

Pharmacy at the 2004 Olympic Games

In this article, **Mark Stuart** and **Maria Skouroliakou** describe pharmacy arrangements at the Olympic Games in Athens last month

The Polyclinic pharmacy in the Athens Olympic village opened on 30 July to provide for the pharmaceutical requirements of over 17,000 athletes, team officials and technical officials from 202 countries. The pharmacy provided medicines to residents of the Olympic village and acted as a central point of organisation, co-ordination and distribution of drugs to the satellite pharmacies at each of the Olympic sporting venues. Pharmacists worked alongside other medical experts in a closely knit environment to provide a world class level of medical care to the "Olympic family".

In addition to the pharmacy, the Polyclinic also contained a comprehensive range of medical services and specialties, which included sports medicine, medical imaging, podiatry, dentistry, physiotherapy, pathology, eye services (including opticians and ophthalmologists), orthopaedics and gynaecology. With its contemporary design, brand new high-tech medical equipment and marble floors throughout, the Polyclinic functioned as a complete luxury hospital and state-of-the-art sports medicine clinic.

A total of 3,000 medical staff were required to run the medical programme for the games. This included 400 specialist doctors, 400 nurses, 400 physical therapists, 200 masseurs, 40 dentists, 30 opticians and 20 podiatrists. In addition, 170 ambulances and three helicopters were at the ready to cope with any medical emergencies that arose. The medical services within the village worked closely with the Greek Ministry of Health and Welfare to ensure that patients requiring additional medical treatment other than that provided in the Polyclinic could be transferred to a network of dedicated hospitals. The Polyclinic pharmacy was staffed by 12 Greek pharmacists and 10 pharmacy students from Athens University. There were two shifts during the day, from 8am to 3pm and 3pm to 10pm; an on-call pharmacy service was provided overnight.

A pharmacy guide outlining the games formulary and prescribing procedures was supplied to each participating nation. The

formulary included information about the status of each drug in sport and information about notification procedures for restricted drugs requiring a therapeutic use exemption, such as beta₂-agonists and corticosteroids. Since many of the large teams brought their own supply of medicines, the formulary also contained information about the importation of drugs into Greece. Eight months before the games, each national Olympic committee was requested to declare all medicines it planned to bring into the country to ensure that there could be no inadvertent breach of customs and importation laws. Special allowances were made for visiting team doctors to prescribe only for members of their own country's team for the duration of the games.

All medicines and medical services were provided free of charge to the athletes and officials. There were 270 different medicines listed on the formulary and available for prescribing. Although a considerable amount of drug stock was donated by pharmaceutical companies, the total cost of drugs for the pharmacy came to €240,000.

Pharmacy computer system

The computer dispensing system was custom designed for the Athens games and seemed to combine the most successful elements of the dispensing programmes from the Sydney Olympics and the Manchester Commonwealth Games. The system was linked to the athlete accreditation system and the details of each athlete were displayed by simply entering his or her identification number. The system was also linked to the other medical systems within the Polyclinic to provide the pharmacist with information about the prescribing doctor and the Polyclinic admission details. The system would alert the dispensing pharmacist if any

prohibited or restricted drug was dispensed and would print a duplicate prescription for the athlete to keep.

Around 100 to 150 prescriptions were dispensed daily. Similar to previous games, anti-inflammatory drugs, including diclofenac, were most frequently prescribed for soft-tissue injury. Antibiotics and loratadine were also in high demand, as was simple eye drops for dry, irritated eyes; the consequence of 36°C temperatures on some days and a dry and dusty atmosphere. Simple analgesics were dispensed by prescription only and fast-movers included paracetamol and orphenadrine. The Polyclinic pharmacy was also responsible for distributing 130,000 free condoms and 30,000 sachets of personal lubricant; pharmacy involvement in safer sex campaigns is becoming a tradition at international games.

The pharmacy was given access to the recently launched MedicinesComplete by the Pharmaceutical Press for the period of the Olympic and Paralympic Games. This comprehensive electronic information package could be used for the identification of drugs and product names from foreign countries and allowed pharmacy staff access to information on a range of nutritional supplements frequently used by athletes.

To cope with the increased pharmacy demands of millions of visitors to Athens, the Olympic organising committee and pharmacists representing the pharmaceutical industry and local businesses came to an agreement for the operation and restocking of essential medicines around Athens during the games. The number of pharmacies open at the weekends and overnight was increased, especially around Olympic venues, downtown Athens and the port of Piraeus. Provisions for the restocking of pharmacies during evening hours were implemented.

