

Olympiad: A model for quantity estimation for multi-coded team events

Wayne E Derman (MB ChB, BSc (Med)(Hons), PhD, FACSM, FFIMS)

UCT/MRC Research Unit for Exercise Science and Sports Medicine, Sports Science Institute of South Africa, Cape Town

Abstract

Objective. This descriptive study was undertaken to report the medications used by the athletes and officials of Team South Africa at the 2004 Olympic Games and to provide a model for the estimation of quantities to be used for planning support to future events.

Setting. South African medical facility, 2004 Olympic Games, Athens, Greece.

Methods. The names of the medications, including the dosage and quantity of medications dispensed, were recorded in the pharmacy stock control book at the South African medical facility, 2004 Olympic Games, Athens, Greece. Retrospective review of patient files and medical encounter forms was also undertaken to check against the pharmacy stock control book to ensure complete data capture of dispensed medications.

Main outcome measures. Quantities of medications consumed during the observation period. The units of medication consumed per travelling team member were calculated by dividing the number of units (tablets, capsules, tubes, inhalers, bottles and ampoules) used during the trip by the total number of travelling team members.

Results. Complete records of medications included in the travelling pharmacy are described. Quantities of medications included ranged from single units to 2 250 units and percentage use of various medications varied from 0% to 100% of stocks. Units per team member ranged from 0 to 9.43. Medications were consumed from all categories of agents. The most utilised agents included

the analgesics, musculoskeletal and non-steroidal anti-inflammatory agents as well as certain vitamin and mineral supplements.

Conclusions. This study describes the consumption of pharmaceutical agents by the athletes and officials of Team South Africa during the Athens 2004 Olympic Games. It also provides a model to assist with the estimation of quantities of medications to be included in the travelling pharmacy for future international multi-coded sports events.

Introduction

Participation in multi-coded sports events often involves travel to international destinations. In South Africa, multi-coded teams are selected on a number of occasions during the year to participate in local competitions (SA Games, SA Student Games); continental zonal competitions (Zone 6 Games); continental competitions (All Africa Games); and intercontinental competitions (Commonwealth Games, World Student Games and Olympic Games).

A significant part of the preparations and tasks of a team physician includes the decisions regarding the medical supply kit.^{2,12} Complete preparation requires the choice of medications in sufficient quantity to cater for most medical problems that are encountered in multi-coded team events.^{4,5,8} While the medical support structures of the host country might be able to supply an adequate quantity and variety of medications through a polyclinic pharmacy, it is often the case that the foreign country is unable to do so, or the labels and drug information might be presented in a foreign language.^{10,11} Furthermore, issues with respect to quality control and possible contamination of substances require the composition of a medical kit of sufficient variety and quantity to allow for the management of the medical conditions encountered during travel to foreign destinations.

Thus the choice of which compounds to include in such kit and at what quantities is often a perplexing challenge for the team physician. The aim of this report is to document the various medications and quantity usage of medications during the Olympic Games in Athens 2004. A model is also presented to calculate the anticipated quantities of medications in future events.

Methods

Data were collected over 30 days, starting when the team arrived in Athens (1 Sept) until the end of the Olympic Games (30 Sept). All

CORRESPONDENCE:

Professor Wayne Derman
UCT/MRC Research Unit for Exercise Science and Sports
Medicine
Sport Science Institute of South Africa
Boundary Rd
Newlands 7700
Cape Town, South Africa
Tel: 27-21-659-5644
Fax: 27-21-659-5633
E-mail: wayne.derman@uct.ac.za

medications dispensed, over this period to both athletes and officials were recorded by the attending team physicians in the pharmacy stock control book in the medical room of Team SA. The names of the medications, including the dosage and quantity of medications dispensed, were recorded. Retrospective review of patient files and medical encounter forms was also undertaken to check against the pharmacy stock control book to ensure complete data capture of dispensed medications.

The pharmacological constituents of each medication as well as quantities of medications were forwarded to the medical authorities of the host country for importation clearance prior to leaving South Africa. Following completion of the travel, the above data were added to the database to allow the calculation of the percentage of medication stocks used. The units of medications per travelling team member were calculated by dividing the number of units (tablets, capsules, tubes, inhalers, bottles and ampoules) used during the trip by the total number of travelling team members.

