

FDA Approved Anabolic Steroids

Clinical Label and Off-Label Uses. Side Effect Management

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of Anabolic Therapies for HIV+ Men and Women*

FDA Approved Anabolic Steroids

- Injectable:

- Testosterone Cypionate and Enanthate, 100 mg/ml, 200 mg/ml (compounded and branded)
- Testosterone decanoate (Aveed), 750 mg/3ml
- Nandrolone decanoate (compounded), 200 mg/ml

- Oral:

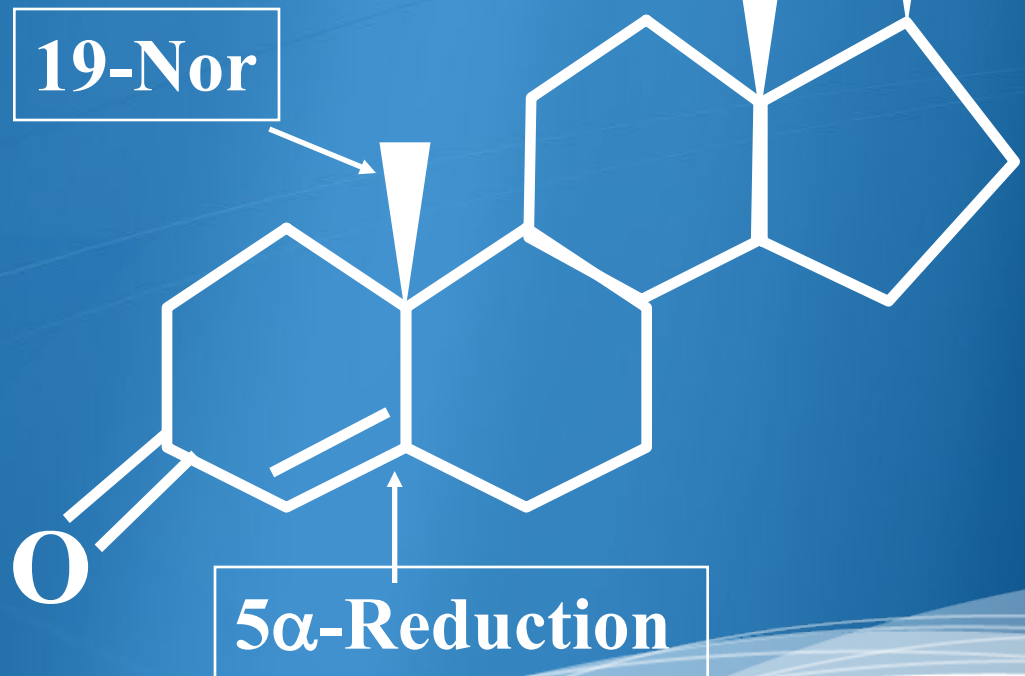
- Oxandrolone (compounded and generic), 20 mg
- Stanozonol (Winstrol), 5 mg
- Oxymetholone (Anadrol-50), 50 mg

FDA Approved Anabolic Steroids Veterinary

- Horses
 - Boldenone (Equipoise)
 - Stanazolol injectable (Winstrol V)
- Steers
 - Trenbolone (implants with estradiol benzoate)

Testosterone & Derivatives

17 β -Esterification (esters)
& 17 α -Alkylation (orals)



Nandrolone decanoate

Presentation: Injectable (IM-Depot) 100mg/mL; 200mg/mL X 10mL

Common dose range: 100-200 mg per week along with TRT

Active-life: 7-10 days post injection

Treatment and Indication:

FDA approved in 1983 for treatment of Osteoporosis; anemia; and to treat some forms of neoplasia including breast cancer.

Indicated for the treatment of anemia associated with chronic and acute renal failure.

Nandrolone decanoate

Clinical Off-Label Uses

Nandrolone is indicated for Cachexia, most commonly in the form of HIV/AIDS wasting syndrome; Wasting caused by Tuberculosis; Cancer Cachexia

To induce an increase in nitrogen retention and feed-efficiency for patients suffering metabolic acidosis.