The Polyclinic pharmacy will remain open until 1 October to serve the athletes and officials of the Paralympic Games.

Further information about pharmacy at previous Olympic and Commonwealth Games and drugs in sport can be found at www.sportspharmacy.com.

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The war on drugs in sport — a perspective from the Athens Olympics

In this article, **Mark Stuart**, a doping officer at the Athens Olympic Games, describes the anti-doping operation at the games

The ruthless desire to compete and win is as old as humankind. Ancient Greek Olympians are known to have used stimulating potions and high protein diets to improve athletic performance and Greek gladiators were doped to make their fights more vigorous and bloody for the spectators. It seems doping in sport has gone full-circle, with Greece having just undertaken the largest, and one of the most successful, Olympic doping-control operations to date.

In the year preceding the Athens games, the war on drugs in sport was well under way. The sporting world was rocked by a number of positive drug tests and allegations of drug use by elite athletes. Britain's favourite for a gold medal in Athens, sprinter Dwain Chambers, was suspended for two years following detection of the "designer" steroid tetrahydrogestrinone (THG). Another British Olympic hopeful, cyclist David Millar, withdrew from the British team only weeks before the games after admitting to a French judge he had used erythropoietin (EPO). Vials of the drug were found by police in a raid of his home just before the Tour de France. He was to compete in at least three Olympic events: the time trial, road race and team pursuit.

Also in the weeks before the Olympics, Australian cyclist Sean Eadie was cleared of allegations that he had imported prohibited substances into Australia and, in the US, the owner of the Bay Area Laboratory Co-operative, Victor Conte, faced charges of supplying performance enhancing drugs to a number of American athletes. Although triple Olympic gold medallist Marion Jones has never failed a drugs test, she was also fighting to clear her name from suspicion of cheating after her ex-husband claimed she injected performance enhancing drugs while competing at the Sydney Olympics.

Two Greek sprinters, Kostas Kenteris and Katerina Thanou, hit the headlines during the games after failing to turn up for a random drugs test following an alleged motorcycle accident. The pair had already missed two drug tests in the past month and, according to International Association of Athletics Federations rules, three "no-show" means an automatic two-year ban. During an International Olympic Committee hearing

Team pursuit: an event that British cyclist David Millar would have competed in had he not withdrawn from the Olympic team after admitting using erythropoietin

the pair decided to withdraw from the games and now face an investigation by the IAAF.

With each Olympics, drug-taking and drug-testing gets more sophisticated. Anti-doping authorities are constantly developing more advanced ways to keep ahead of the cheats. At the Sydney 2000 games EPO testing was conducted for the first time. Both a blood and a urine test were used at these games to identify EPO use. The detection of EPO can now successfully be done by a urine test alone and the Athens games was the first Olympics to use such technology.

Also, for the first time, human growth hormone testing was carried out at Athens using a test developed by scientists at Southampton University. Although human growth hormone has been on the list of banned substances since 1989, until now its detection has not been possible. An initial test can detect if human growth hormone has been used by an athlete in the past 36 hours and a second test can detect if it has been used in the previous 84 days. During the games period, Olympic athletes were randomly selected to provide a blood sample to test for possible abuse of human growth hormone.

Doping control operation

The doping control operation in Athens was one of the biggest in Olympic history, with the number of staff exceeding 500. The International Olympic Committee was re-

sponsible for a total of around 3,500 urine and blood tests over the period of the Olympic Games and the test events. The World Anti-Doping Agency sent independent observer teams to the Athens games, to ensure that the doping operations were conducted in a fair and unbiased manner.

The "in-competition" period of the Olympics was considered to be from the opening of the Olympic village on 30 July to the day of the closing ceremony on 29 August. During this time, tests were conducted for all prohibited substances, which include stimulants, narcotics, cannabinoids, anabolic agents, peptide hormones, beta₂-agonists, anti-oestrogens, masking agents and corticosteroids. A further 650 tests are expected to be conducted for the Paralympic Games in the weeks to follow.

Both the IOC and WADA conducted random tests from the doping control station within the Polyclinic at the Olympic village in the two weeks before the start of the games. After this time the IOC was responsible for the collection and testing of samples. Then each of the gold, silver and bronze medal winners were required to provide a urine sample at the doping control station at each venue for testing. Another athlete within each event was also randomly selected to provide a sample and athletes were randomly selected during the qualifying heats.

