To: **Secretaries/Chief Executive Officers of Unions and Regional Associations in Membership of World Rugby**

From: **David Carrigy**
Head of Development & International Relations

Date: December 18, 2018

Re: 2019 WADA Prohibited List

Please find attached the 2019 WADA Prohibited List of substances and methods prohibited in sport and applicable to Rugby **effective from January 1, 2019.**

Also attached are the following supporting documents:

a) 2019 Explanatory Notes (outlines the modifications from the 2018 Prohibited List to the 2019 Prohibited List)

b) 2019 Monitoring Programme (Outlines the substances placed on WADA's monitoring programme)

The 2019 Prohibited List and the supporting documents are also available for download and reference on the WADA website www.wada-ama.org, and will also be made available on World Rugby's anti-doping website under the Resources tab www.keeprugbyclean.com.

Please forward these documents to all your relevant rugby constituents, medical representatives and those involved in anti-doping within your Union.

If you have any queries regarding the WADA 2019 Prohibited List, please contact the World Rugby Anti-Doping Manager – Compliance & Results, David Ho, at david.ho@worldrugby.org or +353 1 2409 209.

Yours sincerely,

David Carrigy
Head of Development & International Relations

THE WORLD ANTI-DOPING CODE

INTERNATIONAL STANDARD

PROHIBITED LIST

JANUARY 2019

WORLD ANTI-DOPING AGENCY

play true

The official text of the *Prohibited List* shall be maintained by *WADA* and shall be published in English and French. In the event of any conflict between the English and French versions, the English version shall prevail.

This List shall come into effect on 1 January 2019

SUBSTANCES & METHODS
PROHIBITED AT ALL TIMES

(IN- AND OUT-OF-COMPETITION)

IN ACCORDANCE WITH ARTICLE 4.2.2 OF THE WORLD ANTI-DOPING CODE, ALL PROHIBITED SUBSTANCES SHALL BE CONSIDERED AS "SPECIFIED SUBSTANCES" EXCEPT SUBSTANCES IN CLASSES S1, S2, S4.4, S4.5, S6.A, AND PROHIBITED METHODS M1, M2 AND M3.

PROHIBITED SUBSTANCES

S0 NON-APPROVED SUBSTANCES

Any pharmacological substance which is not addressed by any of the subsequent sections of the List and with no current approval by any governmental regulatory health authority for human therapeutic use (e.g. drugs under pre-clinical or clinical development or discontinued, designer drugs, substances approved only for veterinary use) is prohibited at all times.

S1 ANABOLIC AGENTS

Anabolic agents are prohibited.

1. ANABOLIC ANDROGENIC STEROIDS (AAS)

a. Exogenous* AAS, including:

1-Androstenediol (5α-androst-1-ene-3β,17β-diol);
1-Androstenedione (5α-androst-1-ene-3,17-dione);
1-Androsterone (3α-hydroxy-5α-androst-1-ene-17-one);
1-Testosterone (17β-hydroxy-5α-androst-1-en-3-one);
Bolasterone;
Calusterone;
Clostebol;
Danazol ([1,2]oxazolo[4',5':2,3]pregna-4-en-20-yn-17α-ol);
Dehydrochlormethyltestosterone (4-chloro-17β-hydroxy-17α-methylandrosta-1,4-dien-3-one);
Desoxymethyltestosterone (17α-methyl-5α-androst-2-en-17β-ol and 17α-methyl-5α-androst-3-en-17β-ol);
Drostanolone;
Ethylestrenol (19-norpregna-4-en-17α-ol);
Fluoxymesterone;
Formebolone;
Furazabol (17α-methyl [1,2,5]oxadiazolo[3',4':2,3]-5α-androstan-17β-ol);
Gestrinone;
Mestanolone;
Mesterolone;
Metandienone (17β-hydroxy-17α-methylandrosta-1,4-dien-3-one);
Metenolone;
Methandriol;
Methasterone (17β-hydroxy-2α,17α-dimethyl-5α-androstan-3-one);
Methyldienolone (17β-hydroxy-17α-methylestra-4,9-dien-3-one);
Methyl-1-testosterone (17β-hydroxy-17α-methyl-5α-androst-1-en-3-one);
Methylnortestosterone (17β-hydroxy-17α-methylestr-4-en-3-one);
Methyltestosterone;
Metribolone (methyltrienolone, 17β-hydroxy-17α-methylestra-4,9,11-trien-3-one);
Mibolerone;
Norboletone;
Norclostebol;
Norethandrolone;
Oxabolone;
Oxandrolone;
Oxymesterone;
Oxymetholone;
Prostanozol (17β-[(tetrahydropyran-2-yl)oxy]-1'H-pyrazolo[3,4:2,3]-5α-androstane);
Quinbolone;
Stanozolol;
Stenbolone;
Tetrahydrogestrinone (17-hydroxy-18a-homo-19-nor-17α-pregna-4,9,11-trien-3-one);
Trenbolone (17β-hydroxyestr-4,9,11-trien-3-one);

