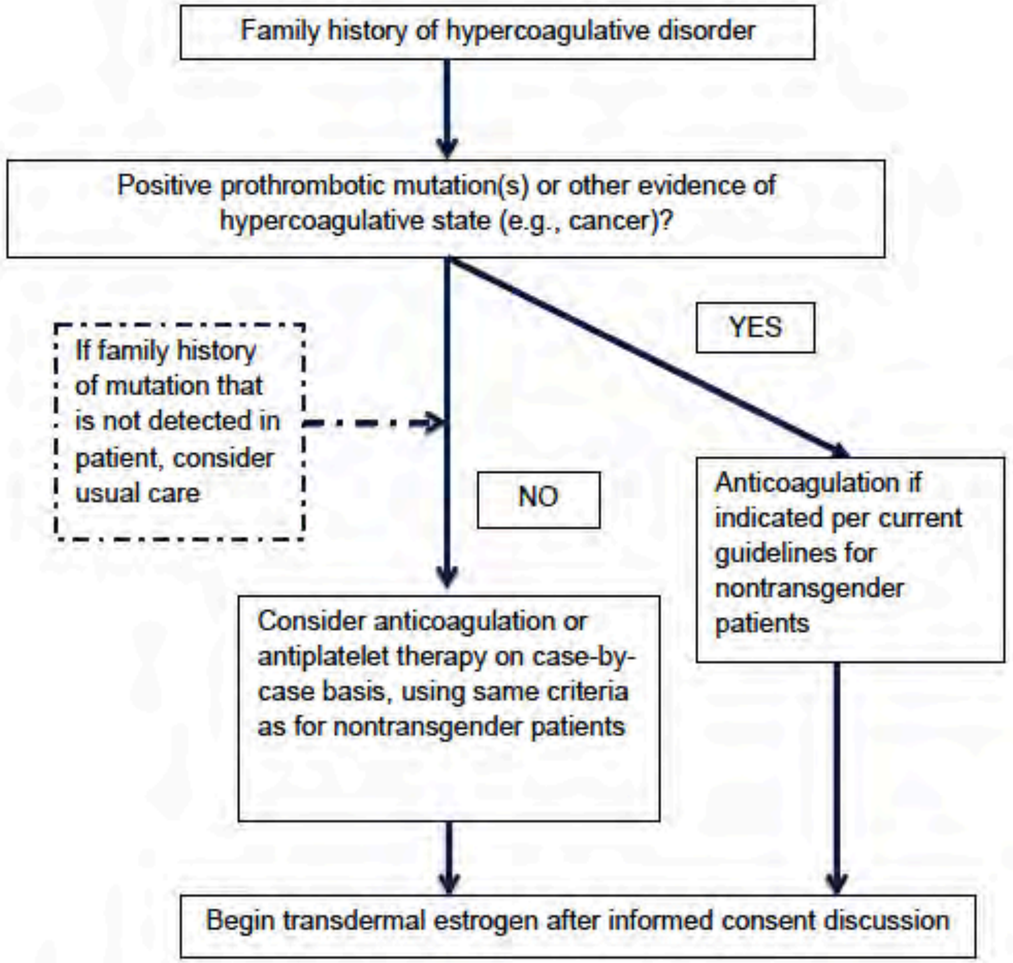

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While more trans individuals seek gender affirming surgical care, rates are limited by access to qualified providers and insurance barriers

Box 2. Gender Confirming Surgical Care

Trans Woman

- Facial feminization surgery
  - Forehead feminization
    - Frontal bossing shave
    - Frontal sinus set back
    - Hairline advancement
    - Hair transplantation
    - Forehead shortening
    - Brow-lift
  - Rhinoplasty
  - Periorbital rejuvenation
  - Rhytidectomy
  - Cheek augmentation
  - Rhinoplasty
  - Lip feminization
    - Lip augmentation
    - Upper lip shortening
  - Gonial angle shave
  - Genioplasty
  - Thyroid cartilage shave
- Breast augmentation
- Body contouring
- Genital surgery
  - Orchiectomy
  - Vaginoplasty
    - Penile inversion (with or without skin graft)
    - Intestinal conduit
  - Clitoroplasty
  - Labiaplasty

Trans Man

- Facial masculinization surgery
  - Rhinoplasty
  - Gonial implants
  - Genioplasty
- Chest reconstruction
  - Subcutaneous mastectomy
  - Liposuction
  - Pectoral implants
- Genital surgery
  - Hysterectomy and oophorectomy
  - Colpectomy
  - Metoidioplasty
  - Phalloplasty
    - Phallus
    - Glansplasty
    - Urethroplasty
    - Erectile prosthesis
  - Scrotoplasty
  - Testicular implants
  - Penile epithesis
  - Pubic lift or mini-abdominoplasty

Berli JU, Knudson G, Fraser L, Tangpricha v, Ettner R, Ettner FM, Safer JD, Graham J, Monstrey S, Schecter L. “What Surgeons Need to Know About Gender Confirmation Surgery When Providing Care for Transgender Individuals: A Review.” *JAMA Surg*. 2017.

While more trans individuals seek gender affirming surgical care, rates are limited by access to qualified providers and insurance barriers

Table 1. Standards of Care, Seventh Edition[a]

Type of Surgery	Referral Letter	Social Transition	Hormonal Treatment
Mastectomy	1	No	No
Breast augmentation	1	No	1 y
Hysterectomy and oophorectomy or orchiectomy	2	No	1 y
Metoidioplasty	2	1 y	1 y
Phalloplasty or vaginoplasty	2	1 y	1 y[b]
Other surgical procedures	No	No	No

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