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Each morning, in the two weeks before the start of the games, the names of athletes selected for testing would be randomly drawn and one athlete's name would be assigned to a doping-control escort. The escort would then have the often difficult job of locating the athlete in the village and notifying the individual to report for a blood and urine test. The escort would then observe the athlete closely until he or she reported for testing to ensure that the athlete did not partake in any activity that may hinder the detection of banned substances.

The doping control laboratory was located at the Athens Olympic Centre and was accredited by WADA to conduct the laboratory tests for the games. This was the first time in games history that accreditation of testing facilities was assumed by WADA. In previous years the IOC has been responsible for laboratory accreditation. The laboratory was capable of processing 180 samples daily, with the negative results available within 24 hours and the positive results in 36 hours.

If an adverse laboratory result was found, the IOC Medical Commission was immediately notified. It would then inform the IOC president who would set up a disciplinary commission. The athlete would be in-

formed and could request the analysis of the second sample with the right to be present for the opening and analysis of the second sealed container. The athletes had the opportunity to defend themselves at the disciplinary hearing after which the IOC executive board would make the final decision. An appeal for this decision could further be made to the Court of Arbitration for Sport.

World Anti-Doping Code

The World Anti-Doping Code was introduced by WADA for the first time at these games. It was mandatory for participating countries to accept and implement the code by the day of the opening ceremony. The code aims to harmonise anti-doping regulations across all sports and all countries. The new code provides a uniform basis for anti-doping policies, rules and regulations for sporting organisations around the world. It also provides requirements for sanctions and hearings should an athlete test positive. In addition, it outlines testing procedures and allowances for therapeutic drug use exemptions.

Before the opening of the Olympic village, WADA carried out worldwide testing on athletes who qualified for the games, paying

particular attention to athletes who do not have national anti-doping agencies in their home countries. Within the village WADA also conducted an athlete outreach programme, where representatives were present to provide information and education about anti-doping and to encourage fair, drug-free sport.

A doping control guide, produced by the Athens 2004 organising committee, was distributed to all national Olympic committees and international sporting federations before the games. The guide outlined the doping-control rules, doping-control programme, and detailed sample collection procedures for the games. It also included the most recent list of prohibited substances and methods, which was updated in March this year.

British athletes competing in Athens were given a medical kit to treat minor ailments while away from home. The aim of the kits was to prevent the occurrence of positive drug tests from over-the-counter medicines, as happened to Alain Baxter at the 2002 Winter Olympics after using an OTC inhaler. The kit contained anti-doping information from UK Sport and a selection of permitted medicines, which included paracetamol, throat lozenges, a nasal spray and anti-diarrhoeal medication.

Volunteering as a doping control officer at the Athens Olympics 2004

In this article, **Tania Thomas**, who worked as a volunteer in doping control at the Athens Olympic Games, explains what the role involved

Swimming competitions were included at the first modern Olympic Games in Athens in 1896. Swimmers jumped off a boat into the Zea yachting marina in the port of Piraeus and swam towards the finish line on shore — quite a different setting from the impressive swimming facilities at the Olympic Aquatic Centre in Athens in 2004.

Moreover, when welcoming home the XXVIII Summer Olympic Games on 13 August 2004, the Athens 2004 Olympic Committee made sure to emphasise the importance of the Olympic values which, although sometimes forgotten in this modern age of competitive sporting, were the foundation of the original games in Ancient Greece. The modern problem of performance enhancement is fundamentally contrary to these values of ethics, equality, honesty and fair-play, and to the spirit of the games.

The aquatic sports of swimming, water polo, diving and synchronised swimming are governed by the rules of the International Swimming Federation (FINA). Athletes selected for testing, according to the World Anti-Doping Agency and the International Olympic Committee Medical Commission,

were those who achieved the top four positions plus at least one other randomly selected participant in individual sporting events, such as swimming races. For team sports, such as relay swimming races, synchronised swimming and water polo, one or two athletes were chosen at random from 25 per cent of the competition throughout the event (including preliminaries and qualifying events) as well as two randomly selected athletes from the top four finishing places. Any athlete who established or broke an Olympic or world record in non-final competitions was also tested.

Role of escort

Participating as a volunteer in doping control for the Athens 2004 aquatic events meant spending each day of the Olympics at one of the three competition swimming pools at the

aquatic centre within the Athens Olympic sports complex. The two roles for pharmacist volunteers within doping control were doping control escorts and doping control technical officers.