and other substances with a similar chemical structure or similar biological effect(s).

b. Endogenous AAS and their** Metabolites **and isomers, when administered exogenously, including but not limited to:**

4-Androstenediol (androst-4-ene-3β,17β-diol);
4-Hydroxytestosterone (4,17β-dihydroxyandrost-4-en-3-one);
5-Androstenedione (androst-5-ene-3,17-dione);
7α-hydroxy-DHEA;
7β-hydroxy-DHEA;
7-keto-DHEA;
19-Norandrostenediol (estr-4-ene-3,17-diol);
19-Norandrostenedione (estr-4-ene-3,17-dione);
Androstanolone (5α-dihydrotestosterone, 17β-hydroxy-5α-androstan-3-one);
Androstenediol (androst-5-ene-3β,17β-diol);
Androstenedione (androst-4-ene-3,17-dione);
Boldenone;
Boldione (androsta-1,4-diene-3,17-dione);
Epiandrosterone (3β-hydroxy-5α-androstan-17-one);
Epi-dihydrotestosterone (17β-hydroxy-5β-androstan-3-one);
Epitestosterone;
Nandrolone (19-nortestosterone);
Prasterone (dehydroepiandrosterone, DHEA, 3β-hydroxyandrost-5-en-17-one);
Testosterone.

2. OTHER ANABOLIC AGENTS

Including, but not limited to:
Clenbuterol, selective androgen receptor modulators (SARMs, e.g. andarine, LGD-4033, enobosarm (ostarine) and RAD140), tibolone, zeranol and zilpaterol.

For purposes of this section:
* "exogenous" refers to a substance which is not ordinarily produced by the body naturally.
** "endogenous" refers to a substance which is ordinarily produced by the body naturally.

S2 PEPTIDE HORMONES, GROWTH FACTORS, RELATED SUBSTANCES, AND MIMETICS

The following substances, and other substances with similar chemical structure or similar biological effect(s), are prohibited:

1. Erythropoietins (EPO) and agents affecting erythropoiesis, including, but not limited to:

1.1 Erythropoietin-Receptor Agonists, e.g.
Darbepoetins (dEPO);
Erythropoietins (EPO);
EPO based constructs [e.g. EPO-Fc, methoxy polyethylene glycol-epoetin beta (CERA)];
EPO-mimetic agents and their constructs (e.g. CNTO-530, peginesatide).

1.2 Hypoxia-inducible factor (HIF) activating agents, e.g.
Argon;
Cobalt;
Daprodustat (GSK1278863);
Molidustat (BAY 85-3934);
Roxadustat (FG-4592);
Vadadustat (AKB-6548);
Xenon.

1.3 GATA inhibitors, e.g.
K-11706.

1.4 TGF-beta (TGF-β) inhibitors, e.g.
Luspatercept;
Sotatercept.

1.5 Innate repair receptor agonists, e.g.
Asialo EPO;
Carbamylated EPO (CEPO).

2. Peptide Hormones and their Releasing Factors,

2.1 Chorionic Gonadotrophin (CG) and Luteinizing Hormone (LH) and their releasing factors in males, e.g. Buserelin, deslorelin, gonadorelin, goserelin, leuprorelin, nafarelin and triptorelin;

