RonanRx
PERSONALIZED MEDICINE

CLINICAL MONOGRAPH · HORMONE OPTIMIZATION

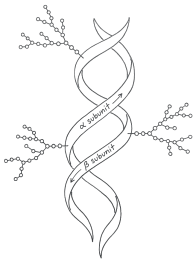
Human Chorionic Gonadotropin (HCG)

Luteinizing-hormone-mimic used in select fertility and HRT contexts

Human chorionic gonadotropin (hCG) is a hormone made by the placenta during pregnancy [fda_label_pregnyl; fda_label_novarel; lijesen1995]. As a medicine, it sends the same biological signal as luteinizing hormone (LH), the pituitary hormone that tells the ovaries to ovulate and tells the testicles to make testosterone and sperm. That is what makes it useful, and that is the only thing it does.

Doctors use hCG for three FDA-approved purposes: triggering ovulation in women undergoing fertility treatment, supporting testosterone production and sperm count in men whose own pituitary gland does not signal the testicles correctly, and (historically) helping bring down an undescended testicle in young boys. The most common modern off-label use is at low doses alongside testosterone replacement therapy in men who want to preserve fertility while on TRT [hsieh2013].

hCG is not a weight-loss drug [fda_label_ovidrel]. The FDA and FTC have repeatedly warned that hCG promoted for weight loss is illegal and ineffective; controlled trials show no benefit beyond a very-low-calorie diet [fda_hcg_warning_2011]. RonanRx does not compound hCG for weight loss.



EVIDENCE POSTURE FDA APPROVED WELL STUDIED REVIEWED **2026-05-11**

State-licensed 503A | Pharmacist reviewed | Doctor led | Cold-chain ready | Patient choice preserved

Contents

Click any section to jump there. Page numbers update on render.

FOR CLINICIANS

Human chorionic gonadotropin is a placental glycoprotein hormone that acts as an agonist at the LH/CG receptor (LHCGR) and reproduces the downstream pharmacology of pituitary LH [rainer2022; andrabi2022; cole2009]. FDA-approved manufactured products fall into two groups: urinary-derived (Pregnyl, Novarel) and recombinant (Ovidrel/choriogonadotropin alfa) [stenman2006; damewood1989; trinchard2002]. Labeled indications across the products include induction of ovulation in selected anovulatory infertile women, final follicular maturation and triggering of ovulation in assisted reproductive technology cycles, treatment of selected cases of male hypogonadotropic hypogonadism (induction and maintenance of testicular testosterone production and spermatogenesis), and, for the urinary products, prepubertal cryptorchidism in boys [fda_label_pregnyl, fda_label_novarel, fda_label_ovidrel].

Mechanistically, hCG shares the alpha subunit with LH, FSH, and TSH and carries a unique beta subunit that gives the molecule a much longer in vivo half-life than LH (~24, 33 hours vs minutes), making it pharmacologically equivalent to sustained LH stimulation. Randomized and controlled work in normal men with experimental gonadotropin suppression demonstrated that even very low-dose hCG (e.g., 125, 500 IU SC every other day) reliably maintains intratesticular testosterone concentrations [coviello2005, roth2010, roth2011]. Concomitant low-dose hCG with testosterone replacement preserves spermatogenesis in men on TRT [hsieh2013], a finding that has redefined fertility-preserving men's health practice and is reflected in current Endocrine Society and AUA guidance [bhasin2018, mulhall2018]. Gonadotropin therapy with hCG (with or without FSH/menotropins) induces virilization and spermatogenesis in men with hypogonadotropic hypogonadism [burris1988, liu2009, nieschlag2017], and similar combination regimens are used for recovery of spermatogenesis after exogenous testosterone or anabolic steroid use.

In ART, hCG is the standard surrogate for the LH surge that triggers final follicular maturation. The principal serious adverse event in women is ovarian hyperstimulation syndrome (OHSS), which is hCG-triggered or hCG-sustained and which drives the modern shift toward GnRH-agonist triggers in high-responders [golan1989, delvigne2003, aboulghar2003]. Recombinant choriogonadotropin alfa (Ovidrel) was developed to address lot-to-lot variability and the contaminant-protein burden of urinary-derived preparations [panic2019] and has been shown equivalent to urinary hCG for ovulation triggering across randomized trials [driscoll2000, alinany2005]. In men, common adverse effects relate to LH-receptor over-stimulation: testosterone-mediated effects (acne, mild gynecomastia from aromatization to estradiol, edema) and rare hypersensitivity [rahnema2014; wenker2015; karavolos2015]. Compounded hCG occupies a legitimate 503A niche for fertility-preserving low-dose SC dosing in men's-health protocols (250, 500 IU SC two-to-three times weekly) at strengths not commercially available, it is explicitly not appropriate for weight loss [fda_hcg_warning_2011, lijesen1995, greenway1977].

Why Personalized Human Chorionic Gonadotropin (HCG)

The FDA-approved hCG products (Pregnyl, Novarel, Ovidrel) were dose-calibrated for population-scale endpoints: triggering ovulation in ART, virilizing a hypogonadotropic man, or descending a cryptorchid testicle. Pregnyl and Novarel ship as 10,000 IU IM vials. Ovidrel ships as a single 250 mcg SC syringe. None of those presentations were built for the modern off-label question that drives most male-fertility consults today, which is how to maintain intratesticular testosterone and sperm production in a specific man on TRT. That answer depends on his pituitary suppression, his baseline testicular volume, his trough testosterone, whether he is actively trying to conceive, how he reacts to LH-receptor stimulation (estradiol rise, acne, gynecomastia), and what his prescriber wants to achieve. A 10,000 IU IM vial is not the right unit of granularity for that conversation.

Compounding is what closes that gap. A 503A pharmacy can prepare hCG at strengths matched to a low-dose SC fertility-preserving regimen (for example 250 IU or 500 IU two to three times weekly, the doses the Coviello and Hsieh literature actually used) rather than asking the patient and prescriber to dilute a 10,000 IU vial and guess at residual stability. Route can be subcutaneous instead of intramuscular at the strengths and volumes that make daily or every-other-day self-administration tolerable. For cryptorchidism, pediatric strengths can be prepared so the dose is right for a small child rather than a fraction of an adult ovulation-trigger vial. The molecule is the same hCG the FDA reviewed; what changes is that the strength, the route, and the cadence are written for the named patient on the prescription instead of for the trial population.

This is what pharmacy looked like before mass manufacturing arrived. A prescriber wrote an order for a specific patient. A pharmacist prepared it. Compounded hCG, dispensed only on a patient-specific prescription for a legitimate fertility or hypogonadism indication, is that older arrangement, kept honest by state board inspection and pharmacist accountability.

Quick Facts About Human Chorionic Gonadotropin (HCG)

Category: Placental glycoprotein hormone; luteinizing-hormone (LH) receptor agonist

Active ingredient: Human chorionic gonadotropin, heterodimer of an alpha subunit (shared with LH, FSH, TSH) and an hCG-specific beta subunit; urinary-derived and recombinant (choriogonadotropin alfa) forms are clinically distinct preparations of the same physiological signal

FDA-approved branded forms: Pregnyl (urinary-derived, Organon), Novarel (urinary-derived, Ferring), both indicated for ovulation induction in selected anovulatory women, hypogonadotropic hypogonadism in men, and prepubertal cryptorchidism; Ovidrel/choriogonadotropin alfa (recombinant, EMD Serono), indicated for ovulation induction and final follicular maturation in ART

Route: Intramuscular (urinary-derived Pregnyl, Novarel) or subcutaneous (recombinant Ovidrel; off-label SC for urinary-derived in male fertility protocols)

Evidence posture: Decades of randomized and observational evidence for ovulation induction and for male hypogonadotropic hypogonadism; high-quality controlled evidence for fertility-preserving co-administration with testosterone replacement in men

FDA-approval status: Manufactured Pregnyl, Novarel, and Ovidrel are FDA-approved. Compounded hCG is not FDA-approved.

Compounded under: 503A, patient-specific prescription only, for legitimate medical indications (fertility-preserving men's health, fertility protocols). NOT for weight loss.

Critical regulatory caution: FDA and FTC have explicitly warned that 'homeopathic' and over-the-counter hCG products promoted for weight loss are illegal and unproven. RonanRx does not compound hCG for weight-loss indications under any circumstances.

Schedule: Not a controlled substance

Pregnancy: Former Category X (contraindicated); current labeling reflects that hCG is not used in established pregnancy

SPECIALS: PATIENT-SPECIFIC PRESCRIPTION ONLY

Human Chorionic Gonadotropin (HCG) described in this monograph is a 503A compounded preparation. Every dose is made on a prescription, for a named patient, by a licensed pharmacist. It is not a stocked, mass-manufactured product.

- **Made to order, not off a shelf.** No batch sits in a warehouse waiting for buyers. Your prescription triggers the prep.
- **Named-patient label.** The bottle carries one patient's name. The batch records carry one prescription.
- **Dose, strength, and route chosen for the patient.** A prescriber decides what gets compounded, not a manufacturer who set the strength for a trial population.
- **Licensed pharmacist on the hook.** A real person, with a license that can be pulled, signs off on every prep. State inspectors check the facility.
- **Compounded drugs are not FDA-approved.** They should not be evaluated using branded-drug trial data alone. Availability varies by state and prescribed medication.

How This Differs from a Research-Use-Only Website

A research-use-only website ships a vial from a warehouse. There is no prescription, no pharmacist, no facility inspection, and no way to recall the product if something is wrong with it. If the vial is mislabeled, contaminated, or under-potent, there is nobody whose license is at stake.

A 503A compounding pharmacy is the other thing. The doctor writes the prescription. A licensed pharmacist, whose name is on the label, prepares the medicine in a facility the state inspects. If something goes wrong, there is a person and a license on the hook, and a documented chain of custody on every lot. That accountability is what makes it safe.

What is Human Chorionic Gonadotropin (HCG)?

Human chorionic gonadotropin (hCG) is a heterodimeric glycoprotein hormone of approximately 36, 40 kDa [fda_label_pregnyl; fda_label_novarel]. The alpha subunit (92 amino acids) is shared with the pituitary glycoprotein hormones LH, FSH, and TSH; the beta subunit (145 amino acids) is hCG-specific and confers receptor specificity and an extended in vivo half-life through its C-terminal peptide and heavy glycosylation [cole2009, stenman2006].

Physiologically, hCG is synthesized by syncytiotrophoblast cells of the placenta during pregnancy and is the basis for pregnancy testing. As a medicine, the molecule is obtained either by purification from the urine of pregnant women (Pregnyl, Novarel, 'urinary-derived' hCG) or by recombinant expression in mammalian cell culture (Ovidrel/choriogonadotropin alfa, 'recombinant hCG') [fda_label_ovidrel]. Both preparations act through the same LH/CG receptor (LHCGR) on testicular Leydig cells and on ovarian theca and granulosa cells, and they produce overlapping pharmacology with manufactured-product-specific differences in protein purity and lot-to-lot variability [panic2019, trinchard2002].

Pregnyl was originally marketed in Europe in the 1930s and has remained available in the United States across multiple manufacturers; Novarel is the modern second urinary-derived product [fda_label_pregnyl]. Ovidrel was approved by the FDA in 2000 as the first recombinant hCG product and is supplied in a pre-filled subcutaneous syringe. Compounded hCG, when prepared for legitimate fertility-preserving men's-health protocols, is typically supplied as a reconstituted sterile injectable solution at custom strengths (e.g., 1,000, 10,000 IU/mL after reconstitution), strengths and SC-route dose-volumes not available in the manufactured products.