Results

A total of 159 team members travelled to Athens. The team comprised 107 athletes from 12 sports codes and 52 officials. Athletes were defined as the members of the team engaged in competition and officials were defined as team or athlete coaches, team managers, team technical staff, administration officials, medical staff and National Olympic Committee members.

The medical consultations conducted during the 30-day period are described elsewhere in this publication.⁵ The medications, active ingredients, dosage, and quantities of medications used, are shown in Tables I - IV.

Table I lists the pharmacological agents in the categories of neurological preparations, local anaesthetics, analgesics, musculoskeletal agents, autacoids and corticoids, and cardiovascular agents. Table II lists the pharmacological agents of the respiratory system, ear nose and throat drugs and drugs to manage gastrointestinal complaints. Dermatological and ophthalmic preparations, antimicrobials and drugs to treat urogenital complaints are listed in Table III while Table IV lists vitamin, mineral and electrolyte supplements as well as the drugs used for emergency management.

Quantities of medications ranged from single units to 2 250 units and percentage use of various medications varied from 0% to 100% of stocks. Units per team member ranged from 0 to 9.43. Medications were consumed from all categories of agents yet certain agents were used to a far greater extent. These agents included the analgesics, musculoskeletal and non-steroidal anti-inflammatory agents as well as certain vitamin and mineral supplements.

Discussion

The 'travelling pharmacy' of Team South Africa consists of two large metal crates-on-wheels to facilitate being pushed during travel as their weight is in excess of 150 kg per container. This pharmacy is passed from one medical team to another and is used for most of South Africa's multi-coded team events, including student games, African Zonal Games, All Africa, Commonwealth and Olympic/Paralympic Games. The pharmacy stock is checked prior to each trip for

expired agents, and remaining quantities of stock from the previous trip are determined.

Of the many responsibilities of a team physician, the decision of which agents to take to an international destination to successfully manage a team of athletes and officials is perhaps one of the more difficult.¹ The team physicians have to be prepared to manage any medical complaint that might occur in a team of 100 - 500 athletes and officials. Medical complaints in a squad of that size can be both diverse in nature and numerous. For example, it is not uncommon on a single trip to be expected to manage a minor outbreak of gastroenteritis, renal stones, myocardial infarction, diabetes complications, acute psychosis and a variety of musculoskeletal injuries.

It is prudent to select a sufficient variety of agents and in sufficient quantities to be independent of the services provided by the host country. While host country services can be excellent and 'state-of-the-art', they can vary greatly depending on their geographical location and the choice of available medications as selected by the local pharmacist.¹⁰ Furthermore, certain medications might simply not be available in the host country or stock might be limited, or there might be delays in accessing host polyclinic services, leading to a delay in patient management. In some countries, the constituents of certain common medications can vary and contamination of agents can also occur. Thus a comprehensive, sufficiently stocked medical supply kit is important.

Factors influencing the choice of which agents to include in the travelling pharmacy include: personal preference of the team physician(s); unused unexpired medications from the previous trip; the country of destination and the anticipated medical problems (e.g. travelling to an area where malaria is endemic would require certain choices and quantities of agents); the nature of the team and individual sports included in the programme (e.g. athletes involved in contact sports could require increased quantities of analgesics and anti-inflammatory agents);⁷ the legislation of the country of destination (e.g. stopayne is not permitted for importation into Australia); and sponsorship of products from various pharmaceutical companies.

Yet, estimation of quantities of these required agents is often difficult. The above list of medications provides the reader with the details of compounds included in the travelling pharmacy, the quantity taken, usage thereof and the number of units per team member consumed during the time of the Athens 2004 Olympic Games. This latter number (which appears in column number 7) in Tables I - IV is particularly useful as it can be multiplied by the total number of persons in any future travelling party, and provides the physician with an estimated quantity of required medication based on a 30-day period. If the travel period is shorter (e.g. 2 weeks, the amount can be halved or if the trip is 6 weeks the number can be multiplied by 1.5). Clearly, this factor provides a guide only and is likely to vary, based on the above-mentioned variables.