2.2 Corticotrophins and their releasing factors, e.g. Corticorelin;

2.3 Growth Hormone (GH), its fragments and releasing factors, including, but not limited to:
Growth Hormone fragments, e.g.
AOD-9604 and hGH 176-191;
Growth Hormone Releasing Hormone (GHRH) and its analogues, e.g.
CJC-1293, CJC-1295, sermorelin and tesamorelin;
Growth Hormone Secretagogues (GHS), e.g. lenomorelin (ghrelin) and its mimetics, e.g. anamorelin, ipamorelin, macimorelin and tabimorelin;
GH-Releasing Peptides (GHRPs), e.g. alexamorelin, GHRP-1, GHRP-2 (pralmorelin), GHRP-3, GHRP-4, GHRP-5, GHRP-6, and examorelin (hexarelin).

3. Growth Factors and Growth Factor Modulators, including, but not limited to:
Fibroblast Growth Factors (FGFs);
Hepatocyte Growth Factor (HGF);
Insulin-like Growth Factor-1 (IGF-1) and its analogues;
Mechano Growth Factors (MGFs);
Platelet-Derived Growth Factor (PDGF);
Thymosin-β4 and its derivatives e.g. TB-500;
Vascular-Endothelial Growth Factor (VEGF);

and other growth factors or growth factor modulators affecting muscle, tendon or ligament protein synthesis/degradation, vascularisation, energy utilization, regenerative capacity or fibre type switching.

S3 BETA-2 AGONISTS

All selective and non-selective beta-2 agonists, including all optical isomers, are prohibited.
Including, but not limited to:
Fenoterol;
Formoterol;
Higenamine;
Indacaterol;
Olodaterol;
Procaterol;
Reproterol;
Salbutamol;
Salmeterol;
Terbutaline;
Tretoquinol (trimetoquinol);
Tulobuterol;
Vilanterol.

Except:

- Inhaled salbutamol: maximum 1600 micrograms over 24 hours in divided doses not to exceed 800 micrograms over 12 hours starting from any dose;
- Inhaled formoterol: maximum delivered dose of 54 micrograms over 24 hours;
- Inhaled salmeterol: maximum 200 micrograms over 24 hours.

The presence in urine of salbutamol in excess of 1000 ng/mL or formoterol in excess of 40 ng/mL is not consistent with therapeutic use of the substance and will be considered as an **Adverse Analytical Finding** (**AAF**) unless the **Athlete** proves, through a controlled pharmacokinetic study, that the abnormal result was the consequence of a therapeutic dose (by inhalation) up to the maximum dose indicated above.

S4 HORMONE AND METABOLIC MODULATORS

The following hormone and metabolic modulators are prohibited:

1. Aromatase inhibitors including, but not limited to:
2-Androstenol (5α-androst-2-en-17-ol);
2-Androstenone (5α-androst-2-en-17-one);
3-Androstenol (5α-androst-3-en-17-ol);
3-Androstenone (5α-androst-3-en-17-one);
4-Androstene-3,6,17 trione (6-oxo);
Aminoglutethimide;
Anastrozole;
Androsta-1,4,6-triene-3,17-dione (androstatrienedione);
Androsta-3,5-diene-7,17-dione (arimistane);
Exemestane;
Formestane;
Letrozole;
Testolactone.

2. Selective estrogen receptor modulators (SERMs) including, but not limited to:
Raloxifene;
Tamoxifen;
Toremifene.

3. Other anti-estrogenic substances including, but not limited to:
Clomifene;
Cyclofenil;
Fulvestrant.

4. Agents preventing activin receptor IIB activation including, but not limited, to:

Activin A-neutralizing antibodies;
Activin receptor IIB competitors such as:
Decoy activin receptors (e.g. ACE-031);
Anti-activin receptor IIB antibodies (e.g. bimagrumab);
Myostatin inhibitors such as:
Agents reducing or ablating myostatin expression;
Myostatin-binding proteins (e.g. follistatin, myostatin propeptide);
Myostatin-neutralizing antibodies (e.g. domagrozumab, landogrozumab, stamulumab).