How Human Chorionic Gonadotropin (HCG) Works

hCG is a luteinizing hormone (LH) receptor agonist. The LH/CG receptor (LHCGR) is a class A G-protein-coupled receptor expressed on testicular Leydig cells, ovarian theca cells, and (after FSH priming) ovarian granulosa cells. Receptor activation couples primarily to Gαs and elevates intracellular cAMP, with secondary recruitment of Gαq/PLC and ERK1/2 cascades. The downstream consequence in men is stimulation of testicular androgen biosynthesis (testosterone, with parallel intratesticular increases in androstenedione and DHEA) [roth2011]. In women, LHCGR activation supports terminal follicular maturation, ovulation, and corpus luteum function.

Because hCG and pituitary LH bind the same receptor and produce indistinguishable downstream signaling, hCG functions as a long-acting pharmacological substitute for the LH signal. The clinically

meaningful pharmacodynamic difference between LH and hCG is duration: LH has a circulating half-life of minutes, while hCG has a half-life of approximately 24, 36 hours after parenteral administration, making a single dose biologically equivalent to several days of LH stimulation [damewood1989, trinchard2002]. In men with normally functioning testes whose endogenous gonadotropins are suppressed by exogenous testosterone, even very low doses of hCG (≥125 IU SC every other day) maintain intratesticular testosterone in the range required for spermatogenesis [coviello2005, roth2010].

Biological Role of Human Chorionic Gonadotropin (HCG)

Endogenously, hCG is a pregnancy hormone. It is secreted by syncytiotrophoblast cells of the developing placenta beginning approximately eight days after fertilization, rises exponentially in early pregnancy with a doubling time of approximately 1.5, 2 days, peaks at around 10 weeks of gestation, and then declines to a stable plateau through the remainder of pregnancy [stenman2006, cole2009]. Its principal endogenous function is rescue of the corpus luteum during early pregnancy: the developing trophoblast secretes hCG, which sustains corpus luteum progesterone production until placental progesterone synthesis takes over by approximately the eighth week of gestation.

Pharmacologically, hCG substitutes for pituitary luteinizing hormone (LH), the two hormones bind the same LHCGR receptor and trigger the same downstream signaling pathways. This is what makes hCG clinically useful: it provides a long-acting LH-equivalent signal that can be dosed once or several times per week rather than continuously. In women undergoing controlled ovarian stimulation, exogenous hCG replaces the natural mid-cycle LH surge and triggers final oocyte maturation. In men with hypogonadotropic hypogonadism (where pituitary LH and FSH are absent or insufficient), hCG substitutes for LH and restores testicular testosterone production and spermatogenesis. In men with normally functioning testes whose LH and FSH are suppressed by exogenous testosterone, low-dose hCG preserves the intratesticular testosterone gradient required for spermatogenesis [coviello2005, hsieh2013].

Detailed Mechanism of Human Chorionic Gonadotropin (HCG)

The LH/CG receptor is the receptor for both pituitary LH and placental hCG [stenman2006]. Both ligands occupy the same large extracellular leucine-rich-repeat domain, and both produce indistinguishable activation of the receptor's heptahelical transmembrane domain. Coupling is primarily through Gαs with adenylyl cyclase activation and cAMP elevation, leading to protein kinase A activation, phosphorylation of steroidogenic acute regulatory protein (StAR), and increased mitochondrial cholesterol import, the rate-limiting step in steroidogenesis. Secondary pathways include Gαq/PLC/IP3/DAG signaling and ERK1/2 activation, which contribute to longer-term transcriptional changes in steroidogenic enzymes (CYP11A1, CYP17A1, HSD3B2, HSD17B3).

In men, the principal target is the testicular Leydig cell. hCG stimulation increases intratesticular testosterone to a much greater extent than peripheral testosterone, intratesticular concentrations are typically 50, 100 times peripheral concentrations under physiologic LH drive, and this gradient is preserved under exogenous hCG. Roth and colleagues quantified the relationship in normal men with experimentally suppressed gonadotropins: 125 IU SC every other day maintained intratesticular testosterone at approximately 25% of baseline, 250 IU at approximately 60%, and 500 IU at greater than 100% [roth2010]. Parallel effects on intratesticular androstenedione, DHEA, and the LH-dependent factor INSL3 were demonstrated in companion work [roth2011]. The clinical inference is that the intratesticular testosterone required to support spermatogenesis (well above peripheral levels) can be reproduced pharmacologically with low-dose hCG even when pituitary gonadotropins are suppressed [coviello2005, hsieh2013] [stenman2006].

In women, hCG (or the endogenous mid-cycle LH surge it mimics) acts on FSH-primed granulosa cells of the dominant follicle to trigger meiotic resumption of the oocyte, follicular wall remodeling, and ovulation, followed by luteinization and progesterone production by the corpus luteum [stenman2006]. In assisted reproductive technology, exogenous hCG administered 34, 38 hours before oocyte retrieval recapitulates this surge. The pharmacological substitution is essentially perfect for triggering, recombinant choriogonadotropin alfa (Ovidrel) and urinary-derived hCG produce equivalent oocyte maturation, fertilization, and pregnancy rates in head-to-head randomized trials [driscoll2000, alinany2005].

Pharmacokinetically, hCG is absorbed adequately from both intramuscular and subcutaneous depot sites. After IM dosing in healthy male volunteers, Trinchard-Lugan and colleagues reported a recombinant-hCG mean terminal half-life of approximately 33 hours and a recombinant-hCG mean residence time of approximately 47 hours; subcutaneous bioavailability was approximately 80% of IM, supporting interchangeable SC dosing [trinchard2002]. Earlier work by Damewood and colleagues characterized similar disappearance kinetics for urinary hCG [damewood1989]. The molecule is cleared by hepatic uptake and renal filtration with degradation of the free beta subunit. Long-circulating hCG immunoassays may detect residual hCG for up to 10, 14 days after a single therapeutic dose, relevant to interpretation of pregnancy testing after ART trigger [cole2009].

Human Chorionic Gonadotropin (HCG) Research History

hCG was identified in the 1920s as the pregnancy-specific hormone responsible for the Aschheim-Zondek pregnancy test and was first purified from the urine of pregnant women in the early 1930s. Pregnyl was introduced as a therapeutic preparation by Organon shortly thereafter, becoming one of the earliest peptide-hormone medicines in clinical use. Clinical use through the mid-twentieth century centered on ovulation induction, treatment of cryptorchidism in boys, and stimulation of testicular function in men with pituitary insufficiency.

The 1954 publication by A.T.W. Simeons proposed hCG injections combined with a 500-calorie diet as a weight-loss treatment. This 'Simeons method' became commercially popular through the 1960s and 1970s despite the absence of controlled evidence. Greenway and Bray published a critical assessment in 1977 [greenway1977], and Lijesen and colleagues published a criteria-based meta-analysis of all available controlled trials in 1995 [lijesen1995], concluding that hCG produced no weight-loss benefit beyond the very-low-calorie diet alone. The Simeons protocol has been continuously promoted to consumers despite this evidence base and despite FDA enforcement actions; in December 2011 the FDA and FTC jointly warned manufacturers and distributors of over-the-counter 'homeopathic' hCG weight-loss products that the products are unproven and illegal [fda_hcg_warning_2011].

Modern research has clarified the male-fertility role of hCG. Burris and colleagues established in 1988 that hCG monotherapy (followed by addition of menotropin/FSH where needed) induces virilization and spermatogenesis in men with isolated hypogonadotropic hypogonadism, with initial testicular size predicting response [burris1988]. Coviello, Matsumoto, and Bremner demonstrated in 2005 that low-dose hCG (125, 500 IU SC every other day) maintains intratesticular testosterone in men whose endogenous gonadotropins are suppressed by exogenous testosterone, a dose-finding study that defined the modern fertility-preserving TRT regimen [coviello2005]. Roth and colleagues extended the dose-response analysis (2010, 2011) and characterized intratesticular androstenedione and DHEA responses [roth2010, roth2011]. Hsieh and colleagues then demonstrated in 2013 that concomitant low-dose hCG with TRT preserves seminal sperm concentrations in men actively trying to conceive [hsieh2013]. Pooled analyses of induction of spermatogenesis with gonadotropin therapy in hypogonadotropic hypogonadism [liu2009, liu2006] and meta-analytic data on recovery of spermatogenesis after hormonal male contraception [liu2006] complete the male-fertility evidence base. The Endocrine Society 2018 testosterone guideline and the AUA 2018 testosterone deficiency guideline both reference hCG as the standard fertility-preserving adjunct for men on TRT [bhasin2018, mulhall2018].

In ART, recombinant choriogonadotropin alfa (Ovidrel) was approved by the FDA in September 2000 as the first non-urinary hCG product, supplied as a pre-filled subcutaneous syringe. The recombinant-vs-urinary comparison was settled by Driscoll and colleagues in a 2000 randomized double-blind double-dummy trial [driscoll2000], by Trinchard-Lugan's PK/PD characterization in healthy male and female volunteers [trinchard2002], and by the Al-Inany Cochrane meta-analysis showing equivalent ovulation triggering and pregnancy outcomes between the two preparations [alinany2005]. Proteomic analysis by Panić-Janković and Mitulović (2019) documented the substantially higher contaminant-protein burden in urinary-derived preparations compared with recombinant hCG [panic2019], relevant for sensitivity reactions and for batch-to-batch variability.

Human Chorionic Gonadotropin (HCG) Timeline

1920s • Aschheim and Zondek identify hCG as the basis of the first reliable pregnancy test

1930s • Urinary hCG purified at therapeutic scale; Organon introduces Pregnyl as an injectable medicine

1954 • Simeons publishes the hCG-plus-500-calorie-diet weight-loss protocol, basis for the discredited 'hCG diet' that has persisted in consumer marketing despite repeated negative trials

1977 • Greenway and Bray publish a critical assessment of the Simeons method in the Western Journal of Medicine, controlled trials show no weight-loss benefit [greenway1977]

1988 • Burris and colleagues (J Clin Endocrinol Metab) establish that hCG monotherapy induces virilization and spermatogenesis in isolated hypogonadotropic hypogonadism, initial testicular size predicts response [burris1988]

1989 • Damewood and colleagues characterize the disappearance kinetics of exogenously administered hCG in healthy volunteers [damewood1989]

1989 • Golan and colleagues publish the classical update review of ovarian hyperstimulation syndrome (OHSS), the dominant serious adverse event of hCG-triggered ART [golan1989]

1995 • Lijesen and colleagues publish criteria-based meta-analysis of hCG-Simeons weight-loss trials in the British Journal of Clinical Pharmacology, no benefit beyond very-low-calorie diet [lijesen1995]

1995 • Pyörälä and colleagues (J Clin Endocrinol Metab) publish a meta-analysis of hormonal treatment of cryptorchidism, modest but real efficacy for hCG, particularly in distal undescended testes [pyorala1995]

2000 • FDA approves Ovidrel (choriogonadotropin alfa), first recombinant hCG; Driscoll et al [driscoll2000; fda_label_ovidrel]. publish the randomized recombinant-vs-urinary head-to-head in Human Reproduction

2001 • Hayes and colleagues characterize the role of inhibin B in regulation of FSH secretion in the human male, informs the rationale for FSH co-administration with hCG in some male-fertility protocols [hayes2001]

2002 • Trinchard-Lugan and colleagues report PK/PD of recombinant hCG in healthy male and female volunteers, terminal half-life ~33 hours; SC bioavailability ~80% of IM [trinchard2002]

2003 • Delvigne and Rozenberg (Human Reproduction Update) and Aboulghar and Mansour (Human Reproduction Update) publish parallel reviews of OHSS classification, clinical course, and prevention [delvigne2003; aboulghar2003]