Doping control escorts were fortunate enough to watch each competition at the "field of play" (FOP), in order to follow the progress of the competition and to identify the athletes selected for testing. Escorts were fully equipped with the starting list for the competition, which included: the athletes' rank and qualifying times; a notification form detailing the venue, selection procedure, necessary tests and athlete/escort identity; a cooler with sealed refreshments and water; and a Tetra device (walkie-talkie). During the event, all competing athletes' accreditation cards — their Olympic "passports" — were handed over to doping control, so that no athlete could leave the FOP without being identified. At the end of each event, the escort notified the selected athlete and explained that he or she had to report to the doping control station for a urine sample within one hour. The escorts accompanied the athlete for the full hour

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Doping control escorts watched each competition at the “field of play”

(this was where the Tetras came in handy) and supervised the athlete during any necessary medal ceremonies or press conferences. In the event that the athlete was also to undergo blood testing (for endurance swimming events over 400 metres), an appointment was made within the next 12 hours at the polyclinic at the Olympic village, where the majority of athletes were staying. Athletes had the right to be accompanied by one person into the station, and most chose their coach or doctor. Contrary to popular belief, athletes had the right to eat or drink anything they wanted at their own discretion before the test but were warned not to eat or drink anything unsealed or of doubtful origin.

Role of technical officer

Once the athlete entered the doping control station, the technical officers took over the procedure for urine sample collection. The athlete was introduced to the medical officer, who explained the procedure and informed them of the volume of sample that was to be provided (at least 75ml and 110ml for the erythropoietin test in endurance events). The technical officer accompanied the athlete

into the toilet, where the athlete was exposed to the technical officer from chest to knee in order to ensure that the sample collected was from the correct athlete at that specific time. Discreet viewing of urine sampling through the use of conveniently placed mirrors is an art in itself, and was taught to the technical officers during pre-Olympic test events. The technical officer tested the collected sample for specific gravity and pH to ensure its suitability for laboratory testing. If the conditions were not met, the athlete was required to give another sample, although there was a contingency for “partial” samples. At all points during sample collection the athlete alone was permitted to touch the sample vessel, from the point of removing the container from its sealed packaging to resealing it and labelling the box with an identification code, to be sent off to the doping control laboratory. Following satisfactory sample collection, the medical officer recorded all medicines or supplements that the athlete had taken during the previous three days, including the commercial name of the product, dosage form and dosage (the strength of the product and the last day on which it was taken). Once the athlete had checked the

documentation to ensure that no confidentiality had been breached, the forms were signed by the medical officer, the technical officer and the athlete. Escorts, athletes and medical officers were supervised randomly by officials from WADA, FINA and the IOC. In fact, most days were spent with officials from all three organisations.

Challenges

As anyone who has participated in such events is aware, the most difficult task was the identification of the athletes. The water polo athletes initially seemed the easiest to identify because of the numbers on their swimming caps — that is, until they emerged from the pool and immediately removed their caps. Once the athlete was successfully identified, notification had to be conducted discreetly and without attracting the attention of cameras and journalists, which was also quite difficult considering the luminous green doping control armbands that we wore. The notification process itself was also challenging, taking into account the athlete’s heightened psychological state on leaving the FOP, the general attitude of athletes towards anti-doping (some nationalities being more accustomed to the procedure than others) and, of course, the cultural and language barriers. Being Greek myself, it was always a pleasant experience for me to notify Greek athletes (especially when they were medallists), although it was emphasised to all volunteers that they were not to be treated any differently from other nationalities. One of the most exhilarating experiences was being at the FOP when the Greek men’s 10 metre synchronised divers won the gold medal in a last minute turn around, and I was able to join in the eruption of chants of “Hellas” and customary waves.

Success of the programme

The intensive sampling of athletes and updated detection methods used at Athens 2004 resulted in the expected increase in numbers of athletes failing doping control testing as compared with previous Olympic Games. This was seen as a success for the doping control programme at the Athens Olympics, and a starting block for similar testing in the future, in a move to recapture the true spirit of the games.

Three stripped of gold medal

According to *BBC Online*, by the end of the closing ceremony of the Athens 2004 Olympic Games, over 24 doping violations had been uncovered, double the previous high of 12 violations in the 1984 Los Angeles Olympics.

Three athletes were stripped of their gold medals: Russian shot putter Irina Korzhanenko tested positive for stanozolol; and Hungarian discus thrower Robert Fazekas and his teammate, hammer thrower Adrian Annus, had their gold medals taken away after failing to give urine samples.