The ABP in 2018 – Status Report

WADA ABP Symposium – 5-7 November 2018

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Protect the clean athlete
Towards an even playing field

- Reduced prevalence
  - Prevention
  - Deterrence
  - Detection

- Reduced effectiveness
  - Reduced dose
  - Less potent substances
  - Altered timing of doping

*Increase the likelihood that a clean athlete can win*
Doping prevalence and effectiveness are independent

Low likelihood of winning clean

High likelihood of winning clean
Anti-doping toolbox

- Investigations
- ABP
- Testing
- Education
How can I optimize my role within an ABP program?

How can I optimize my ABP program?

How can I optimize the integration of my ABP program within my overall anti-doping strategy?
Detecting doping

Biomarkers of doping

Cause
Substance detection
Metabolites

Effect
Biomarkers of doping
Why do we need biomarkers?

- Some substances are not easily detectable
- Some substances are rapidly metabolized
- New substances are continuously developed
- Measuring the effect complements substance detection
How do we use biomarkers to infer doping?
1. Personalized thresholds based on athletes own values.

2. Increased sensitivity.

Solution: longitudinal profiling using the ABP

![Graph showing sample data with upper and lower limits, and percentage ranges for 90%, 95%, 97.5%, 99%, 99.5%, and 99.9%]
Automated Process

- One Athlete – One Passport
- Automated calculation and alerts
- Passport sharing
- WADA monitoring
Modules of the ABP

Haematological Module - 2009
• Aims to detect blood doping
• Matrix – EDTA blood samples

Steroid Module - 2014
• Aims to detect steroid doping
• Matrix – urine samples

Endocrine Module
• Under development
• Goal to detect GH doping
Translating biological data into specific actions

- Specific analyses
- Expert Panel Reviews
- Target Testing
- Sample Storage
- Intelligence gathering

Direct detection (Article 2.1)
Passport case (Article 2.2)
Investigations (Articles 2.5-2.10)
The ABP can be used to directly sanction athletes.
The ABP can direct sample analysis – what to test for?

Population based limit

ATPF

Automatic IRMS

Sanction
The ABP can direct testing – who to test?

Athlete 1

Athlete 2

Reduce testing

Increase testing
Reactive testing is critical.

Individual samples can support the evidence in neighboring samples and be linked together into one biological response to doping.

The ABP can direct testing – when to test?
The ABP can be used to direct investigations

- The ABP provides robust forensic evidence
- Correlate with other intelligence
- Identify individuals and group of athletes
Spatial-temporal analysis of ABP patterns

Same date, same place

Discovery of Blood Transfusion Equipment

Team-level doping
The steroid module assists in fighting corruption

- Sample switching – DNA analysis
- Confirm sample identify
- Use in investigations
Integration of the ABP into an anti-doping program

- Ability to put APMU recommendations into action rapidly
- Passport status should inform testing frequency
- Feed passport information to investigations
Status of the ABP - 2018
Growth in the use of the ABP

- 119 ADOs running compliant ABP programs
- There are presently 113 ADOs working with Lab-associated APMUs (58 NADOs and 55 IFs)
- With growth had come increasing complexity and specialization of individual roles.
Addressing increased specialization in the ABP

- ABP Expert Education strategy
  - Reference Guide for Experts via Adel platform
  - Webinar series

- TD2019APMU
  - Harmonize APMU role
  - APMU approval process

- Improvements to ADAMS
  - Improve communication between stakeholders
  - Provide new tools to manage passports
Status of the Haematological Module

- 91 ADOs running haematological module

- ABP Blood testing (2017)
  - 29,130 tests
  - 10,788 athletes
  - Average of 2.7 tests per athlete

- Haematological Module becomes mandatory for endurance sports in 2019 (TDSSA)

- BSS went live in June 2017
Steroid Testing in 2017

- 224,167 tests (avg 1.5 tests per athlete).
- Of IRMS positives, >75% are on first test.

<table>
<thead>
<tr>
<th>First Sample</th>
<th>SSP-CPR system fit for purpose</th>
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<tbody>
<tr>
<td>At least two Samples – T/E over 4</td>
<td>Reduction in costs as less IRMS</td>
</tr>
<tr>
<td>At least two Samples – T/E less that 4</td>
<td>Increased sensitivity</td>
</tr>
</tbody>
</table>
40 APFs in 2017

7 new ADOs declaring APFs in 2017 (15 ADOs in total)

5 APFs where no ADRV was delivered
Outcomes of the ABP

- Over 150 athletes sanctioned directly using the ABP
- 30 APFs in results management
- >500 ESA positives
- Improved sensitivity to steroid abuse at low T/E levels
- Efficient targeting of IRMS with longitudinal profiling
- Detection of urine exchange
- Investigations
  - IC, IP, LIMS, Kenya
  - ADOs
Changes in Behavior

- Reduction in atypical passports

- Effectiveness (potency) of doping regimes has significantly diminished
  - Reduced doses, less effective substances.

- Athletes are doping at less effective times
  - Doping during the off-season for training

- Evidence of effects on performances

*Increasing the likelihood that a clean athlete can win*
Future of the ABP
The development of the ABP is driven by stakeholders

- **ABP Expert Groups:**
  - Haematological
  - Steroid

- **Working Groups:**
  - BSS
  - APMU
  - Endocrine/IGF-1
  - Biomarker of Doping
Challenges with biomarkers in the ABP

- Limited to blood and steroid doping
- No new biomarkers
- Sensitivity
- Windows of detection
- Important confounding factors without biomarkers
Development of the ABP

- Implemented, legally validated framework to which new biomarkers can continuously be added.

- Strategy – continuously add new biomarkers to the ABP.

- Goal is to make it virtually impossible to dope.
The way forward – WADA Biomarker Working Group

- Targeted research for biomarker discovery
  - First RFA in 2017

- Link with other funding agencies (ex. FRSQ)

- Promote interactions with other biomarker specialists
  - Sample analysis
  - Data analysis
  - Learn from other fields
## ABP Biomarker Development Pipeline 2018

<table>
<thead>
<tr>
<th>Growth Hormone</th>
<th>Discovery</th>
<th>Validation</th>
<th>Implementation</th>
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<tr>
<td>IGF-I, PIIINP</td>
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<td>Proteomics</td>
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## Blood Doping

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<th>Discovery</th>
<th>Validation</th>
<th>Implementation</th>
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<tr>
<td>Plasma Volume</td>
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<td>Iron markers</td>
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<td>Transcriptomics</td>
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<td>ABT</td>
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<td>ESAs/Altitude</td>
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## Steroids

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<td>Extended urine profile</td>
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<td>Metabolomics in blood</td>
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<td>New RFA</td>
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<td>2019?</td>
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The effectiveness of the ABP is dependent on:
- Testing quantity
- Testing quality

Anti-doping data is growing and becoming more complex.
- Roles within the ABP are becoming more specialized and complex
- Data management is increasingly important

The ABP is reliant on strong collaboration between stakeholders
play true