2005 • Coviello, Matsumoto, and Bremner (J Clin Endocrinol Metab) demonstrate that low-dose hCG (125, 500 IU SC every other day) maintains intratesticular testosterone in men with testosterone-induced gonadotropin suppression, defines the modern fertility-preserving TRT regimen [coviello2005]

2005 • Al-Inany and colleagues (Human Reproduction) publish meta-analysis of recombinant vs urinary gonadotrophins for ovulation triggering, equivalence [alinany2005]

2006 • Liu, Swerdloff, Christenson, and Handelsman (Lancet) publish integrated analysis of spermatogenic recovery after hormonal male contraception, defines time-course and predictors [liu2006]

2006 • Stenman and colleagues (Human Reproduction Update) review the classification, functions, and clinical use of hCG isoforms [stenman2006]

2009 • Liu and colleagues (J Clin Endocrinol Metab) publish predictors of fertility outcome with gonadotropin treatment of gonadotropin-deficient men, hCG ± FSH [liu2009]

2009 • Cole publishes a review of hCG measurement and clinical interpretation (Expert Rev Mol Diagn) [cole2009]

2010 • Roth and colleagues (J Clin Endocrinol Metab) characterize the dose-dependent intratesticular testosterone response to very-low-dose hCG (125, 250, 500 IU) in men with experimental gonadotropin deficiency [roth2010]

2011 • Roth and colleagues (J Clin Endocrinol Metab) extend the analysis to intratesticular androstenedione and DHEA [roth2011]

2011 • FDA and FTC issue joint warning to manufacturers and distributors of OTC 'homeopathic' hCG weight-loss products, the products are unproven and illegal [fda_hcg_warning_2011]

2013 • Hsieh and colleagues (Journal of Urology) demonstrate that concomitant low-dose hCG with TRT preserves seminal sperm concentrations, current standard for fertility-preserving testosterone therapy [hsieh2013]

2014 • Rahnema and colleagues (Fertility and Sterility) publish a clinical framework for diagnosis and treatment of anabolic-steroid-induced hypogonadism, hCG plays a central role [rahnema2014]

2015 • Wenker and colleagues (Journal of Sexual Medicine) characterize hCG-based combination therapy for recovery of spermatogenesis after exogenous testosterone use; Karavolos and colleagues (Clin Endocrinol) review male central hypogonadism secondary to exogenous androgens [wenker2015; karavolos2015]

2017 • Nieschlag, Bouloux, and colleagues (Reprod Biol Endocrinol) report open-label trial of corifollitropin alfa + hCG for spermatogenesis induction in adult men with hypogonadotropic hypogonadism [nieschlag2017]

2018 • Endocrine Society (Bhasin et al., J Clin Endocrinol Metab) and American Urological Association (Mulhall et al., J Urol) publish updated testosterone-therapy guidelines, both reference hCG as the standard fertility-preserving adjunct for men on TRT [bhasin2018; mulhall2018]

2019 • Panić-Janković and Mitulović (Electrophoresis) quantify the contaminant-protein burden of urinary-derived hCG preparations vs recombinant hCG using label-free proteomics [panic2019]

2022 • Rainer and colleagues (Cureus) characterize the safety of hCG monotherapy among men with previous exogenous testosterone use; Andrabi and colleagues (Clin Exp Reprod Med) report effect of hCG therapy on semen parameters in hypogonadic severe-oligozoospermic men [rainer2022; andrabi2022]

2025 • Hochu and colleagues (Transl Androl Urol) and Hohl and colleagues (Arch Endocrinol Metab) publish updated reviews and meta-analyses of stimulatory and fertility-preserving therapies in testosterone deficiency [hochu2025; hohl2025]

Clinical Contexts for Human Chorionic Gonadotropin (HCG)

Induction of ovulation in selected anovulatory infertile women FDA APPROVED

FDA-approved indication for manufactured Pregnyl, Novarel, and Ovidrel.

After follicular development has been induced with FSH/menotropin therapy, a single dose of hCG (typically 5,000, 10,000 IU IM of Pregnyl/Novarel, or 250 mcg SC of Ovidrel) is used to mimic the natural mid-cycle LH surge and trigger ovulation [fda_label_pregnyl; fda_label_novarel; fda_label_ovidrel]. Recombinant and urinary-derived preparations have been shown equivalent for triggering oocyte maturation and for clinical pregnancy outcomes in randomized comparison [driscoll2000] and in meta-analysis [alinany2005]. The principal serious adverse event in women is ovarian hyperstimulation syndrome (OHSS), which is hCG-triggered and hCG-sustained [golan1989, delvigne2003, aboulghar2003], modern protocols mitigate OHSS risk in high responders by substituting a GnRH-agonist trigger when feasible.

Branded product: Pregnyl, Novarel (urinary-derived); Ovidrel (recombinant choriogonadotropin alfa)

Hypogonadotropic hypogonadism in men (induction of spermatogenesis and maintenance of testosterone production) FDA APPROVED

FDA-approved indication for manufactured Pregnyl and Novarel.

In men with secondary hypogonadism (failure of pituitary LH/FSH secretion from congenital, traumatic, or tumor-related causes), hCG substitutes for endogenous LH to drive testicular testosterone synthesis [hayes2001]. hCG monotherapy (typically 1,500, 2,000 IU IM 2, 3 times weekly, titrated) restores serum testosterone and supports initiation of spermatogenesis; in azoospermic men or those failing to respond, FSH (recombinant or urinary menotropin) is added [burris1988, liu2009, nieschlag2017]. Initial testicular size predicts response [burris1988]. Pooled analysis of multiple gonadotropin-treatment trials in gonadotropin-deficient men [liu2009] characterizes the time course (median to sperm in ejaculate ~7 months) and outcome predictors [fda_label_pregnyl; fda_label_novarel].

Branded product: Pregnyl, Novarel

Prepubertal cryptorchidism in boys FDA APPROVED

Historical FDA-approved indication for manufactured Pregnyl and Novarel; modern pediatric urology generally prefers surgical orchidopexy.

hCG was historically the first-line non-surgical treatment of undescended testes in boys, based on the rationale that LH-equivalent stimulation could complete an incomplete androgen-driven testicular descent. The Pyörälä, Huttunen, and Uhari meta-analysis (1995) of 33 placebo-controlled and comparative trials reported a modest success rate (~20%) overall, with greater efficacy in distal undescended testes and less efficacy in higher-lying testes [pyorala1995]. Surgical orchidopexy has progressively replaced hormonal therapy as the standard of care over the subsequent three decades, but the FDA-approved indication remains on the urinary hCG labels [fda_label_pregnyl; fda_label_novarel].

Branded product: Pregnyl, Novarel

Off-Label Uses of Human Chorionic Gonadotropin (HCG)

Fertility preservation during testosterone replacement therapy in men WELL STUDIED

Off-label use, well-supported by controlled and observational evidence; referenced in current Endocrine Society and AUA guidelines as the standard fertility-preserving adjunct to TRT.

Exogenous testosterone suppresses pituitary LH and FSH, which suppresses intratesticular testosterone (a 50, 100-fold gradient over peripheral concentrations under normal physiology) and shuts down spermatogenesis. Coviello, Matsumoto, and Bremner (2005) demonstrated in normal men with experimentally suppressed gonadotropins that low-dose hCG (125, 250, or 500 IU SC every other day) restores intratesticular testosterone in a dose-dependent fashion [coviello2005]. Roth and colleagues (2010, 2011) extended this to the very-low-dose range and characterized intratesticular androstenedione and DHEA responses [roth2010, roth2011]. Hsieh and colleagues (2013) translated this physiology into a clinical regimen, concomitant low-dose IM hCG with TRT preserves seminal sperm concentration over follow-up [hsieh2013]. Typical fertility-preserving dosing in current practice is 500 IU SC two-to-three times weekly, although IM dosing and higher (~1,000, 3,000 IU) two-to-three-times-weekly regimens are also documented. The Endocrine Society 2018 testosterone guideline [bhasin2018] and the AUA 2018 testosterone deficiency guideline [mulhall2018] both reference hCG as the standard fertility-preserving adjunct for men on TRT who wish to maintain fertility [hochu2025].

Recovery of spermatogenesis after testosterone or anabolic androgenic steroid use

WELL STUDIED

Off-label use; supported by clinical-series and review evidence.

After discontinuation of exogenous testosterone or anabolic androgenic steroids (AAS), the hypothalamic-pituitary-gonadal axis is suppressed and recovery of endogenous testosterone production and spermatogenesis is variable in time-course. Rahnema and colleagues (2014) provided a clinical framework for diagnosis and treatment of anabolic-steroid-induced hypogonadism [rahnema2014]. Wenker and colleagues (2015) characterized hCG-based combination therapy (typically hCG ± a selective estrogen receptor modulator such as clomiphene, ± an aromatase inhibitor such as anastrozole) for recovery of spermatogenesis after testosterone use [wenker2015]. Karavolos and colleagues (2015) reviewed protocols documented in the user community [karavolos2015]. Rainer and colleagues (2022) reported safety data on hCG monotherapy in men with previous exogenous testosterone use [rainer2022]. Liu, Swerdloff, Christenson, and Handelsman's integrated analysis (2006) of spermatogenic recovery after hormonal male contraception trials provides time-course expectations and outcome predictors that inform AAS-recovery counseling [liu2006] [hohl2025].

Adjunct to clomiphene/enclomiphene or aromatase-inhibitor regimens for male hypogonadism EMERGING

Off-label combined regimen; supported by clinical-series and recent meta-analytic data on the SERM components.

In men with secondary hypogonadism preferring not to use exogenous testosterone, regimens combining hCG with a SERM (clomiphene or enclomiphene) and/or an aromatase inhibitor (anastrozole) are used to raise endogenous testosterone while preserving fertility. The Hohl 2025 systematic review and meta-analysis of clomiphene and enclomiphene citrate for male hypogonadism documented serum-testosterone responses comparable to TRT in selected populations [hohl2025], and the Andrabi 2022 series reported hCG-driven semen-parameter improvement in hypogonadic severe-oligozoospermic men [andrabi2022]. The combination approach is reflected in the Hochu 2025 review of stimulatory therapies in testosterone deficiency [hochu2025].

FDA-Approved Uses of Human Chorionic Gonadotropin (HCG)

Brand	Indication	Year	Route
Pregnyl	Induction of ovulation in anovulatory infertile women; selected cases of hypogonadotropic hypogonadism in men; prepubertal cryptorchidism in boys	Pre-1970 NDA (legacy listing)	Intramuscular injection
Novarel	Induction of ovulation in anovulatory infertile women; selected cases of hypogonadotropic hypogonadism in men; prepubertal cryptorchidism in boys	—	Intramuscular injection
Ovidrel (choriogonadotropin alfa)	Induction of ovulation and pregnancy in infertile women undergoing ART; induction of ovulation in infertile women with oligo-ovulation or anovulation	2000	Subcutaneous injection (pre-filled syringe)

Three hCG-containing products are FDA-approved in the United States: Pregnyl (urinary-derived, Organon/Merck), Novarel (urinary-derived, Ferring), and Ovidrel/choriogonadotropin alfa (recombinant, EMD Serono, first approved September 2000). The urinary-derived products are supplied as lyophilized powder with diluent for IM administration; Ovidrel is supplied as a pre-filled subcutaneous syringe. Labeled indications for the urinary products include induction of ovulation in selected anovulatory infertile women, treatment of selected cases of hypogonadotropic hypogonadism in men (induction and maintenance of testicular function and spermatogenesis), and prepubertal cryptorchidism in boys. Ovidrel's

labeled indications are limited to induction of ovulation and final follicular maturation in ART [fda_label_pregnyl, fda_label_novarel, fda_label_ovidrel].