5. Metabolic modulators:
5.1 Activators of the AMP-activated protein kinase (AMPK), e.g. AICAR, SR9009; and Peroxisome Proliferator Activated Receptor δ (PPARδ) agonists, e.g. 2-(2-methyl-4-((4-methyl-2-(4-(trifluoromethyl) phenyl)thiazol-5-yl)methylthio)phenoxy) acetic acid (GW1516, GW501516);
5.2 Insulins and insulin-mimetics;
5.3 Meldonium;
5.4 Trimetazidine.

S5 DIURETICS AND MASKING AGENTS

The following diuretics and masking agents are prohibited, as are other substances with a similar chemical structure or similar biological effect(s).

Including, but not limited to:

- Desmopressin; probenecid; plasma expanders, e.g. intravenous administration of albumin, dextran, hydroxyethyl starch and mannitol.
- Acetazolamide; amiloride; bumetanide; canrenone; chlortalidone; etacrynic acid; furosemide; indapamide; metolazone; spironolactone; thiazides, e.g. bendroflumethiazide, chlorothiazide and hydrochlorothiazide; triamterene and vaptans, e.g. tolvaptan.

Except:

- Drospirenone; pamabrom; and ophthalmic use of carbonic anhydrase inhibitors (e.g. dorzolamide, brinzolamide);
- Local administration of felypressin in dental anaesthesia.

The detection in an **Athlete's Sample** at all times or **In-Competition**, as applicable, of any quantity of the following substances subject to threshold limits: formoterol, salbutamol, cathine, ephedrine, methylephedrine and pseudoephedrine, in conjunction with a diuretic or masking agent, will be considered as an **Adverse Analytical Finding (AAF)** unless the **Athlete** has an approved **Therapeutic Use Exemption (TUE)** for that substance in addition to the one granted for the diuretic or masking agent.

PROHIBITED METHODS

M1 MANIPULATION OF BLOOD AND BLOOD COMPONENTS

The following are prohibited:

1. The **Administration** or reintroduction of any quantity of autologous, allogenic (homologous) or heterologous blood, or red blood cell products of any origin into the circulatory system.

2. Artificially enhancing the uptake, transport or delivery of oxygen.
Including, but not limited to:
Perfluorochemicals; efaproxiral (RSR13) and modified haemoglobin products, e.g. haemoglobin-based blood substitutes and microencapsulated haemoglobin products, excluding supplemental oxygen by inhalation.

3. Any form of intravascular manipulation of the blood or blood components by physical or chemical means.

M2 CHEMICAL AND PHYSICAL MANIPULATION

The following are prohibited:

1. **Tampering**, or **Attempting to Tamper**, to alter the integrity and validity of **Samples** collected during **Doping Control**.
Including, but not limited to:
Urine substitution and/or adulteration, e.g. proteases.

2. Intravenous infusions and/or injections of more than a total of 100 mL per 12 hour period except for those legitimately received in the course of hospital treatments, surgical procedures or clinical diagnostic investigations.

M3 GENE AND CELL DOPING

The following, with the potential to enhance sport performance, are prohibited:

1. The use of polymers of nucleic acids or nucleic acid analogues.

2. The use of gene editing agents designed to alter genome sequences and/or the transcriptional, post-transcriptional or epigenetic regulation of gene expression.

3. The use of normal or genetically modified cells.

SUBSTANCES & METHODS
PROHIBITED IN-COMPETITION

IN ADDITION TO THE CLASSES S0 TO S5 AND M1 TO M3 DEFINED ABOVE, THE FOLLOWING CLASSES ARE PROHIBITED IN-COMPETITION:

PROHIBITED SUBSTANCES

S6 STIMULANTS

All stimulants, including all optical isomers, e.g. d- and l- where relevant, are prohibited.

Stimulants include:

a: Non-Specified Stimulants:

Adrafinil;
Amfepramone;
Amfetamine;
Amfetaminil;
Amiphenazole;
Benfluorex;
Benzylpiperazine;
Bromantan;
Clobenzorex;
Cocaine;
Cropropamide;
Crotetamide;
Fencamine;
Fenetylline;
Fenfluramine;
Fenproporex;
Fonturacetam [4-phenylpiracetam (carphedon)];
Furfenorex;
Lisdexamfetamine;
Mefenorex;
Mephentermine;
Mesocarb;
Metamfetamine(d-);
p-methylamfetamine;
Modafinil;
Norfenfluramine;
Phendimetrazine;
Phentermine;
Prenylamine;
Prolintane.