Usage of the analgesics and non-steroidal anti-inflammatory agents warrants special mention. While choice of a certain preparation over another would depend on factors including time to onset of action, desired route of administration and preference of both physician and athlete, it is of interest to note the use of the total number of units of all anti-inflammatory and analgesic tablets (and patches). The total number of units per team member for both these agents is 2.2. Therefore for a team size of 300 members the total

TABLE 1. Medications used for the Athens 2004 Olympic Games: Neurological preparations, local anaesthetics, analgesics, musculoskeletal agents, autacoids and corticoids and cardiovascular agents

Product/brand name	Active/main ingredient	Weight, volume or concentration per unit	Quantity taken	Units of medication used	% Medication used	Units/team member
Neurological preparations						
Adco-zolpidem tabs	Zolpidem hemitartrate	10 mg	100	62	62	0.39
Anxirid tabs	Alprazolam	1 mg	200	0	0	0.00
Dormicum tabs	Midazolam	15 mg	40	2	5	0.01
Dormonoc tabs	Loprazolam	2 mg	60	20	33	0.13
Imigran tabs	Sumatriptan	10 mg	24	0	0	0.00
Sandoz sulpiride tabs	Sulpiride	50 mg	50	0	0	0.00
Zornig tabs	Zolmitriptan	2.5 mg	6	0	0	0.00
Zopimed tabs	Zopiclone	7.5 mg	500	30	6	0.19
Local anaesthetics						
Xylotox amps	Lignocaine hydrochloride	20 mg	100	3	3	0.02
Marcaine amps	Bupivacaine hydrochloride	5 mg/ml	10	3	30	0.02
Analgesics						
Disprin tabs	Aspirin	300 mg	500	26	5	0.16
Docdol tabs	Paracetamol, codeine	500 mg; 10 mg	30	18	60	0.11
Myprodol caps	Paracetamol, ibuprofen, codeine	250 mg; 200 mg, 10 mg	300	154	51	0.97
Napamol tabs	Paracetamol	500 mg	500	80	16	0.50
Stopayne caps	Paracetamol, codeine, caffeine, meprobromate	500 mg; 8 mg; 32 mg; 150 mg	1 000	60	6	0.38
Tramhexal tabs	Tramadol	50 mg	300	12	4	0.08
Tramal amps	Tramadol	100 mg/2 ml	30	0	0	0.00
Musculoskeletal/NSAIDs						
Bextra tabs	Valdecoxib	40 mg	50	20	40	0.13
Catalfam D tabs	Dichlophenacin potassium	50 mg	200	65	33	0.41
Celestone soluspan amps	Betametazone acetate	3 mg/ml	40	3	8	0.02
Diclofenac tabs	Diclofenac potassium	50 mg	500	16	3	0.10
Elmetacin topical spray	Indomethacin	10 mg/g	5	2	40	0.01
Mobic amps	Meloxicam	15 mg/1.5 ml	25	0	0	0.00
Mobic tabs	Meloxicam	15 mg	200	100	50	0.63
Mobic tabs	Meloxicam	7.5 mg	100	94	94	0.59
Thrombophob gel	Heparin	2 000 IU/25 g	10	3	30	0.02
Transact topical patches	Flubiprofen	40 mg	400	56	14	0.35
Volaren emulgel	Diclofenac diethylam	50 g/ tube	30	2	7	0.01
Autacoids & corticoids						
Telfast tabs	Fexofenadine	120 mg	200	68	34	0.43
Prednisone tabs	Prednisone	5 mg	1 000	0	0	0.00
Cardiovascular system						
Adalat caps	Nifedapine	10 mg	200	0	0	0.00
Adco-retic tabs	Amloride, hydrochlorothiazide	5 mg; 50 mg	100	0	0	0.00
Amiloretic tabs	Hydrochlorothiazide	25 mg	30	0	0	0.00
Angi spray	Isosorbide dinitrate	1.25 mg/0.09 ml	1	0	0	0.00
Atenolol tabs	Atenolol	50 mg	500	0	0	0.00
Dispirin CV tabs	Aspirin	100 mg	60	26	43	0.16
Isoplin SR tabs	Verapamil	240 mg	30	0	0	0.00