All three labels carry warnings regarding ovarian hyperstimulation syndrome (OHSS) in women, multiple pregnancy in ART, and arterial thromboembolism in association with OHSS. Pregnancy contraindication is universal across the products. The recombinant product additionally addresses the lot-to-lot purity variability inherent to urinary-derived preparations [panic2019].

Compounded Human Chorionic Gonadotropin (HCG) (503A)

Compounded hCG is dispensed under 503A only on a patient-specific prescription written for an identified patient with a documented clinical reason that the manufactured Pregnyl, Novarel, or Ovidrel product is not appropriate [usp_797] [bhasin2018]. The legitimate documented needs in men's-health and fertility practice are specific: (1) the typical fertility-preserving men's-health dose is 250, 500 IU subcutaneously two-to-three times per week; manufactured Pregnyl and Novarel are supplied at 10,000 IU strength designed for full-dose IM ovulation triggering and are not commercially packaged in small SC dose-volumes for chronic male dosing; (2) excipient sensitivity to a component of the manufactured preparation; and (3) documented manufactured-product supply interruption [fda503a, fda_essentially_a_copy] [coviello2005].

The clinical indications appropriate for compounded hCG at RonanRx are tightly defined and align with the published evidence base: fertility-preserving adjunct in men on testosterone replacement therapy; recovery of spermatogenesis after exogenous testosterone or anabolic androgenic steroid use [rahnema2014, wenker2015, rainer2022]; and selected fertility-protocol custom strengths supporting reproductive medicine prescriptions written by a licensed reproductive endocrinologist or urologist [usp_797].

Compounded hCG is explicitly NOT used for weight loss at RonanRx, under any circumstances [usp_797]. The FDA and FTC have warned since 2011 that over-the-counter 'homeopathic' hCG weight-loss products are unproven and illegal [fda_hcg_warning_2011]. The peer-reviewed evidence does not support hCG as a weight-loss medicine: the Lijesen 1995 criteria-based meta-analysis [lijesen1995] and the earlier Greenway and Bray 1977 critical assessment [greenway1977] both found no weight-loss benefit beyond the very-low-calorie diet that historically accompanied the Simeons protocol. Prescriptions requesting compounded hCG for weight loss are not filled [hsieh2013; mulhall2018; roth2010].

Compounded hCG preparations are sterile injectable solutions prepared per USP General Chapter <797> [usp_797]. The compounded preparation is not bioequivalent to Pregnyl, Novarel, or Ovidrel; clinicians and patients should understand that local PK and tolerability may differ from manufactured-product published data, particularly when concentration, excipient profile, or container closure differ from the reference product. The published evidence base establishes the LH-equivalent pharmacology of hCG as a class, the dosing inferences generalize across well-prepared hCG preparations of the same dose [roth2011; liu2009].

Human Chorionic Gonadotropin (HCG) Formulations and Routes

Form	Concentration	Description
Sterile subcutaneous injection (compounded)	Custom, typically reconstituted to 1,000, 10,000 IU/mL for SC dosing of 250, 500 IU 2, 3 times weekly in men's-health protocols	Sterile injectable solution prepared under USP <797> standards from FDA-registered active pharmaceutical ingredient on a patient-specific prescription. Container closure, excipient profile, and concentration are documented per batch and matched to the patient's prescription.
Manufactured Pregnyl / Novarel (urinary-derived)	10,000 USP units per vial (lyophilized powder, reconstituted with provided diluent)	Pregnyl (Organon/Merck) and Novarel (Ferring) are FDA-approved urinary-derived hCG products supplied as multidose lyophilized powder with bacteriostatic water diluent. Labeled for IM administration. Intended primarily for full-dose ovulation triggering, male hypogonadotropic hypogonadism induction, and pediatric cryptorchidism.
Manufactured Ovidrel (recombinant choriogonadotropin alfa)	250 mcg / 0.5 mL pre-filled syringe	FDA-approved (September 2000) recombinant hCG product. Supplied as a single-dose subcutaneous pre-filled syringe; 250 mcg is bioequivalent to ~6,500 IU of urinary hCG. Labeled for ART ovulation triggering and final follicular maturation.

Routes used in published literature: intramuscular, subcutaneous.

Human Chorionic Gonadotropin (HCG) Dosing

Route	Population	Range	Duration	Study type
Intramuscular	Ovulation induction in women undergoing ART (Pregnyl/ Novarel labeled regimen)	5,000, 10,000 USP units IM as a single dose, one day following the last dose of menotropin, when ovarian follicles are mature	Single dose per cycle	FDA-approved labeled regimen
Subcutaneous	Ovulation induction in women undergoing ART (Ovidrel labeled regimen)	250 mcg SC as a single dose, one day following the last dose of follicle-stimulating preparation,	Single dose per cycle	FDA-approved labeled regimen

Route	Population	Range	Duration	Study type
		when ovarian follicles are mature		
Intramuscular	Adult men with hypogonadotropic hypogonadism (Pregnyl/Novarel labeled regimen)	Typical: 1,000, 2,000 USP units IM 2, 3 times weekly. Higher doses (4,000 USP units 3 times weekly for 6, 9 months, then 2,000 USP units 3 times weekly thereafter) are described in the labeling.	Long-term while clinically beneficial; spermatogenesis induction typically requires 6, 24 months and may require co-administration with FSH/menotropin	FDA-approved labeled regimen; supported by Burris 1988 and Liu 2009 outcome data
Subcutaneous	Adult men, fertility preservation during testosterone replacement therapy	250, 500 IU SC two-to-three times weekly is the most commonly documented regimen. Coviello 2005 demonstrated maintenance of intratesticular testosterone at 125, 250, and 500 IU SC every other day; Hsieh 2013 demonstrated preservation of seminal sperm concentration with concomitant TRT.	Indefinite while TRT continues and fertility preservation is desired	Controlled and observational evidence (off-label, well-studied)
Subcutaneous	Adult men, recovery of spermatogenesis after exogenous testosterone or anabolic androgenic steroid use	Commonly 1,500, 3,000 IU SC two-to-three times weekly (often combined with clomiphene/ enclomiphene and/or anastrozole) for the duration of recovery, with periodic semen-analysis and serum-testosterone monitoring	Typically 3, 6 months, individualized by laboratory and clinical response	Clinical series and review evidence (off-label, well-studied)
Intramuscular	Prepubertal boys with cryptorchidism (Pregnyl/Novarel labeled regimen)	Various IM regimens have been used; one commonly cited regimen is 4,000 USP units 3 times weekly for 3 weeks, with adjustment per response.	Course-based (typically 3 weeks)	FDA-approved labeled regimen; modest efficacy in meta-analysis (~20% success)

Route	Population	Range	Duration	Study type
		Modern pediatric urology generally prefers surgical orchidopexy.		

Doctor-prescribed and titrated. The labeled ovulation-induction dose is a single trigger event per ART cycle, scheduled 34, 38 hours before planned oocyte retrieval. The labeled male-hypogonadotropic-hypogonadism regimen is 2, 3 IM injections per week at 1,000, 4,000 IU, titrated to testosterone and clinical response, with addition of FSH/menotropin where spermatogenesis is the goal and hCG monotherapy is insufficient [burris1988, liu2009] [hsieh2013].

In off-label fertility-preserving men's-health practice, dosing is at the low end of the male-fertility range: 250, 500 IU SC two-to-three times weekly, alongside testosterone replacement, with the dose individualized to preserve seminal sperm concentration and to avoid supraphysiologic estradiol from excessive Leydig-cell drive [bhasin2018; mulhall2018]. Doses above 500 IU SC three times weekly add little intratesticular testosterone benefit in the controlled-dose-response work [roth2010] while increasing the risk of secondary estradiol elevation and gynecomastia [rahnema2014] [coviello2005]. Recovery-of-spermatogenesis regimens after exogenous testosterone or anabolic steroid use typically employ higher doses (1,500, 3,000 IU SC 2, 3 times weekly), commonly combined with a SERM (clomiphene/enclomiphene) and/or aromatase inhibitor (anastrozole), and continued for 3, 6 months with serial semen analysis [wenker2015; rainer2022; hohl2025].

Doses are not titrated based on patient request or weight. The Simeons-style 125, 200 IU/day weight-loss dose has no evidence of weight-loss benefit and is not a legitimate clinical use [lijesen1995, greenway1977, fda_hcg_warning_2011].

Human Chorionic Gonadotropin (HCG) Safety

The dominant serious adverse event of hCG in women undergoing assisted reproductive technology is ovarian hyperstimulation syndrome (OHSS), which is hCG-triggered and hCG-sustained [2][12][32][2][32]. OHSS ranges in severity from mild (abdominal distension, ovarian enlargement) to severe (ascites, pleural effusion, oliguria, hemoconcentration, and thromboembolism). Severe OHSS occurs in approximately 1, 2% of stimulated cycles with conventional hCG triggering and is the principal driver of the modern shift to GnRH-agonist triggers (with rescue hCG luteal support) in high-responder protocols. Multiple pregnancy in ART is a parallel and dose-independent risk of ovulation induction; arterial thromboembolism has been reported in the context of severe OHSS.

In men, common adverse events relate to LH-receptor-mediated downstream effects: testosterone-mediated effects (acne, oily skin, fluid retention), gynecomastia and breast tenderness from peripheral aromatization of hCG-driven testicular testosterone to estradiol (more prominent at higher hCG doses and

in men with elevated body fat), mild mood changes, and rarely worsening of androgen-dependent skin disease. Local injection-site reactions are typically mild. Hypersensitivity reactions, including rare anaphylaxis, have been reported with both urinary-derived and recombinant preparations, the contaminant-protein burden in urinary-derived preparations [30] is the historical basis for hypersensitivity concern, although recombinant Ovidrel has also produced hypersensitivity in postmarketing reports [34].

Antibody formation against hCG (with potential loss of effect on rechallenge) has been reported infrequently. Long-term hCG use in men with normal pituitary function does not produce HPG-axis benefit beyond LH replacement, and discontinuation is followed by recovery of endogenous testosterone over weeks-to-months in men whose pituitary function is intact [712]. Compounded hCG safety considerations include the standard sterile-compounding risks (sterility, endotoxin, content uniformity, beyond-use dating) and the dose-strength-error risk inherent to custom-concentration preparations, pharmacist review at dispensing addresses each. In pregnancy, hCG is not used: the molecule is endogenous to pregnancy and exogenous administration is not therapeutic; it is contraindicated in established pregnancy on the manufactured labels [3233334].

Contraindications

hCG is contraindicated in: known hypersensitivity to hCG or to any component of the formulation; primary ovarian failure (hCG cannot drive ovulation when ovarian follicles are absent or unresponsive); precocious puberty; prostate cancer or other androgen-dependent neoplasia in men; uncontrolled thyroid or adrenal dysfunction; and known or suspected pregnancy [3233334].

Relative contraindications and use-with-caution conditions include: history of asthma, epilepsy, migraine, or cardiac/renal disease where fluid retention from androgen response (in men) or from OHSS (in women) could be clinically significant; thrombophilic states (severe OHSS predisposes to thromboembolism); and undiagnosed abnormal uterine bleeding.

Drug interactions

hCG does not undergo cytochrome P450 metabolism and is not expected to participate in CYP-mediated drug-drug interactions [32]. The relevant clinical interactions are pharmacodynamic. In women undergoing controlled ovarian stimulation, concomitant medications that affect ovarian responsiveness (FSH/menotropin, GnRH agonists/antagonists, dopamine agonists) are co-prescribed by design and managed within the stimulation protocol.