A stimulant not expressly listed in this section is a Specified Substance.

b: Specified Stimulants.

Including, but not limited to:

3-Methylhexan-2-amine (1,2-dimethylpentylamine);
4-Methylhexan-2-amine (methylhexaneamine);
4-Methylpentan-2-amine (1,3-dimethylbutylamine);
5-Methylhexan-2-amine (1,4-dimethylpentylamine);
Benzfetamine;
Cathine**;
Cathinone and its analogues, e.g. mephedrone, methedrone, and α - pyrrolidinovalerophenone;
Dimetamfetamine;
Ephedrine***;
Epinephrine**** (adrenaline);
Etamivan;
Etilamfetamine;
Etilefrine;
Famprofazone;
Fenbutrazate;
Fencamfamin;
Heptaminol;
Hydroxyamfetamine (parahydroxyamphetamine);
Isometheptene;
Levmetamfetamine;
Meclofenoxate;
Methylenedioxymethamphetamine;
Methylephedrine***;
Methylphenidate;
Nikethamide;
Norfenefrine;
Octopamine;
Oxilofrine (methylsynephrine);
Pemoline;
Pentetrazol;
Phenethylamine and its derivatives;
Phenmetrazine;
Phenpromethamine;
Propylhexedrine;
Pseudoephedrine*****;

Selegiline;
Sibutramine;
Strychnine;
Tenamfetamine (methylenedioxyamphetamine);
Tuaminoheptane;

and other substances with a similar chemical structure or similar biological effect(s).

Except:

- Clonidine;
- Imidazole derivatives for topical/ophthalmic use and those stimulants included in the 2019 Monitoring Program*.

* Bupropion, caffeine, nicotine, phenylephrine, phenylpropanolamine, pipradrol, and synephrine: These substances are included in the 2019 Monitoring Program, and are not considered **Prohibited Substances**.

** Cathine: Prohibited when its concentration in urine is greater than 5 micrograms per milliliter.

*** Ephedrine and methylephedrine: Prohibited when the concentration of either in urine is greater than 10 micrograms per milliliter.

**** Epinephrine (adrenaline): Not prohibited in local administration, e.g. nasal, ophthalmologic, or co-administration with local anaesthetic agents.

***** Pseudoephedrine: Prohibited when its concentration in urine is greater than 150 micrograms per milliliter.

S7 NARCOTICS

The following narcotics are prohibited:

Buprenorphine;
Dextromoramide;
Diamorphine (heroin);
Fentanyl and its derivatives;
Hydromorphone;
Methadone;
Morphine;
Nicomorphine;
Oxycodone;
Oxymorphone;
Pentazocine;
Pethidine.

S8 CANNABINOIDS

The following cannabinoids are prohibited:

- Natural cannabinoids, e.g. cannabis, hashish and marijuana,
- Synthetic cannabinoids e.g. Δ9-tetrahydrocannabinol (THC) and other cannabimimetics.

Except:

- Cannabidiol.

S9 GLUCOCORTICOIDS

All glucocorticoids are prohibited when administered by oral, intravenous, intramuscular or rectal routes.

Including but not limited to:

Betamethasone;
Budesonide;
Cortisone;
Deflazacort;
Dexamethasone;
Fluticasone;
Hydrocortisone;
Methylprednisolone;
Prednisolone;
Prednisone;
Triamcinolone.

SUBSTANCES PROHIBITED IN PARTICULAR SPORTS

P1 BETA-BLOCKERS

Beta-blockers are prohibited **In-Competition** only, in the following sports, and also prohibited **Out-of-Competition** where indicated.

- Archery (WA)*
- Automobile (FIA)
- Billiards (all disciplines) (WCBS)
- Darts (WDF)
- Golf (IGF)
- Shooting (ISSF, IPC)*
- Skiing/Snowboarding (FIS) in ski jumping, freestyle aerials/halfpipe and snowboard halfpipe/big air
- Underwater sports (CMAS) in constant-weight apnoea with or without fins, dynamic apnoea with and without fins, free immersion apnoea, Jump Blue apnoea, spearfishing, static apnoea, target shooting, and variable weight apnoea.