Product/brand name	Active/main ingredient	Weight, volume or concentration per unit	Quantity taken	Units of medication used	% Medication used	Units/team member
Respiratory system						
Combivent inhaler	Ipratropium bromide, salbutamol	20 µg; 100 µg	1	0	0	0.00
Flemex mixture	Carbocisteine	250 mg/5 ml	1	0	0	0.00
Inflammid inhaler	Budesonide	200 µg	1	1	100	0.01
Rolab beclomethasone dipropionate	Beclomethasone	50 µg	3	1	3	0.01
Serevent inhaler	Salmeterol	25 µg	3	2	67	0.01
Solmucoi tabs	N-acetylcysteine	200 mg	120	16	13	0.10
Solphylflex cough mixture	Theophylline, etofylline, diphenhypraline hydrochloride, ammonium chloride, Sodium citrate	100 mg; 10 mg; 8 mg; 720 mg; 300 mg/30 ml	20	2	10	0.01
Ventolin nebulas	Salbutamol	5 mg	12	0	0	0.00
Venteze inhaler	Salbutamol	100 µg	2	0	0	0.00
Ventzone inhaler	Beclomethasone dipropionate	50 µg	7	1	14	0.01
Ear, nose and throat						
Aurasept drops	Benzocaine, phenazone	20 mg; 1.4 mg	10	0	0	0.00
Bonjela	Choline salicylate, setalkonium chloride	0.87 g; 1 mg/10 g	20	0	0	0.00
Budafiam aquanase	Budesonide	100 µg/spray	20	2	10	0.01
Cepacaine lozenges	Benzocaine, cetylpyridinium chloride	20 mg; 1.4 mg	80	72	90	0.45
Cerumenex ear drops	Triethanolamine polypeptide	1.57 g/15 ml	2	1	50	0.01
Daktarin oral gel	Miconazole	20 mg / g	2	0	0	0.00
Illiadin nasal spray	Oxymetazoline hydrochloride	0.5 mg/ml	30	2	7	0.01
Kenalog in orabase	Triamcinolone acetonide	1 mg/g	4	3	75	0.02
Locabotal throat spray	Fusafungine	0.5 mg/0.05 ml	40	9	23	0.06
Sinimax tabs	Paracetamol, pseudoephedrine	500 mg; 30 mg	150	44	29	0.28
Soffradex drops	Framycetin, gramitidin, dexamethasone	5 mg; 0.05 mg; 0.5 mcg/ml	6	1	17	0.01
Sudafed tabs	Pseudoephedrine hydrochloride	60 mg	80	25	31	0.16
Vibrociil nasal gel	Dimethindene maleate, phenylephrine, neomycin	25 mg; 250 mg; 350 mg/100 ml	3	0	0	0.00
Gastrointestinal tract						
Adco-cyclizine tabs	Cyclizine hydrochloride	50 mg	40	0	0	0.00
Anusol suppositories	Bismuth subgallate, bismuth oxide, zinc oxide	59 mg; 24 mg; 296 mg	120	1	1	0.01
Buscopan tabs	Hyoscine butylbromide	10 mg	510	2	0	0.01
Buscopan co tabs	Hyoscine butylbromide, dipyron	10 mg; 250 mg	20	2	10	0.01
Cimloc tabs	Cimetidine	400 mg	200	0	0	0.00
Colofac tabs	Mebeverine hydrochloride	135 mg	60	4	7	0.03
Eno single sachet	Soda bicarbonate, citric acid, sodium carbonate	2.32 g; 2.18 g; 0.5 g	30	2	7	0.01
Fybrogel orange sachet	Ispaghula husk	3.5 g	90	2	2	0.01
Gaviscon tabs	Alginic acid, Magnesium trisilicate, Aluminium-hydroxide,					
Gelumen antacid liquid	Na-bicab	500 mg; 25 mg; 100 mg; 170 mg	120	4	3	0.03
Immodium tabs	Dicyclomine, aluminium hydroxide	200 ml	10	2	20	0.01
Interflora caps	Loperamide hydrochloride	2 mg	650	16	2	0.10
Kantrexil solution	Saccharomyces	0.1 g	480	20	4	0.13
Lacteol forte caps	Neomycin, kaolin, pectin, dicyclomin hydrochloride	100 ml	5	1	20	0.01
Losec mups	Lactobacillus acidophilus	10 billion/sachet	100	42	42	0.26
Maxolon tabs	Omeprazole	20 mg	60	10	17	0.06
Nystacin oral solution	Metoclopramide monohydrate	10 mg	1 000	4	1	0.03
Ranhexal tabs	Nystacin	20 ml	5	0	0	0.00
Scheriproct ointment	Ranitidine	150 mg	190	0	0	0.00
Senokot tabs	Prednisolone, clemisole, cinchocaine	15 g	6	1	17	0.01
Valcid tabs	Senosides A&B	7.5 mg	248	25	10	0.16
	Cyclizine hydrochloride	50 mg	180	4	2	0.03