In men on testosterone replacement therapy, concomitant low-dose hCG attenuates the spermatogenesis-suppressing effect of exogenous testosterone but does not change testosterone pharmacokinetics. Aromatase inhibitors (anastrozole, letrozole) co-prescribed in some male-hypogonadism regimens reduce conversion of hCG-driven testicular testosterone to estradiol and can mitigate gynecomastia at higher hCG doses [915]. Selective estrogen receptor modulators (clomiphene, enclomiphene) co-prescribed in some regimens drive endogenous LH/FSH and act synergistically with hCG when fertility recovery is the goal [1015 3234].

Adverse events

In women: ovarian hyperstimulation syndrome (OHSS) is the principal serious adverse event, occurring in approximately 1, 2% of conventional hCG-triggered ART cycles in severe form and at higher rates in milder forms [212322 33]. Multiple pregnancy follows ovulation induction in a dose- and protocol-dependent fashion. Local injection-site reactions are common but mild. Headache, irritability, restlessness, depression, fatigue, and edema have been reported.

In men: gynecomastia or breast tenderness (from estradiol generated by aromatization of hCG-driven testicular testosterone) is the most distinctive on-therapy adverse event, particularly at higher doses (>3,000 IU/week) and in men with elevated body fat [33]. Acne, fluid retention, and mood changes are reported. Erythrocytosis from elevated testosterone is unlikely at fertility-preserving doses but may occur at higher dosing or in combination regimens. Anaphylactic and hypersensitivity reactions have been reported with both urinary-derived and recombinant preparations [30].

Across both sexes, anti-hCG antibody formation has been described infrequently; its clinical significance is generally limited. Pediatric use in cryptorchidism is associated with precocious-puberty-pattern adverse events (premature pubic hair, increased penile size and pigmentation, growth-acceleration), generally reversible after discontinuation [2032 3334].

Monitoring Human Chorionic Gonadotropin (HCG) Therapy

For ovulation induction in women: baseline assessment of ovarian reserve and pre-cycle screening (estradiol, antral follicle count, AMH), serial transvaginal ultrasound and serum estradiol during stimulation to titrate FSH dose and to assess OHSS risk, and triggering decision based on follicular development and the integrated OHSS-risk picture. Modern protocols substitute a GnRH-agonist trigger when OHSS risk is high.

For male hypogonadotropic hypogonadism (induction of spermatogenesis): baseline morning testosterone, LH, FSH, prolactin, estradiol, testicular ultrasound (testicular volume predicts response [burris1988]), and semen analysis. On therapy: serum testosterone (target mid-normal), estradiol, hematocrit, and serial semen analysis every 3 months until spermatogenesis is established (typically 6, 24 months); addition of FSH/menotropin if hCG monotherapy fails to produce sperm in the ejaculate within 6 months [liu2009, nieschlag2017].

For fertility preservation during TRT in men: baseline semen analysis, serum testosterone, estradiol, hematocrit, and PSA in age-appropriate men. On therapy: periodic semen analysis to confirm fertility preservation, serum testosterone and estradiol, and adjustment of hCG and TRT doses based on the panel [hsieh2013, bhasin2018, mulhall2018]. Recovery-of-spermatogenesis regimens require similar monitoring with attention to estradiol, hematocrit, and lipid effects of any co-administered SERM or aromatase inhibitor [rahnema2014, wenker2015].

Human Chorionic Gonadotropin (HCG) in Special Populations

Human Chorionic Gonadotropin (HCG) Evidence Quality

Evidence supporting the FDA-approved indications of manufactured hCG products is strong and decades-deep. Ovulation induction in ART has been supported by thousands of cycles in randomized and observational studies, including the head-to-head recombinant-vs-urinary trial by Driscoll and colleagues [driscoll2000] and the Cochrane-style meta-analysis by Al-Inany and colleagues [alinany2005]. Male hypogonadotropic hypogonadism is supported by the foundational Burris 1988 series [burris1988], by the integrated multi-trial analysis by Liu and colleagues [liu2009], and by modern combination work [nieschlag2017]. Cryptorchidism evidence is consolidated in the Pyörälä meta-analysis [pyorala1995].

Off-label fertility-preserving co-administration of hCG with testosterone replacement therapy in men is supported by the Coviello 2005 dose-finding study in normal men with experimental gonadotropin suppression [coviello2005], the Roth 2010/2011 dose-response work characterizing intratesticular androgens [roth2010, roth2011], the Hsieh 2013 clinical demonstration that concomitant hCG preserves seminal sperm during TRT [hsieh2013], and the Endocrine Society 2018 and AUA 2018 guidelines incorporating hCG as the standard fertility-preserving adjunct [bhasin2018, mulhall2018]. Recovery of spermatogenesis after exogenous testosterone or anabolic steroid use is supported by the Rahnema 2014 framework [rahnema2014], the Wenker 2015 combination-therapy series [wenker2015], the Karavolos 2015 protocol review [karavolos2015], the Rainer 2022 safety series [rainer2022], and the Hochu 2025 contemporary review [hochu2025].

The weight-loss indication is unsupported and contraindicated by the published evidence. The Lijesen 1995 criteria-based meta-analysis of all controlled hCG-Simeons trials [lijesen1995] and the Greenway 1977 critical assessment [greenway1977] both report no weight-loss benefit beyond the very-low-calorie diet. The FDA and FTC 2011 enforcement action [fda_hcg_warning_2011] reflects the consistent absence of evidence and the consumer-protection concern over commercial promotion of the indication.

Evidence specifically supporting compounded preparations is largely absent, there is no parallel efficacy program for compounded hCG. Compounded use at RonanRx is justified case by case by patient-specific clinical factors (typically the absence of a commercially available low-dose SC presentation for male-fertility protocols), with the pharmacology of LH-receptor agonism generalizing across well-prepared hCG preparations at equivalent doses.

Major Human Chorionic Gonadotropin (HCG) Clinical Studies

Study	Design	Participants	Duration	Finding
Coviello et al. (2005, J Clin Endocrinol Metab), Low-dose hCG maintains intratesticular testosterone during testosterone-induced gonadotropin suppression	Prospective dose-finding study in normal men with exogenous testosterone-induced gonadotropin suppression, four hCG dose arms (placebo, 125, 250, 500 IU SC every other day)	29	3-week dosing periods after suppression	All hCG doses dose-dependently maintained intratesticular testosterone vs placebo; 250 IU SC every other day maintained intratesticular testosterone at ~60% of baseline, 500 IU at >100%, defined the modern fertility-preserving TRT dose range [coviello2005]
Hsieh et al. (2013, J Urol), Concomitant IM hCG preserves spermatogenesis during TRT	Retrospective cohort study of men receiving testosterone replacement therapy with or without concomitant hCG	26	Median follow-up approximately 6 months	Concomitant low-dose IM hCG (500 IU every other day) with TRT preserved seminal sperm concentration during therapy, translates Coviello 2005 physiology to clinical fertility preservation [hsieh2013]
Roth et al. (2010, J Clin Endocrinol Metab), Dose-dependent intratesticular T with very-low-dose hCG	Randomized, controlled, dose-finding study in normal men with experimentally suppressed gonadotropins, hCG arms of 0, 15, 60, 125, 250, and 500 IU SC every other day	37	21 days	Intratesticular testosterone responded dose-dependently across the very-low-dose range; 125 IU SC every other day produced ~25% of baseline intratesticular testosterone, defined the lower bound of the fertility-preserving dose range [roth2010]
Roth et al. (2011, J Clin Endocrinol Metab), Intratesticular androstenedione	Companion analysis to Roth 2010 of intratesticular androstenedione and DHEA	—	21 days	hCG dose-dependently restored intratesticular androstenedione and DHEA in parallel with intratesticular testosterone, establishes that hCG

Study	Design	Participants	Duration	Finding
and DHEA responses				reproduces the full intratesticular steroid environment, not just the principal androgen [roth2011]
Burris et al. (1988, J Clin Endocrinol Metab), hCG induction of testicular function in isolated HH	Prospective open-label trial of hCG induction of testicular function in men with isolated hypogonadotropic hypogonadism	35	Up to 18 months	hCG monotherapy produced virilization and initiated spermatogenesis in most subjects; initial testicular size predicted response, informs current addition-of-FSH protocols for poor responders [burris1988]
Liu et al. (2009, J Clin Endocrinol Metab), Predictors of fertility outcome with gonadotropin treatment	Integrated multi-trial analysis of induction of spermatogenesis with gonadotropin treatment in gonadotropin-deficient men	75	Median follow-up to sperm in ejaculate ~7 months; up to 24 months	Initial testicular volume, prior gonadotropin treatment, history of cryptorchidism, and underlying diagnosis (Kallmann vs idiopathic HH) predicted time to sperm in ejaculate; hCG (with FSH added where indicated) achieved spermatogenesis in the majority, quantitative basis for modern male-fertility counseling [liu2009]
Liu et al. (2006, Lancet), Integrated analysis of spermatogenic recovery after hormonal male contraception	Integrated analysis of 30 hormonal-male-contraception studies (>1500 men) for time-course and predictors of spermatogenic recovery after discontinuation	>1500	Up to 36 months post-discontinuation	Median time to recovery of sperm concentration to 20 million/mL ~5 months; baseline sperm concentration, age, ethnicity, suppression depth, and duration of suppression were modifiers, informs recovery-after-AAS counseling [liu2006]

Study	Design	Participants	Duration	Finding
Wenker et al. (2015, J Sex Med), hCG-based combination therapy for spermatogenesis recovery after testosterone use	Retrospective cohort study of men using hCG-based combination therapy (hCG + clomiphene ± anastrozole) for recovery of spermatogenesis after discontinuation of exogenous testosterone	49	Median 4.6 months	Recovery of sperm in the ejaculate in 95% of men; rapid recovery of serum testosterone, supports combination protocols and frames typical 3, 6-month recovery counseling [wenker2015]
Rahnema et al. (2014, Fertil Steril), Anabolic steroid-induced hypogonadism diagnosis and treatment	Systematic narrative review and clinical framework	—	—	Defines the clinical syndrome of anabolic-steroid-induced hypogonadism, recovery time-courses, and the role of hCG (with or without SERM/AI) in restoration of hypothalamic-pituitary-testicular axis function, current reference for AAS-recovery practice [rahnema2014]
Karavolos et al. (2015, Clin Endocrinol), Male central hypogonadism from exogenous androgens	Review of drugs and protocols highlighted by the online user community for prevention/mitigation of AAS-induced hypogonadism	—	—	Cataloged the regimens (hCG, clomiphene, tamoxifen, aromatase inhibitors) used in the user community, contextualized against the underlying physiology, informs prescriber awareness of self-administered protocols [karavolos2015]
Rainer et al. (2022, Cureus), Safety of hCG monotherapy in men with prior exogenous T use	Retrospective cohort safety analysis	—	—	hCG monotherapy was well-tolerated in men with prior exogenous testosterone use; common AEs included gynecomastia (modest, dose-dependent), acne, and minor mood

Study	Design	Participants	Duration	Finding
				changes, supports clinical use in AAS-recovery and TRT-fertility-preservation contexts [rainer2022]
Andrabi et al. (2022, Clin Exp Reprod Med), hCG therapy in hypogonadic severe-oligozoospermic men	Prospective therapeutic series in hypogonadic men with severe oligozoospermia	—	—	hCG therapy produced statistically significant improvement in semen parameters in selected men, supports the use of hCG as a primary fertility-restoration approach in selected hypogonadic infertility [andrabi2022]
Nieschlag et al. (2017, Reprod Biol Endocrinol), Corifollitropin alfa + hCG in adult men with HH	Phase 3 open-label clinical trial of corifollitropin alfa combined with hCG for induction of spermatogenesis in adult men with hypogonadotropic hypogonadism	26	Up to 64 weeks	Combination corifollitropin alfa + hCG induced spermatogenesis in the majority, supports modern long-acting-FSH plus hCG regimens for male HH spermatogenesis induction [nieschlag2017]
Pyörälä, Huttunen, and Uhari (1995, J Clin Endocrinol Metab), Cryptorchidism meta-analysis	Systematic review and meta-analysis of 33 placebo-controlled and comparative hormonal-treatment trials for cryptorchidism (hCG, LHRH)	—	Pooled across studies	Overall hormonal-treatment success rate ~20%; greater efficacy in distally-located undescended testes; the analysis is the contemporary evidence base for the labeled pediatric indication and for the modern preference for surgical orchidopexy [pyorala1995]
Driscoll et al. (2000, Hum Reprod), Recombinant vs urinary hCG for ovulation triggering	Prospective randomized double-blind double-dummy comparison in ART cycles	297	Single-trigger event per cycle, with pregnancy outcome follow-up	Recombinant choriogonadotropin alfa (Ovidrel) was equivalent to urinary hCG for oocyte maturation, fertilization, and clinical pregnancy