To treat musculoskeletal injuries and soft tissue trauma. Nandrolone is also prescribed to improve joint pain/injury.

To treat muscle loss due to M.S and other neurological disease.

Nandrolone and Lipids

“... intramuscular administration of 200 mg/wk of nandrolone decanoate (200 mg a week) for eight weeks did not have any effect on serum concentrations of triglycerides, total cholesterol, HDL-C, HDL2-C, and HDL3-C, although a trend to decreased Lp(a) concentration was found.

This may beneficially affect the risk of cardiovascular events.”

Effects of androgenic-anabolic steroids on apolipoproteins and lipoprotein (a)
Br J Sports Med 2004;38:253-259

Stanozolol and Oxandrolone

- The C-17 methyl group enhances oral availability.
- They are weaker androgens than DHT and exerts comparatively less androgenic effect. It will not aromatize to estrogenic metabolites.
- Well known as “cutting agents” in the bodybuilder community.
- Can increase LFTs and decrease HDL.

Oxandrolone

Presentation: Capsule; Tablet; Sublingual Troche

Common dose range: PO: 2.5mg-40mg daily

Active life: 9h-12h

Treatment and Indication:

Oxandrolone is indicated as an adjunctive therapy to promote weight-gain after weight loss following extensive surgery, chronic infections; or severe trauma, and in some patients who without definite pathophysiologic reasons fail to gain or maintain normal weight.

Stanozolol (Winstrol)

Presentation: Tablet/Capsule 2 mg

Common dose range: 6 mg-20mg PO daily (tid)

Active life: ~8h

Treatment and Indications;

Stanozolol is indicated prophylactically to decrease the frequency and severity of attacks of hereditary angioedema. Given the serious potential adverse reactions, patients should be placed on the lowest possible effective dose.

Off label used in patients with HIV-related unintentional weight loss and cancer cachexia.

Oxymetholone (Anadrol)

This quite potent AAS is a unique agent. Oxymetholone is C-17 methylated and, thus, is an oral agent. The 3-keto stability added by the 2-hydroxymethylene group greatly enhances the drug's anabolic properties. The action of this agent in androgen-sensitive tissues is much like that of DHT and is quite androgenic.

Oxymetholone is the only AAS to date to be considered a carcinogen.

Like this entire class, oxymetholone does not aromatize. It is thought to activate estrogen receptors via the 2-hydroxymethylene group, and it can exert many estrogenic side effects.

Oxymetholone is marketed in the United States as Anadrol-50 and has been abused the world over by weight lifters and strength athletes for its strong anabolic and pronounced androgenic effects.

Management of AAS Adverse Effects

- Erythrocytosis
 - Rx: Phlebotomy
- Decreased HDL (Increased hepatic lipase activity)
 - Rx: Exercise & Supplementation ? Orals > Injectable.
- Acne
 - Acne washes (Benzoyl peroxide, salicylic acid, alpha hydroxy acids)
 - 2 % ketoconazole (Nizoral) shampoo (1% is OTC)
 - UV light
 - Zinc?

Management of Adverse Effects

- Gynecomastia
 - Improve T/E2 ratio
 - Anastrozole and other AIs
 - Check for low DHT
 - Surgery (if advanced)
- Increase in LFTs
 - Orals only. GTT not affected.
- Peliosis hepatitis (oxymetholone)

Management of Adverse Effects

- Hair loss
 - Minoxidil foam. Nizoral Shampoo. Compounded hair gels.
Warning: FDA warning about finasteride (Propecia)
- Decreased libido. ED (if used without testosterone)
- Insomnia and/or sleep apnea.
 - Sleep Rx, CPAP, dosing adjustment?
- Testicular atrophy
 - hCG
- Aggressiveness (supraphysiologic)?
- Hypertension
 - HTN Rx

Nandrolone and Tendon Healing

“Muscle atrophy, fatty degeneration, and fibrosis are consistent findings in chronically torn tendons and currently do not improve after repair.