*Also prohibited **Out-of-Competition**

Including, but not limited to:

Acebutolol;
Alprenolol;
Atenolol;
Betaxolol;
Bisoprolol;
Bunolol;
Carteolol;
Carvedilol;
Celiprolol;
Esmolol;
Labetalol;
Metipranolol;
Metoprolol;
Nadolol;
Oxprenolol;
Pindolol;
Propranolol;
Sotalol;
Timolol.

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SUMMARY OF MAJOR MODIFICATIONS AND EXPLANATORY NOTES

2019 PROHIBITED LIST

Substances and methods prohibited at all times (In- and Out-of-Competition)

Prohibited Substances

S1 ANABOLIC AGENTS

1a Exogenous Anabolic Androgenic Steroids

- 4-hydroxytestosterone was transferred to class S1.1b, "Endogenous Anabolic Androgenic Steroids (AAS)", since this substance can be formed endogenously at low concentrations.
- Bolandiol was removed, since it constitutes one of the isomers of 19-norandrostenediol, which is already included under class S1.1b.

1b Endogenous AAS and their *Metabolites* and isomers, when administered exogenously

- The title of S1.1b "Endogenous Anabolic Androgenic Steroids when administered exogenously" was changed to: "Endogenous AAS and their *Metabolites* and isomers when administered exogenously" to clarify that ALL endogenous AAS and their *Metabolites* and isomers are prohibited when administered exogenously. Therefore, the listed examples now include the endogenous AAS and some of their *Metabolites*/isomers.
- The examples of *Metabolites* and isomers of endogenous AAS were simplified, leaving only those endogenous substances that are currently known to be available in nutritional supplements or that may be used as masking agents (e.g. to affect the "steroid profile"). The currently named examples are:
  7α-hydroxy-DHEA;
  7β-hydroxy-DHEA;
  4-androstenediol (androst-4-ene-3β,17β-diol);
  5-androstenedione (androst-5-ene-3,17-dione);
  7-keto-DHEA;
  epiandrosterone (3β-hydroxy-5α-androstan-17-one);
  epi-dihydrotestosterone (17β-hydroxy-5β-androstan-3-one);
  epitestosterone.
- All other substances previously listed as examples of *Metabolites*/isomers of endogenous AAS were removed as specific examples of this class; however, such substances remain prohibited if administered exogenously. The *Prohibited List* usually does not list *Metabolites*, unless it provides useful information to either *Athletes* or stakeholders. The removed *Metabolites* may have multiple names and are not known to be available in nutritional supplements or to have biological activity.
- The analysis of several of these *Metabolites*, as *Markers* of the exogenous administration of endogenous AAS is already covered in specific WADA Technical Documents:
  19-Norandrosterone and 19-Noretiocholanolone are *Metabolites* of the 19-norsteroids, Nandrolone, 19-Norandrostenediol and 19-Norandrostenedione, and are covered in the TD19NA;
  Androsterone, Etiocholanolone, 5α-androstane-3α,17β-diol (5αAdiol) and 5β-androstane-3α,17β-diol (5βAdiol), which are *Metabolites* of Testosterone and its precursors, are defined as *Markers* of the "steroid profile", and are covered in the TDEAAS and TDIRMS;
  All the other substances previously listed (androstane- and androstenediols), if administered exogenously, are also monitored through GC/C/IRMS analysis of the *Markers* of the "steroid profile" (TDIRMS).
- 2-Androstenone (5α-androst-2-ene-17-one) was transferred to class S4.1 Aromatase Inhibitors, which better reflects its biological activity. Analogues and isomers of this substance were also included in S4.1, namely 2-Androstenol (5α-androst-2-en-17-ol), 3-Androstenol (5α-androst-3-en-17-ol) and 3-Androstenone (5α-androst-3-en-17-one);
- Epiandrosterone (3β-hydroxy-5α-androstan-17-one) was added as an example, since this substance is available in nutritional supplements.

2 Other Anabolic Agents:

- Ostarine is now also listed by its International Non-proprietary Name (INN), enobosarm.