Study	Design	Participants	Duration	Finding
				rates, established the clinical interchangeability of the two preparations at the trigger event [driscoll2000]
Al-Inany et al. (2005, Hum Reprod), Meta-analysis recombinant vs urinary gonadotrophins triggering ovulation	Cochrane-style systematic review and meta-analysis	—	—	Recombinant and urinary hCG produced equivalent ovulation triggering and clinical pregnancy outcomes in ART cycles, completes the evidence base for therapeutic interchangeability [alinany2005]
Trinchard-Lugan et al. (2002, Reprod Biomed Online), PK/PD of recombinant hCG	Open-label single-dose PK/PD study of recombinant hCG in healthy male and female volunteers, with IM and SC administration	Healthy volunteers across sex and dose groups	Single-dose PK with 14-day follow-up	Terminal half-life ~33 hours; SC bioavailability ~80% of IM; supports SC-route compounded dosing in male-fertility protocols [trinchard2002]
Damewood et al. (1989, Fertil Steril), Disappearance kinetics of exogenously administered hCG	Open-label PK study of urinary hCG disappearance in healthy female volunteers	—	Up to 14 days post-dose	Single-dose exogenous hCG was measurable for up to 10, 14 days post-administration, informs interpretation of post-trigger β-hCG immunoassay in ART [damewood1989]
Lijesen et al. (1995, Br J Clin Pharmacol), Criteria-based meta-analysis of hCG for obesity (Simeons method)	Systematic review and criteria-based meta-analysis of controlled hCG-Simeons-diet weight-loss trials	—	—	No effect of hCG on weight loss, fat distribution, hunger, or sense of well-being beyond the very-low-calorie diet, the canonical negative evidence base that underlies subsequent FDA enforcement against hCG weight-loss products [lijesen1995]

Study	Design	Participants	Duration	Finding
Greenway and Bray (1977, West J Med), Critical assessment of the Simeons method	Narrative critical review	—	—	Available controlled trials at the time showed no weight-loss benefit of hCG beyond the very-low-calorie diet, earliest peer-reviewed negative assessment of the Simeons protocol [greenway1977]
Golan et al. (1989, Obstet Gynecol Surv), OHSS update review	Narrative review with classification system	—	—	Classification of OHSS by severity (mild/moderate/severe/critical) and review of pathophysiology and management, the framework that has structured all subsequent OHSS literature [golan1989]
Aboulghar and Mansour (2003, Hum Reprod Update), OHSS classifications and prevention	Systematic review of OHSS preventive measures	—	—	Reviewed evidence for cycle-cancellation, coasting, albumin, GnRH-agonist trigger substitution, and dopamine agonists; informed the modern shift to GnRH-agonist trigger in high-responder protocols [aboulghar2003]
Delvigne and Rozenberg (2003, Hum Reprod Update), Clinical course and treatment of OHSS	Systematic review of clinical course, severity stratification, and treatment of OHSS	—	—	Comprehensive synthesis of OHSS clinical syndrome, time-course, and supportive-care framework, companion to Aboulghar 2003 as the modern reference base for OHSS clinical management [delvigne2003]
Panić-Janković and Mitulović (2019, Electrophoresis), Contaminant	Label-free quantitation proteomics study of multiple urinary-	—	—	Urinary-derived hCG preparations contained substantial levels of contaminant urinary

Study	Design	Participants	Duration	Finding
proteins in urinary-derived hCG	derived hCG pharmaceutical formulations			proteins relative to recombinant preparations, informs hypersensitivity-risk and lot-to-lot variability considerations [panic2019]
Hohl et al. (2025, Arch Endocrinol Metab), Clomiphene and enclomiphene meta-analysis for male hypogonadism	Systematic review and meta-analysis of randomized controlled trials of clomiphene/ enclomiphene citrate in male hypogonadism	—	—	Both clomiphene and enclomiphene produced clinically meaningful serum testosterone increases in selected men with hypogonadism, provides modern evidence base for hCG-SERM combination regimens [hohl2025]
Hochu et al. (2025, Transl Androl Urol), Preserving spermatogenesis innovations in TD	Narrative review of stimulatory and fertility-preserving therapies in testosterone deficiency	—	—	Synthesized the contemporary clinical approach to fertility-preserving TRT and AAS-recovery, emphasizing hCG, SERMs, and aromatase inhibitors, current practitioner reference [hochu2025]

Human Chorionic Gonadotropin (HCG) Pharmacokinetics & Pharmacodynamics

Pharmacokinetics

hCG is a 36, 40 kDa heterodimeric glycoprotein. After parenteral administration, it is absorbed adequately from both intramuscular and subcutaneous depots. In healthy male and female volunteers, Trinchard-Lugan and colleagues reported a terminal half-life of approximately 33 hours and a mean residence time of approximately 47 hours after recombinant hCG dosing; subcutaneous bioavailability was approximately 80% of intramuscular [trinchard2002]. Comparable disappearance kinetics for urinary-derived hCG were characterized earlier by Damewood and colleagues [damewood1989]. The molecule is cleared by a combination of hepatic uptake and renal filtration with degradation of the free beta subunit; intact hCG

immunoreactivity can persist in serum for 10, 14 days after a single therapeutic dose, clinically relevant to interpretation of post-trigger β-hCG immunoassay in ART [damewood1989, cole2009].

Differences between urinary-derived and recombinant preparations are dominated by contaminant-protein burden rather than by hCG-specific PK. The Panić-Janković proteomic analysis (2019) documented substantially higher contaminant urinary-protein content in urinary-derived preparations [panic2019]; this is not a PK question per se but it informs hypersensitivity-risk and lot-to-lot variability. Compounded sterile injectable hCG should not be assumed to share manufactured-product PK exactly, given variation in excipient profile, concentration, and container closure; the LH-receptor agonism is conserved across preparations at equivalent doses.

Pharmacodynamics

The principal pharmacodynamic effect of hCG is luteinizing-hormone-receptor activation. In men, the measurable endpoints are serum total and free testosterone (peripheral response), intratesticular testosterone (much larger response, Roth 2010 quantified the dose-dependence in normal men with experimental gonadotropin suppression), seminal sperm concentration (the principal clinically relevant fertility endpoint), and serum estradiol (rises proportionally to testosterone via aromatization) [roth2010; roth2011; coviello2005].

In women, the principal pharmacodynamic endpoints are ovulation (assessed by serum progesterone rise, follicular collapse on ultrasound, or oocyte retrieval in ART), corpus luteum function (progesterone), and the OHSS-risk profile (estradiol, hemoconcentration, ascites, oliguria). Time to ovulation after hCG triggering is approximately 36 hours, supporting the conventional 34, 38-hour interval between trigger and oocyte retrieval [fda_label_pregnyl, fda_label_ovidrel] [hsieh2013].

↓↑ Comparing Human Chorionic Gonadotropin (HCG) Formulations

The three FDA-approved hCG products fall into two pharmaceutical categories. Pregnyl (Organon/Merck) and Novarel (Ferring) are urinary-derived preparations: purified from the urine of pregnant women, supplied as multidose lyophilized powder with bacteriostatic water diluent for IM administration [fda_label_pregnyl; fda_label_novarel]. Ovidrel (choriogonadotropin alfa, EMD Serono) is recombinant: produced in mammalian cell culture, supplied as a single-dose pre-filled SC syringe at 250 mcg per 0.5 mL (bioequivalent to ~6,500 IU urinary hCG) [fda_label_ovidrel]. The molecules produce equivalent pharmacology at the LH/CG receptor and have been shown clinically equivalent for ovulation triggering [driscoll2000, alinany2005]. The principal differences are pharmaceutical: recombinant Ovidrel has substantially lower contaminant-protein content [panic2019], lot-to-lot consistency benefits, and a pre-filled SC presentation that avoids the IM-route and reconstitution requirements.

Compounded hCG sterile injectable preparations vary in concentration and excipient profile and are not bioequivalent to any of the manufactured products. The legitimate clinical niche for compounded hCG at

RonanRx is low-dose subcutaneous male-fertility protocols (250, 500 IU SC two-to-three times weekly), a presentation not commercially available in the manufactured products. The pharmacology of LH-receptor agonism generalizes across well-prepared preparations at equivalent doses; the principal local concerns are sterility, content uniformity, and beyond-use dating addressed by the USP <797> compounding standard [usp_797].

Human Chorionic Gonadotropin (HCG) Storage and Handling

Manufactured Pregnyl and Novarel lyophilized powder is stored at controlled room temperature (15, 30°C); after reconstitution with the supplied diluent, refrigerated storage (2, 8°C) is recommended with a labeled beyond-use date of approximately 30, 60 days depending on preparation and label [fda_label_pregnyl; fda_label_novarel]. Ovidrel pre-filled syringes are stored refrigerated (2, 8°C) in the original carton to protect from light; a limited room-temperature window is permitted per the label [fda_label_ovidrel].

Compounded sterile injectable hCG is stored refrigerated per the pharmacy's stability data and beyond-use date assignment under USP <797> [usp_797]. Patients should be educated on temperature management during shipping and at home and on recognizing temperature excursions that warrant pharmacist consultation.

Human Chorionic Gonadotropin (HCG) Compounding & Operations

503A compounding

Compounded hCG is prepared under 503A on patient-specific prescriptions in state-licensed compounding pharmacies. RonanRx prepares sterile injectable preparations per USP General Chapter <797>, the official compendial standard for sterile pharmaceutical compounding, with documented active ingredient sourcing, gravimetric and analytical verification, sterility and endotoxin testing per the pharmacy's quality-management system, and full lot traceability [fda503a; usp_797; usp_795]. For any nonsterile preparative steps the corresponding USP General Chapter <795> applies; however, the finished injectable product is governed by <797> in full.

Beyond-use dating, ingredient identity verification, sterility assurance, and stability assessment follow USP <797> requirements. Each compounded batch is documented per state board of pharmacy retention rules with full traceability from API lot through dispensing. Prescriptions for hCG indicating weight loss as the intended use are not filled.

Pharmacist review

Each prescription for compounded hCG undergoes pharmacist review prior to dispensing [wenker2015]. The review confirms: a documented legitimate clinical indication (fertility-preserving adjunct to TRT in

men, recovery of spermatogenesis after exogenous testosterone or anabolic steroid use, hypogonadotropic hypogonadism in men, or a fertility-protocol prescription written by a reproductive-medicine specialist for an identified patient); a documented patient-specific reason that the manufactured Pregnyl, Novarel, or Ovidrel product is not appropriate (typically the absence of a commercially available low-dose SC presentation for chronic male-fertility dosing); absence of contraindications (pregnancy, androgen-dependent neoplasia, hypersensitivity); and a prescribed regimen consistent with the published evidence base [coviello2005; hsieh2013; bhasin2018].

