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## **Experience in Sample Receiving during Commonwealth Games**

**2010**

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### **1.0 INTRODUCTION**

Doping analysis is not solely a scientific work; it involves lot of legal issues as the anti doping scientists have to defend their results in arbitration courts. Hence, apart from scientific data documentation linked to sample receiving and chain of custody becomes very crucial, as in some cases the benefit of doubt has gone in athlete's favour. The XIX Commonwealth Games (CWG) were held in New Delhi, India (Oct 3-14, 2010) for which testing of urine and blood samples were carried out at National Dope Testing Laboratory (NDTL). The challenge of receipt of samples and chain of custody was more crucial to handle with the requirement of 24 hours turn around time. The objective of the present paper is to evaluate the challenges faced in sample receiving and chain of custody during CWG 2010.

### **2.0 PERSONNEL:**

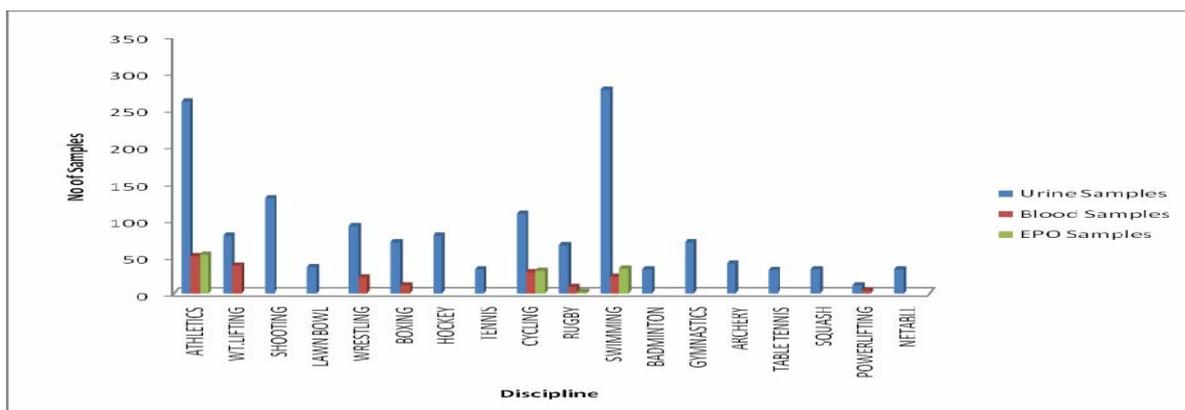
A team of 8 persons (in 2 shifts) including one foreign expert were part of the sample accessioning team wherein all the documentation and the process considered for evaluating the integrity of the samples was checked.<sup>(1,2)</sup>

### **3.0 EXPERIMENTAL:**

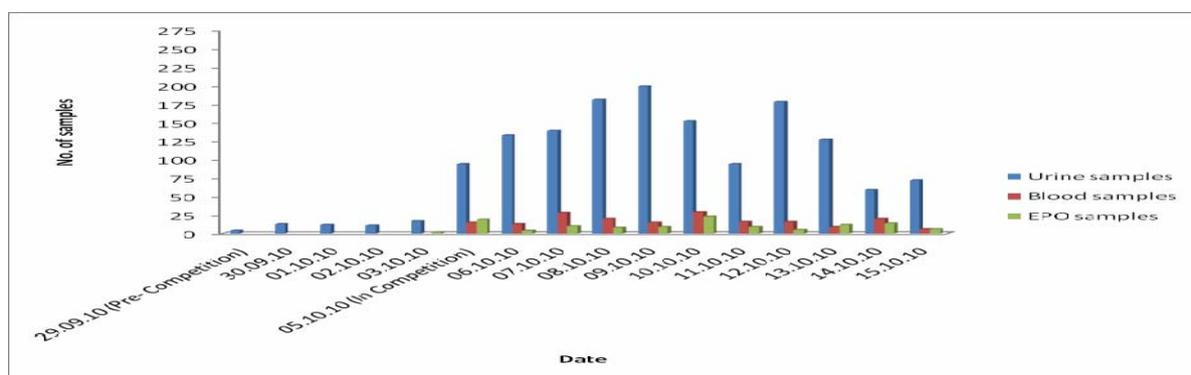
A total of 1482 urine samples (Fig. 1 & 2) and 188 blood samples (Fig 3) were received from the Commonwealth Games Federation Medical Commission (CGF-MC) during the games period. The samples were received from 18 disciplines, out of 1482 urine samples, 150 were Out of Competition (OC), 1332 were Competition (C) and 121 samples were for Erythropoietin testing (08 OC and 113 C). This represents the largest and the most comprehensive Commonwealth Games anti doping programme till date.

### **4.0 SAMPLE RECEIVING:**

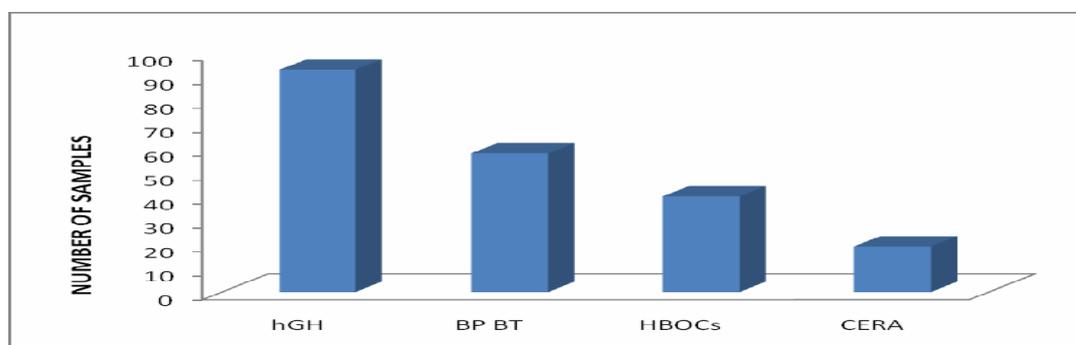
The number of samples received in a day ranged from 04 to 199 for urine and 06 to 29 for blood (Fig. 2). The samples were delivered to the lab every day in two shifts at scheduled timing of 8 am and 9 pm. However, the number of samples received in one shift