The current study indicates that the use of nandrolone decanoate, in a rabbit model, may prevent these deleterious effects from occurring.”

Gerber C. (2011).

Anabolic steroids reduce muscle damage caused by rotator cuff tendon release in an experimental study in rabbits.

The Journal of Bone and Joint Surgery. American volume, 93 (23), 2189-95

Nandrolone and Tendon Healing

“Nandrolone decanoate and load acted synergistically to increase matrix remodeling and biomechanical properties of bioartificial tendons.”

Am J Sports Med June 2004 vol. 32 no. 4 934-943

Nandrolone Decanoate Improves Joint Pain in Men Within 8 Weeks: A Novel Prospective Pilot Study

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Androgen Society

March 21-22, 2019 / New Orleans, LA

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Results

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Mean Rheumatoid Arthritis Pain Scale Scores (n=18)

	Before Treatment	After Treatment	P Value
Physiologic	12.8	6.1	0.01*
Affective	14.2	7.4	0.002*
Sensory-Discriminative	23.0	11.8	0.001*
Cognitive	15.2	5.7	<0.001*
Total	65.2	31.1	<0.001*

Anabolic Steroids: A Comparison of HIV Clinical Studies

Drug (No of subjects)	Duration (weeks)	Control Arm	Inclusion Criteria	Baseline Body Weight	Mean Gain of Weight	Body Composition	Comments
Oxymetholone (n=30) Hengge 1996	12	Yes	Loss of B.W. >10% last 4 mths.	56.5 kg (Oxymetholone) 56 kg (Oxy + Ketotifen)	5.7 kg (Oxymetholone) 4.4 kg (Oxy + Ketotifen)	No	Significant increase of BMI in both groups
Nandrolone Decanoate (n=17) Gold 1996	16	No open-label study	Loss of B.W. 5- 15 %	62 kg	2.3 kg	Yes	Good tolerance
Nandrolone Decanoate (n=10) Strawford 1999	12	No open-label study	Loss of B.W. >5% reduced testosterone levels	No data	4.9 ± 1.2 kg	Yes	
Oxandrolone (n=10) Romeyn 2000	12	No pilot-study	Loss of B.W. >5% reduction of muscle mass	No data	2.7 kg Oxandrolone, 3.9 kg + PRE	No	
Oxandrolone (n=21) Berger 1996	16	Yes	Loss of B.W. >10%	No data	1.7 kg	No	No increased strength

Anabolic Steroids: Doses and Side Effects

Steroid	Anabolic*	Androgenic*	Reported Doses	Side Effects
Nandrolone Decanoate Deca Durabolin™ (injections) Available in the U.S.	High	Low to Medium	Men 100-200 mg/wk Women 25 mg/wk	Some water retention
Stanozolol Winstrol™ (Oral) Available in the U.S.	Low	Very Low	Men 6-18 mg/day Women 4-12 mg/day	Slight chance of virilizing for women. Watch liver function.
Oxandrolone Oxandrin™ (Oral) Available in U.S.	Low to Medium	Very Low	Men 15-20 mg/day Women 10-40 mg/wk Children 2.5-5 mg/day	Slight chance of virilization for women. Patients on protease inhibitors should watch liver function. Women report water retention.
Oxymetholone Trade name Anadrol™ 50 (oral) Available in the U.S.	Very High	Very High	Men 150 mg/day Women 150 mg/day	Balding in men, high blood pressure, water retention, body hair growth in women and breast enlargement in men. Watch liver function.
Testosterone Cypionate or Enanthate (Injections) Available in the U.S.	High	Medium to High	Men 100-200 mg/wk Women 25 mg/wk	Water retention, balding in men, acne, breast enlargement in men, may virilize women.

For Further Information

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