RonanRx does not fill prescriptions for compounded hCG indicating weight loss as the intended use, consistent with FDA and FTC guidance on the lack of evidence for hCG weight-loss claims [fda_hcg_warning_2011, lijesen1995, greenway1977]. Prescriptions that read as routine substitution of compounded for manufactured product without documented clinical rationale are also not filled, consistent with FDA guidance on compounded copies of commercially available drugs [fda_essentially_a_copy] [mulhall2018; rahnema2014].

Quality and traceability

Active pharmaceutical ingredients are sourced from FDA-registered facilities with documented certificates of analysis. Each batch is recorded with lot numbers traceable to API source, compounding date, beyond-use date, sterility test result, endotoxin test result, and dispensing pharmacist of record. Finished product lot records are retained per state board of pharmacy retention requirements.

Cold chain

Compounded sterile injectable hCG is a cold-chain product. Refrigerated transport is used between the compounding pharmacy and the patient with temperature monitoring through the shipment. Patients are advised to refrigerate the product on arrival, to inspect for temperature excursions, and to contact the pharmacy if the cold-chain integrity is in question. Manufactured Pregnyl, Novarel, and Ovidrel follow refrigerated storage after reconstitution (Pregnyl/Novarel) or as-supplied (Ovidrel) per labeling [fda_label_pregnyl; fda_label_novarel; fda_label_ovidrel].

Frequently Asked Questions About Human Chorionic Gonadotropin (HCG)

Is hCG a weight-loss drug?

No. The FDA and FTC have warned since 2011 that hCG promoted for weight loss is illegal and unproven. Controlled trials and meta-analyses (Lijesen 1995; Greenway and Bray 1977) show no weight-loss benefit beyond the very-low-calorie diet that historically accompanied the Simeons protocol [fda_hcg_warning_2011; lijesen1995; greenway1977]. RonanRx does not compound hCG for weight loss under any circumstances.

Why do some men on TRT take hCG?

Exogenous testosterone suppresses pituitary LH and FSH, which shuts down intratesticular testosterone production and spermatogenesis [coviello2005; mulhall2018]. Low-dose hCG (typically 250, 500 IU SC two-to-three times weekly) replaces the LH signal at the testicle and preserves spermatogenesis during TRT [hsieh2013]. Coviello 2005 established the dose range, Hsieh 2013 demonstrated preservation of seminal sperm during TRT, and the Endocrine Society 2018 and AUA 2018 guidelines reference hCG as the standard fertility-preserving adjunct [bhasin2018].

How does hCG help men with hypogonadotropic hypogonadism?

Men with hypogonadotropic hypogonadism have absent or insufficient pituitary LH and FSH [burris1988; nieschlag2017]. hCG substitutes for LH and restores testicular testosterone production. If spermatogenesis is the goal and hCG monotherapy is insufficient, FSH (recombinant or urinary menotropin) is added. Burris 1988 established the framework; Liu 2009 quantified time-course and predictors of fertility outcome [liu2009].

What is hCG used for in fertility treatment?

In assisted reproductive technology, hCG is the standard surrogate for the mid-cycle LH surge that triggers final follicular maturation and ovulation. A single dose of 5,000, 10,000 IU IM of Pregnyl/Novarel (or 250 mcg SC of Ovidrel) is administered 34, 38 hours before planned oocyte retrieval [fda_label_pregnyl]. Recombinant Ovidrel and urinary hCG are clinically equivalent for triggering (Driscoll 2000; Al-Inany 2005) [fda_label_ovidrel; driscoll2000; alinany2005].

What is OHSS?

Ovarian hyperstimulation syndrome (OHSS) is the principal serious adverse event of hCG-triggered ovulation induction [golan1989; aboulghar2003; delvigne2003]. It ranges from mild abdominal distension to severe ascites, pleural effusion, hemoconcentration, and thromboembolism. Severe OHSS occurs in approximately 1, 2% of conventional hCG-triggered ART cycles. The modern approach is to substitute a GnRH-agonist trigger in high-responder cycles to mitigate OHSS risk (Golan 1989; Aboulghar 2003; Delvigne 2003).

What is the difference between urinary-derived (Pregnyl, Novarel) and recombinant (Ovidrel) hCG?

Pregnyl and Novarel are purified from the urine of pregnant women and supplied as lyophilized powder for IM administration. Ovidrel (choriogonadotropin alfa) is produced recombinantly in mammalian cell culture and supplied as a pre-filled SC syringe. The two preparations produce equivalent ovulation-triggering and pregnancy outcomes in head-to-head randomized comparison (Driscoll 2000) and meta-analysis (Al-Inany 2005) [driscoll2000]. The recombinant product has substantially lower contaminant-protein content

(Panić-Janković 2019), greater lot-to-lot consistency, and a more convenient SC presentation [alinany2005; panic2019].

Can hCG bring back fertility after stopping anabolic steroids?

In most cases, yes. Anabolic-steroid-induced hypogonadism suppresses the hypothalamic-pituitary-testicular axis; recovery is variable in time-course. Combination therapy with hCG ± clomiphene (or enclomiphene) ± anastrozole accelerates recovery in selected men. Wenker 2015 reported sperm-in-ejaculate recovery in 95% of men with median 4.6 months on combination therapy [wenker2015]. Rahnema 2014 provided the modern clinical framework [rahnema2014; rainer2022].

What are the side effects of hCG in men?

Most common: mild acne, fluid retention, occasional mood changes, and, at higher doses, gynecomastia or breast tenderness from peripheral conversion of hCG-driven testicular testosterone to estradiol [rainer2022]. Local injection-site reactions are typically mild. Rare hypersensitivity reactions have been reported with both urinary-derived and recombinant preparations [rahnema2014; panic2019].

Does RonanRx sell compounded hCG directly to patients?

No. Compounded hCG requires a patient-specific prescription written by a licensed doctor for an identified patient with a documented legitimate clinical indication (fertility-preserving TRT, recovery of spermatogenesis after testosterone or anabolic steroid use, hypogonadotropic hypogonadism, or a reproductive-medicine fertility prescription), plus pharmacist review before dispensing [fda_essentially_a_copy]. Prescriptions indicating weight loss as the intended use are not filled. RonanRx is not a direct-to-consumer storefront [fda503a; fda_hcg_warning_2011].

References

1. *[coviello2005]* Coviello AD, Matsumoto AM, Bremner WJ, Herbst KL, Amory JK. *Low-dose human chorionic gonadotropin maintains intratesticular testosterone in normal men with testosterone-induced gonadotropin suppression*. Journal of Clinical Endocrinology and Metabolism. 2005. PMID 15713727. (accessed 2026-05-11)
2. *[hsieh2013]* Hsieh TC, Pastuszak AW, Hwang K, Lipshultz LI. *Concomitant intramuscular human chorionic gonadotropin preserves spermatogenesis in men undergoing testosterone replacement therapy*. Journal of Urology. 2013. PMID 23260550. (accessed 2026-05-11)
3. *[roth2010]* Roth MY, Page ST, Lin K, Anawalt BD, Matsumoto AM, Snyder CN, Marck BT, Bremner WJ, Amory JK. *Dose-dependent increase in intratesticular testosterone by very low-dose human chorionic gonadotropin in normal men with experimental gonadotropin deficiency*. Journal of Clinical Endocrinology and Metabolism. 2010. PMID 20484472. (accessed 2026-05-11)
4. *[roth2011]* Roth MY, Page ST, Lin K, Anawalt BD, Matsumoto AM, Marck BT, Bremner WJ, Amory JK. *The effect of gonadotropin withdrawal and stimulation with human chorionic gonadotropin on intratesticular androstenedione and DHEA in normal men*. Journal of Clinical Endocrinology and Metabolism. 2011. PMID 21289266. (accessed 2026-05-11)

5. *[burris1988]* Burris AS, Rodbard HW, Winters SJ, Sherins RJ. *Gonadotropin therapy in men with isolated hypogonadotropic hypogonadism: the response to human chorionic gonadotropin is predicted by initial testicular size*. Journal of Clinical Endocrinology and Metabolism. 1988. PMID 3372679. (accessed 2026-05-11)
6. *[liu2009]* Liu PY, Baker HW, Jayadev V, Zacharin M, Conway AJ, Handelsman DJ. *Induction of spermatogenesis and fertility during gonadotropin treatment of gonadotropin-deficient infertile men: predictors of fertility outcome*. Journal of Clinical Endocrinology and Metabolism. 2009. PMID 19066302. (accessed 2026-05-11)
7. *[liu2006]* Liu PY, Swerdloff RS, Christenson PD, Handelsman DJ, Wang C. *Rate, extent, and modifiers of spermatogenic recovery after hormonal male contraception: an integrated analysis*. Lancet. 2006. PMID 16650651. (accessed 2026-05-11)
8. *[nieschlag2017]* Nieschlag E, Bouloux PG, Stegmann BJ, Shankar RR, Guan Y, Tzontcheva A, McCrary Sisk C, Behre HM. *An open-label clinical trial to investigate the efficacy and safety of corifollitropin alfa combined with hCG in adult men with hypogonadotropic hypogonadism*. Reproductive Biology and Endocrinology. 2017. PMID 28270212. (accessed 2026-05-11)
9. *[rahnema2014]* Rahnema CD, Lipshultz LI, Crosnoe LE, Kovac JR, Kim ED. *Anabolic steroid-induced hypogonadism: diagnosis and treatment*. Fertility and Sterility. 2014. PMID 24636400. (accessed 2026-05-11)
10. *[wenker2015]* Wenker EP, Dupree JM, Langille GM, Kovac J, Ramasamy R, Lamb D, Mills JN, Lipshultz LI. *The Use of HCG-Based Combination Therapy for Recovery of Spermatogenesis after Testosterone Use*. Journal of Sexual Medicine. 2015. PMID 25904023. (accessed 2026-05-11)
11. *[karavolos2015]* Karavolos S, Reynolds M, Panagiotopoulou N, McEleny K, Scally M, Quinton R. *Male central hypogonadism secondary to exogenous androgens: a review of the drugs and protocols highlighted by the online community of users for prevention and/or mitigation of adverse effects*. Clinical Endocrinology (Oxford). 2015. PMID 25333666. (accessed 2026-05-11)
12. *[rainer2022]* Rainer Q, Pai R, Zucker I, Ghomeshi A, Diaz P, Ramasamy R. *The Safety of Human Chorionic Gonadotropin Monotherapy Among Men With Previous Exogenous Testosterone Use*. Cureus. 2022. PMID 35822152. (accessed 2026-05-11)
13. *[andrabi2022]* Andrabi SW, Makker GC, Makker R, Mishra G, Singh R. *Human chorionic gonadotropin therapy in hypogonadic severe-oligozoospermic men and its effect on semen parameters*. Clinical and Experimental Reproductive Medicine. 2022. PMID 35255659. (accessed 2026-05-11)
14. *[hochu2025]* Hochu G, Geyer-Kim I, Kim E. *Preserving spermatogenesis in testosterone deficiency: innovations in replacement and stimulatory therapies*. Translational Andrology and Urology. 2025. PMID 41522318. (accessed 2026-05-11)
15. *[hohl2025]* Hohl A, Chavez MP, Pasqualotto E, Ferreira ROM. *Clomiphene or enclomiphene citrate for the treatment of male hypogonadism: a systematic review and meta-analysis of randomized controlled trials*. Archives of Endocrinology and Metabolism. 2025. PMID 41066380. (accessed 2026-05-11)
16. *[bhasin2018]* Bhasin S, Brito JP, Cunningham GR, Hayes FJ, Hodis HN, Matsumoto AM, Snyder PJ, Swerdloff RS, Wu FC, Yialamas MA. *Testosterone Therapy in Men With Hypogonadism: An Endocrine Society Clinical Practice Guideline*. Journal of Clinical Endocrinology and Metabolism. 2018. PMID 29562364. (accessed 2026-05-11)
17. *[mulhall2018]* Mulhall JP, Trost LW, Brannigan RE, Kurtz EG, Redmon JB, Chiles KA, Lightner DJ, Miner MM, Murad MH, Nelson CJ, Platz EA, Ramanathan LV, Lewis RW. *Evaluation and Management of Testosterone Deficiency: AUA Guideline*. Journal of Urology. 2018. PMID 29601923. (accessed 2026-05-11)
18. *[lijesen1995]* Lijesen GK, Theeuwen I, Assendelft WJ, Van Der Wal G. *The effect of human chorionic gonadotropin (HCG) in the treatment of obesity by means of the Simeons therapy: a criteria-based meta-analysis*. British Journal of Clinical Pharmacology. 1995. PMID 8527285. (accessed 2026-05-11)