S2 PEPTIDE HORMONES, GROWTH FACTORS, RELATED SUBSTANCES, AND MIMETICS

- More examples of Hypoxia-inducible factor (HIF) activating agents were added. These are daprodustat (GSK1278863) and vadadustat (AKB-6548), while the reference name of molidustat, BAY 85-3934, has been included.
- The title of S2.2 was changed to "Peptide Hormones and their Releasing Factors", more accurately reflecting the substances in this class.
- Ghrelin and hexarelin are now listed by their INNs, lenomorelin and examorelin, respectively.
- Macimorelin was added as an example of a growth hormone secretagogue.

S3 BETA-2-AGONISTS

- Tretoquinol (trimetoquinol) is a beta-2 agonist and was added as an example to S3. It is an ingredient in oral cold and flu medications, particularly in some countries in Asia.

S4 HORMONE AND METABOLIC MODULATORS

- 2-Androstenone (5α-androst-2-ene-17-one) was transferred from S1.1b to this class, which better reflects its biological activity. Analogues and isomers of this substance were also included in S4.1, namely 2-Androstenol (5α-androst-2-en-17-ol), 3-Androstenol (5α-androst-3-en-17-ol) and 3-Androstenone (5α-androst-3-en-17-one).
- The title of S4.4 was changed to: "Agents preventing Activin receptor IIB activation", and several examples are listed. These include myostatin inhibitors such as myostatin-neutralizing antibodies (e.g. domagrozumab, landogrozumab, stamulumab), myostatin-binding proteins (e.g. follistatin, myostatin propeptide), agents reducing or ablating myostatin expression, activin receptor IIB competitors such as e.g. decoy activin receptors (e.g. ACE-031), anti-activin receptor IIB antibodies (e.g. bimagrumab), and activin A-neutralizing antibodies. This change was made to reflect the multiple ways in which this receptor can be affected.

Prohibited Methods

M3 GENE AND CELL DOPING

- The title of this class was changed to: "Gene and Cell Doping", in order to reflect that cells were already included in M3.3. Stem cells are not prohibited for treating injuries as long as their use restores normal function of the affected area and does not enhance function. The term "post-transcriptional" was added to the list of examples to more completely define the processes that can be modified by gene editing.

Substances and Methods Prohibited In-Competition

- The wording of the opening sentence was modified to harmonize with Article 4.2.2 of the Code as well as other sections of the List. In this regard, the word "categories" was replaced by "classes".

S6 STIMULANTS

- For consistency in chemical nomenclature, 1,3-dimethylbutylamine is also represented as 4-methylpentan-2-amine. Two additional analogues of methylhexaneamine were added as examples: 5-methylhexan-2-amine (1,4-dimethylpentylamine) and 3-methylhexan-2-amine (1,2-dimethylpentylamine).
- Dimethylamphetamine is now listed by its INN dimetamfetamine. Other amphetamine compounds were standardized to align with the INN.

Substances Prohibited in Particular Sports

P1 BETA-BLOCKERS

- Bunolol is a racemic mixture of levobunolol and bunolol, so levobunolol was removed as an example in P1.

* For further information on previous modifications and clarifications please consult the Prohibited List Q & A on www.wada-ama.org/en/questions-answers/prohibited-list-qa

THE 2019 MONITORING PROGRAM*

The following substances are placed on the 2019 Monitoring Program:

1. Stimulants:	*In-Competition* only: Bupropion, caffeine, nicotine, phenylephrine, phenylpropanolamine, pipradrol and synephrine.
2. Narcotics:	*In-Competition* only: Codeine, hydrocodone and tramadol.
3. Glucocorticoids:	*In-Competition* (by routes of administration other than oral, intravenous, intramuscular or rectal) and *Out-of-Competition* (all routes of administration).
4. 2-ethylsulfanyl-1H-benzimidazole (bemitil):	*In-* and *Out-of-Competition*.
5. Beta-2-agonists:	*In-* and *Out-of-Competition*: any combination of beta-2-agonists.

*The World Anti-Doping Code (Article 4.5) states: *"WADA, in consultation with Signatories and governments, shall establish a monitoring program regarding substances which are not on the Prohibited List, but which WADA wishes to monitor in order to detect patterns of misuse in sport."*