**Fig. 1** No. of samples received from various disciplines



**Fig. 2** Distribution of No. of samples received per day



**Fig. 3** Distribution of No. of Blood samples received for various test

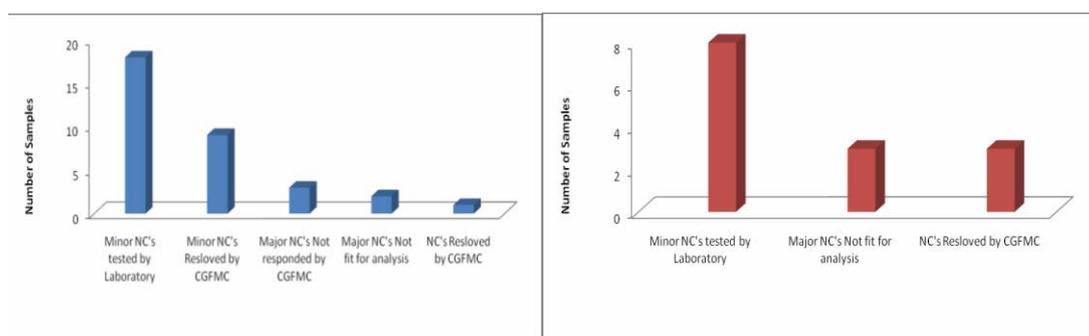
ranged from 20 to 80, the maximum number of samples received in a day (2 shifts) was 199 i.e. on 6<sup>th</sup> day of CWG 2010. The existing chain of custody area in NDTL was modified to accommodate receiving of blood samples. On arrival of the blood samples, the temperature was checked using data logger as per WADA Technical Document of Blood. <sup>(3)</sup> The samples were inspected on receipt at the laboratory by verifying the code numbers of sample bottles with those on the Doping Control Form (DCF). The pH, specific gravity and volume were measured and registration of the samples was done using in house customized software. Internally generated lab codes were pasted one each on the sample

bottle ‘A’ and ‘B’ and the DCF. These coded numbers were used throughout the analytical process maintaining chain of custody as per Technical document TD2009LCOC. The ‘B’ samples were stored in cold room at -20 C and the ‘A’ samples were aliquoted for analyzing different group of banned substances as per different screening procedures.

### 5.0 Non Conformity (NC’s) and their handling

Urine samples: A total of 33 NC’s were reported for urine samples, out of which 28 were tested (Fig 4). Six NC’s were major and one NC was resolved by the testing authority.

Blood samples: A total of 14 NC’s were observed in blood samples and communicated to CGF-MC. 8 NC’s were due to haemolyzed blood samples received which were to be tested for hGH and all of these were tested. Out of remaining six NC’s, three were not fit for analysis which was conveyed to the testing authority and three were tested in the presence of CGFMC officials.



**Fig. 4** Distribution of Urine (4a) and Blood (4b) samples analyzed and not analyzed NC’s.

The NC’s of CWG 2010 were compared with those observed in national or other international samples. The percentage of NC’s in CWG was found to be 2%. (Table -1).

S.NO	Name of the Organization	Total No. of Samples	Number of NC's	Percentage %
1.	NADA & Federations	2891	51	1.76
2.	Singapore Youth Olympic Games 2010	1168	18	1.54
3.	CWG – 2010	1482	33	2.22
4.	Other International Organizations	1220	07	0.57
<b>Total</b>		<b>6764</b>	<b>109</b>	<b>1.61</b>

**Table1.** Comparison of NC’s received during CWG and other samples received by NDTL

## **6.0 RESULTS & DISCUSSION**

**Doping Control Form (DCF):** The statistical evaluation of the DCF revealed that the recorded information on first copy was not transferred correctly to the lab's copy which was communicated to CGF-MC in the early stages of the Games and accordingly DCO's were told to write directly on to the carbon copies. <sup>(4)</sup>There was deviation up to 8.6% in Sp. Gravity mentioned in DCF and the Sp. Gravity value measured in the lab though both the measurements were made using refractometer. . The deviation observed in the volume which was checked on receipt and that mentioned on the DCF was upto 78.8 %. The evaluation regarding athlete's consent for research revealed that 68.15 % (n = 1010) agreed to give their samples for research and 31.98 % (n = 472) refused for it.

The percentage of NC's observed in CWG 2010 (2%) is the highest observed till date in any national or international event which may be due to the pressure of higher number of samples to be collected in time bound manner.

## **7.0 CONCLUSION**

A fast and reliable communication with the medical commission and the local organizers is necessary for reporting within 24 hrs during major events. Information about non-conformances has to be transmitted by the responsible medical commission within shortest time to the Doping Control Officers (DCOs) to avoid the same for any further sample taking procedure. The standard of the Doping control forms should be tested prior to the commencement of the games.

The laboratory has to be involved and experience about any possible non- conformities have to be discussed (e.g. DCF, sample sealing, communication) as preventive action in chain of custody.

## **REFERENCES**

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