TABLE III. Medications used for the Athens 2004 Olympic Games: Dermatological and ophthalmic preparations, agents to manage urogenital complaints and antimicrobial agents

Product/brand name	Active/main ingredient	Weight, volume or concentration per unit	Quantity taken	Units of medication used	% Medication used	Units/team member
Dermatologicals						
Anthisan cream	Mepyramine maleate	2 g/100g	4	2	50	0.01
Bactroban ointment	Mupirocin	2 g/100g	8	5	63	0.03
Calamine lotion	Calamine	50 ml	2	0	0	0.00
Candizole cream	Clotrimazole	200 mg/20 g	6	1	17	0.01
Elocon ointment	Mometasone Furoate	1 mg/g	4	0	0	0.00
Fusidin ointment	Fusidic acid	20 mg/gm	5	1	20	0.01
Mycota powder	Zinc undecanoate	10 g	6	2	33	0.01
Quadriderm ointment	Betamethasone, gentamycin, tolnafate, cloquinal	0.5 mg: 1 mg: 10 mg: 10 mg/g	5	1	20	0.01
Stopitch cream	Hydrocortisone acetate	0.1 g/10 g	20	2	10	0.01
Travacort cream	Isoconazole nitrate,	10 mg: 1 mg/g	10	2	20	0.01
Zovirax cream	Acyclovir	2 g	3	2	67	0.01
Ophthalmics						
Covomycin eye drops	Chloramphenicol, neomycin, naphazoline hydrochloride	2 mg: 5 mg: 0.5 mg/ml	5	0	0	0.00
Fluorets eye strips	Fluorescein sodium	Strips	100	0	0	0.00
Novesin eye drops	Oxybuprocaine hydrochloride, chlorhexadine	0.4 g: 0.01 g /100 ml	2	5	250	0.03
Otosporin drops	Polymixin B sulphate, neomycin sulphate, hydrocortisone	10 000 u: 3 400 u: 10 mg/ml	12	1	8	0.01
Spersallerge eye drops	Antazoline hydrochloride, tetryzoline	0.5 mg: 0.4 mg / 1 ml	5	0	0	0.01
Tears naturelle	Dextran-70, hydroxypropyl methylcellulose	1 mg: 3 mg/ml	4	1	25	0.03
Visine eye drops	Tetrahydrozoline hydrochloride	7.5 mg / 15 ml	22	1	5	0.00
Urinary system						
Citro-Soda granules	Na Citrate, Na Bic	4 g	30	2	7	0.01
Puricos tabs	Allopurinol	300 mg	50	0	0	0.00
Genital system						
Canesten vaginal tab	Clotrimazole	500 mg/1 g	9	1	11	0.01
Cyclocapron tabs	Tranexamic acid	500 mg	30	0	0	0.00
Overal tabs	Norgestrel, ethinylestradiol	500 µg: 50 µg	28	0	0	0.00
Provera tabs	Medroxyprogesterone acetate	100 mg	100	0	0	0.00
Primolut N tabs	Norethisterone	5 mg	200	0	0	0.00
Antimicrobials						
Adco-co-trimoxazole	Co-trimoxazole	500 mg	1 000	0	0	0.00
Amoxiciln tabs	Amoxicillin	500 mg	500	0	0	0.00
Augmaxil tabs	Amoxicillin, clavulnic acid	250 mg: 125 mg	150	55	37	0.35
Ciprobay tabs	Ciprofloxacin	500 mg	450	40	9	0.25
Doxycline tabs	Doxycycline	100 mg	1 000	0	0	0.00
Erymycin tabs	Erythromycin stearate	250 mg	500	0	0	0.00
Fasigyn tabs	Tindazole	500 mg	8	0	0	0.00
Flagyl tabs	Metronidazole	400 mg	600	0	0	0.00
Interflora caps	Saccharomyces boulardii	250 mg	100	10	10	0.06
Relenza blisters & diskhaler packs	Zanamivir	5 mg	10	0	0	0.00
Retrovir/3TC post exposure packs	Zydovudine 3TC,lamivudine	100 mg: 150 mg	2	0	0	0.00
Vermox tabs	Mebendazole	500 mg	70	0	0	0.00
Zinnat tabs	Cefuroxime	250 mg	40	10	25	0.06
Zithromax tabs	Azithromycin	500 mg	90	27	30	0.17