19. *[greenway1977]* Greenway FL, Bray GA. *Human chorionic gonadotropin (HCG) in the treatment of obesity: a critical assessment of the Simeons method*. Western Journal of Medicine. 1977. PMID 595585. (accessed 2026-05-11)
20. *[pyorala1995]* Pyörälä S, Huttunen NP, Uhari M. *A review and meta-analysis of hormonal treatment of cryptorchidism*. Journal of Clinical Endocrinology and Metabolism. 1995. PMID 7673426. (accessed 2026-05-11)
21. *[golan1989]* Golan A, Ron-el R, Herman A, Soffer Y, Weinraub Z, Caspi E. *Ovarian hyperstimulation syndrome: an update review*. Obstetrical and Gynecological Survey. 1989. PMID 2660037. (accessed 2026-05-11)
22. *[aboulghar2003]* Aboulghar MA, Mansour RT. *Ovarian hyperstimulation syndrome: classifications and critical analysis of preventive measures*. Human Reproduction Update. 2003. PMID 12859048. (accessed 2026-05-11)
23. *[delvigne2003]* Delvigne A, Rozenberg S. *Review of clinical course and treatment of ovarian hyperstimulation syndrome (OHSS)*. Human Reproduction Update. 2003. PMID 12638783. (accessed 2026-05-11)
24. *[alinany2005]* Al-Inany H, Aboulghar MA, Mansour RT, Proctor M. *Recombinant versus urinary gonadotrophins for triggering ovulation in assisted conception*. Human Reproduction. 2005. PMID 16024539. (accessed 2026-05-11)
25. *[driscoll2000]* Driscoll GL, Tyler JP, Hangan JT, Fisher PR, Birdsall MA, Knight DC. *A prospective, randomized, controlled, double-blind, double-dummy comparison of recombinant and urinary HCG for inducing oocyte maturation and follicular luteinization in ovarian stimulation*. Human Reproduction. 2000. PMID 10831560. (accessed 2026-05-11)
26. *[damewood1989]* Damewood MD, Shen W, Zacur HA, Schlaff WD, Rock JA, Wallach EE. *Disappearance of exogenously administered human chorionic gonadotropin*. Fertility and Sterility. 1989. PMID 2776893. (accessed 2026-05-11)
27. *[trinchard2002]* Trinchard-Lugan I, Khan A, Porchet HC, Munafo A. *Pharmacokinetics and pharmacodynamics of recombinant human chorionic gonadotrophin in healthy male and female volunteers*. Reproductive Biomedicine Online. 2002. PMID 12470572. (accessed 2026-05-11)
28. *[cole2009]* Cole LA. *Human chorionic gonadotropin tests*. Expert Review of Molecular Diagnostics. 2009. PMID 19817556. (accessed 2026-05-11)
29. *[stenman2006]* Stenman UH, Tiitinen A, Alfthan H, Valmu L. *The classification, functions and clinical use of different isoforms of HCG*. Human Reproduction Update. 2006. PMID 16877746. (accessed 2026-05-11)
30. *[panic2019]* Panić-Janković T, Mitulović G. *Human chorionic gonadotrophin pharmaceutical formulations of urinary origin display high levels of contaminant proteins-A label-free quantitation proteomics study*. Electrophoresis. 2019. PMID 30883802. (accessed 2026-05-11)
31. *[hayes2001]* Hayes FJ, Pitteloud N, DeCruz S, Crowley WF Jr, Boepple PA. *Importance of inhibin B in the regulation of FSH secretion in the human male*. Journal of Clinical Endocrinology and Metabolism. 2001. PMID 11701733. (accessed 2026-05-11)
32. *[fda_label_pregnyl]* Organon LLC; U.S. Food and Drug Administration. *Pregnyl (chorionic gonadotropin for injection, USP) — FDA Prescribing Information (DailyMed)*. DailyMed / FDA Structured Product Labeling. 2025. https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=1e94155f-19be-4944-b197-be4edbb4faf9 (accessed 2026-05-11)
33. *[fda_label_novarel]* Ferring Pharmaceuticals Inc.; U.S. Food and Drug Administration. *Novarel (chorionic gonadotropin for injection, USP) — FDA Prescribing Information (DailyMed)*. DailyMed / FDA Structured Product Labeling. 2025. https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=ac6918ff-9dc3-40d9-8619-54b26e4bdfc8 (accessed 2026-05-11)
34. *[fda_label_ovidrel]* EMD Serono, Inc.; U.S. Food and Drug Administration. *Ovidrel (choriogonadotropin alfa injection) — FDA Prescribing Information (DailyMed)*. DailyMed / FDA Structured Product Labeling. 2023. https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=a683e58a-63ea-44b8-a326-1a99a537bcf2 (accessed 2026-05-11)

35. *[fda_hcg_warning_2011]* U.S. Food and Drug Administration; U.S. Federal Trade Commission. *HCG Diet Products Are Illegal — FDA Consumer Update; companion FDA/FTC warning letters to manufacturers and distributors of over-the-counter homeopathic hCG weight-loss products*. FDA Consumer Updates. 2011. https://www.fda.gov/consumers/consumer-updates/hcg-diet-products-are-illegal (accessed 2026-05-11)

36. *[fda_essentially_a_copy]* U.S. Food and Drug Administration. *Compounded Drug Products That Are Essentially Copies of Approved Drug Products Under Section 503A of the Federal Food, Drug, and Cosmetic Act — Guidance for Industry*. FDA Guidance for Industry. 2018. https://www.fda.gov/media/98973/download (accessed 2026-05-11)

37. *[fda503a]* U.S. Food and Drug Administration. *Compounding Laws and Policies — Section 503A of the Federal Food, Drug, and Cosmetic Act*. FDA Drug Compounding. 2024. https://www.fda.gov/drugs/human-drug-compounding/compounding-laws-and-policies (accessed 2026-05-11)

38. *[usp_797]* United States Pharmacopeia. *USP General Chapter <797> Pharmaceutical Compounding — Sterile Preparations*. USP Compounding Compendium. 2023. https://www.usp.org/compounding/general-chapter-797 (accessed 2026-05-11)

39. *[usp_795]* United States Pharmacopeia. *USP General Chapter <795> Pharmaceutical Compounding — Nonsterile Preparations*. USP Compounding Compendium. 2023. https://www.usp.org/compounding/general-chapter-795 (accessed 2026-05-11)

How to Access Human Chorionic Gonadotropin (HCG)

Compounded Human Chorionic Gonadotropin (HCG) is dispensed under 503A on a patient-specific prescription. Depending on your role, the next step looks different.

FOR PRESCRIBING CLINICIANS

Offer this medication

A pharmacist will follow up within two business days. We'll cover state availability, supported formulations, and what integration looks like for your clinic.

ronanrx.com/request-partnership-call

PATIENT WITH A DOCTOR

Receive your prescription

If your doctor has prescribed Human Chorionic Gonadotropin (HCG), sign up so we can prepare and ship your medication. The signup wizard collects intake and connects you to the prescribing workflow.

ronanrx.com/patients

PATIENT WITHOUT A DOCTOR

Find a partner clinic

RonanRx prescribes through partner clinics — we don't initiate prescriptions on this site. Read how the referral process works and how to find a partner clinic in your state.

ronanrx.com/find-clinic

Other compounds RonanRx makes

This monograph is one of many in the RonanRx formulary. Every compound below is prepared under 503A on a patient-specific prescription. Browse the full catalog at ronanrx.com/medications and ronanrx.com/peptides, or scan the codes at right for each index.

Medications

Peptides

MEDICATIONS (40)

Alpha-Lipoic Acid (ALA) — Antioxidant & mitochondrial
Coenzyme Q10 (CoQ10) — Antioxidant & mitochondrial
Glutathione — Antioxidant & mitochondrial
NAD+ / NMN — Antioxidant & mitochondrial
Compounded Topical Anesthetics (BLT, LET) — Dermatology
Topical Minoxidil — Dermatology
Topical Tretinoin — Dermatology
Compounded Magnesium — Energy & nutritional
Cyanocobalamin — Energy & nutritional
High-Dose Vitamin D — Energy & nutritional
Hydroxocobalamin — Energy & nutritional
Iron (Compounded) — Energy & nutritional
L-Carnitine — Energy & nutritional
Methylcobalamin (B12) — Energy & nutritional
Methylfolate — Energy & nutritional
Anastrozole — Hormone optimization
Clomiphene & Enclomiphene — Hormone optimization
DHEA — Hormone optimization
Estradiol — Hormone optimization
Estriol — Hormone optimization
Human Chorionic Gonadotropin (HCG) — Hormone optimization
Pregnenolone — Hormone optimization
Progesterone — Hormone optimization
Testosterone — Hormone optimization
Compounded Metformin — Metabolic & weight
Compounded Semaglutide — Metabolic & weight
Compounded Tirzepatide — Metabolic & weight
Lipotropic Injection (MIC, MICC) — Metabolic & weight
Low-Dose Naltrexone (LDN) — Metabolic & weight
Naltrexone-Bupropion Combination — Metabolic & weight
Topiramate — Metabolic & weight
Bremelanotide / PT-141 — Sexual health
Compounded Sildenafil — Sexual health
Compounded Tadalafil — Sexual health
Trimix Injection — Sexual health
Compounded Gabapentin — Sleep & recovery
Compounded Melatonin — Sleep & recovery
Compounded T3 (Liothyronine) — Thyroid
Compounded T3/T4 Combinations — Thyroid
Compounded T4 (Levothyroxine) — Thyroid

PEPTIDES (21)

Sermorelin — Available now

Tesamorelin — Available now

AOD-9604 — Growth-hormone axis (under FDA review)

CJC-1295 — Growth-hormone axis (under FDA review)

GHRP-2 / GHRP-6 — Growth-hormone axis (under FDA review)

Hexarelin — Growth-hormone axis (under FDA review)

Ipamorelin — Growth-hormone axis (under FDA review)

MK-677 / Ibutamoren — Growth-hormone axis (under FDA review)

5-Amino 1MQ — Metabolic & longevity (under FDA review)

Epitalon / Epithalon — Metabolic & longevity (under FDA review)

MOTS-C — Metabolic & longevity (under FDA review)

Thymosin Alpha-1 / Thymalin — Metabolic & longevity (under FDA review)

DSIP, Delta Sleep-Inducing Peptide — Neuro & cognitive (under FDA review)

Selank — Neuro & cognitive (under FDA review)

Semax — Neuro & cognitive (under FDA review)

Vasoactive Intestinal Peptide (VIP) — Neuro & cognitive (under FDA review)

BPC-157 — Tissue repair (under FDA review)

KPV — Tissue repair (under FDA review)

LL-37 — Tissue repair (under FDA review)

Pentadeca Arginate (PDA) — Tissue repair (under FDA review)

TB-500 / Thymosin Beta-4 — Tissue repair (under FDA review)