TABLE IV. Medications used for the Athens 2004 Olympic Games: Vitamin, mineral and electrolyte preparations and emergency drugs

Product/brand name	Active/main ingredient	Weight, volume or concentration per unit	Quantity taken	Units of medication used	% Medication used	Units/team member
Vitamins minerals and electrolytes						
Electropac sachets	NaCl, Na-bicarb, KCl, dextrose monohydrate	0.4 g; 0.5 g; 0.3 g; 4 g	30	11	37	0.07
Ferrimed ampoules	Iron polyisomaltose	100 mg / 2 ml	75	0	0	0.00
Ferro-folic tablets	Iron sulphate, folic acid, ascorbic acid	525 mg; 350 mg; 500 mg	300	30	10	0.19
Lennon-vit B Co ampoules	Vit B1, B6, B12	2 ml	40	6	15	0.04
Neurobion ampoules	Vit B1, B6, B12	100 mg; 100 mg, 1 mg	21	12	57	0.08
Neurobion tablets	Vit B1, B6, B12	100 mg; 200 mg, 200 µg	100	0	0	0.00
Ultimag tablets	Magnesium chloride, zinc oxide	660 mg; 6 mg	80	78	98	0.49
Vita-thion sachets	Vit C, Vit B1, glutathion,					
	Na-adenosine triphosphate,	500 mg; 2 mg; 0.5 mg; 0.5 mg;				
	Ca-inositol hexaphosphate	100 mg	2 250	1 500	67	9.43
						0.00
Emergency drugs/ampoules						
Sterile water	Sterile water	10 ml	10	2	20	0.00
Aminophyllin	Aminophyllin	250 mg/ml	10	0	0	0.00
Dextrose	Dextrose	50 ml; 50% solution	10	0	0	0.00
Adrenaline	Adrenaline	1 ml 1/1 000	20	0	0	0.00
Phenergan	Promethazine hydrochloride	25 mg	10	0	0	0.00
Celestone	Betametazone sodium	1 ml	10	0	0	0.00
Atrophin	Atropine sulphate	1 mg / ml	10	0	0	0.00
Maxolon	Metochlopramide	10 mg	10	0	0	0.00
Sterniti	Prochlorperazine	12.5 m /ml	20	0	0	0.00
Scopex	Hyoscine -N-butrobromide	20 mg/1 ml	32	2	6	0.00
Valium	Diazepam	10 mg/2 ml	15	0	0	0.00
Keflin	Cephalothin sodium	1 g	1	0	0	0.01
Tetanus vaccine	Tetanus vaccine	1 ml	2	0	0	0.00
Magnesium sulphate	Magnesium sulphate	5 ml	10	0	0	0.00
Remicaine 2%	Lignocaine hydrochloride	20 mg/ml	5	0	0	0.00
Morphine sulphate	Morphine sulphate	10 mg/ml	10	0	0	0.00
Pethidine	Pethidine hydrochloride	25 mg/ml	10	0	0	0.00
Solucortef	Hydrocortisone sodium	100 mg/2 ml	3	0	0	0.00
Uretic	Furosemide	20 mg	10	0	0	0.00

number of doses of these agents would be 660 tablets/capsules/ patches of non-steroidal anti-inflammatory agents and 660 tablets capsules of analgesic compounds based on a 30-day trip. This figure does not include injectable agents, the usage of which is indicated in Table I. The true consumption of non-steroidal anti-inflammatory agents during this event was however somewhat underestimated in this calculation, as it does not take into account flurbiprofen patches and other transdermal anti-inflammatories dispensed by the physiotherapists, or self-medication by the athletes using their own medication supplies.¹⁴ It is thus apparent that double or triple-dosing of these agents regularly occurs and as these agents are not without side-effects,^{3,6,9} it is important that good communication exists between the physicians and physiotherapist with respect to dispensing of non-steroidal anti-inflammatory agents, and that the athletes are educated with respect to judicious use of these medications.¹³ It is therefore suggested that dispensing of all medications is conducted by the team physicians only. Furthermore, dispensing of small quantities of these agents with frequent re-evaluation of the patient is preferable to dispensing larger quantities in original packaging. Indeed, this recommendation extends to the use of all medicinal compounds listed and not only the analgesics and anti-inflammatory agents.

In conclusion, this study describes the consumption of pharmacological agents by the athletes and officials of Team South Africa during the Athens 2004 Olympic Games. It also provides a model to be used as a tool to assist with the estimation of quantities of medications to be included in the travelling pharmacy for future international multi-coded sports events.

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REFERENCES

1. Alaranta A, Alaranta H, Helenius I. Use of prescription drugs in athletes. *Sports Med* 2008; 38: 449-63.
2. Buettner CM. The team physician's bag. *Clin Sports Med* 1998; 17: 365-73.
3. Corrigan B, Kazlauskas R. Medication use in athletes selected for doping control at the Sydney Olympics (2000). *Clin J Sport Med* 2003; 13: 33-40.
4. Derman WE. Medical care of the South African Olympic Team – the Sydney 2000 experience. *South African Journal of Sports Medicine* 2003; 15: 22-5.
5. Derman WE. Profile of medical and injury consultations of Team South Africa during the XXVIIIth Olympiad, Athens 2004. *South African Journal of Sports Medicine* 2008; 20: 72-76.
6. Huang SH, Johnson K, Pipe AL. The use of dietary supplements and medications by Canadian athletes at the Atlanta and Sydney Olympic Games. *Clin J Sport Med* 2006; 16: 27-33.
7. Junge A, Langevoort G, Pipe A, et al. Injuries in team sport tournaments during the 2004 Olympic Games. *Am J Sports Med* 2006; 34: 565-76.
8. Katelaris CH, Carrozzini FM, Burke TV. Allergic rhinoconjunctivitis in elite athletes: optimal management for quality of life and performance. *Sports Med* 2003; 33: 401-6.
9. Lippi G, Franchini M, Guidi GC, Kean WF. Non-steroidal anti-inflammatory drugs in athletes. *Br J Sports Med* 2006; 40: 661-2.
10. Milne CJ, Shaw MT. Travelling to China for the Beijing 2008 Olympic Games. *Br J Sports Med* 2008; 42: 321-6.
11. Shaw MT, Leggat PA, Borwein S. Travelling to china for the Beijing 2008 Olympic and Paralympic Games. *Travel Med Infect Dis* 2007; 5: 365-73.
12. Simon LM, Rubin AL. Traveling with the team *Curr Sports Med Rep* 2008; 7: 138-43.
13. Smith BJ, Collina SJ. Pain medications in the locker room: to dispense or not. *Curr Sports Med Rep* 2007; 6: 367-70.
14. Tscholl PM, Junge A, Dvorak J. The use of medication and nutritional supplements during FIFA World Cups™ 2002 and 2006. *Br J Sports Med* 2008; 42: 725-730.

SPORTS PHYSICIAN – JOHANNESBURG

An associate to join an established practice working out of 2 multidisciplinary sports clinics in Johannesburg is sought.

The suitable candidate must:

- be registered with the HPCSA
- have postgraduate sports medicine qualifications
- preferably have some experience working with athletes and sports teams

Interested candidates should e-mail their CVs to Sandy at jpat@mweb.co.za