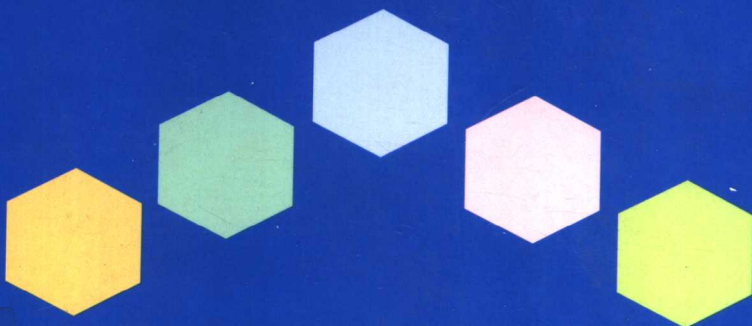

WHO MODEL PRESCRIBING INFORMATION



DRUGS USED IN SKIN DISEASES



WORLD HEALTH ORGANIZATION, GENEVA



WHO Library Cataloguing in Publication Data

WHO model prescribing information : drugs used in skin diseases.

1.Skin diseases—drug therapy 2.Skin diseases, Parasitic—drug therapy 3.Skin diseases, Bacterial—drug therapy 4.Skin diseases, Viral—drug therapy 5.Skin diseases, Eczematous—drug therapy 6.Skin diseases, Papulosquamous—drug therapy 7.Skin diseases, Vesiculobullous—drug therapy 8.Dermatologic agents

ISBN 92 4 140106 0 (NLM Classification: QV 250)

The World Health Organization welcomes requests for permission to reproduce or translate its publications, in part or in full. Applications and enquiries should be addressed to the Office of Publications, World Health Organization, Geneva, Switzerland, which will be glad to provide the latest information on any changes made to the text, plans for new editions, and reprints and translations already available.

© World Health Organization 1997

Publications of the World Health Organization enjoy copyright protection in accordance with the provisions of Protocol 2 of the Universal Copyright Convention. All rights reserved.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

Typeset in Hong Kong
Printed in Italy

96/11149—Best-set/Musumeci—6000

The World Health Organization was established in 1948 as a specialized agency of the United Nations serving as the directing and coordinating authority for international health matters and public health. One of WHO's constitutional functions is to provide objective and reliable information and advice in the field of human health, a responsibility that it fulfils in part through its extensive programme of publications.

The Organization seeks through its publications to support national health strategies and address the most pressing public health concerns of populations around the world. To respond to the needs of Member States at all levels of development, WHO publishes practical manuals, handbooks and training material for specific categories of health workers; internationally applicable guidelines and standards; reviews and analyses of health policies, programmes and research; and state-of-the-art consensus reports that offer technical advice and recommendations for decision-makers. These books are closely tied to the Organization's priority activities, encompassing disease prevention and control, the development of equitable health systems based on primary health care, and health promotion for individuals and communities. Progress towards better health for all also demands the global dissemination and exchange of information that draws on the knowledge and experience of all WHO's Member countries and the collaboration of world leaders in public health and the biomedical sciences.

To ensure the widest possible availability of authoritative information and guidance on health matters, WHO secures the broad international distribution of its publications and encourages their translation and adaptation. By helping to promote and protect health and prevent and control disease throughout the world, WHO's books contribute to achieving the Organization's principal objective – the attainment by all people of the highest possible level of health.

Contents

Preface	1
Introduction	3
Parasitic infections	5
Pediculosis	5
Scabies	6
Cutaneous larva migrans (creeping eruption)	7
Gnathostomiasis	8
Insect and arachnid bites and stings	9
Mosquitos and other biting flies	9
Bees, wasps, hornets and ants	10
Bedbugs and reduviid bugs	11
Scorpions	11
Poisonous spiders	12
Chiggers or harvest mites	12
Ticks	13
Superficial fungal infections	14
Dermatophyte infections	14
Pityriasis (tinea) versicolor	16
Candidosis	17
Subcutaneous fungal infections	20
Sporotrichosis	20
Mycetoma	20
Chromomycosis	21
Subcutaneous zygomycosis	21
Bacterial infections	23
Staphylococcal and streptococcal infections	23
Yaws and pinta	25
Viral infections	27
Warts	27
Herpes simplex	28
Zoster and varicella	28
Molluscum contagiosum	29
Eczematous diseases	30
Contact dermatitis	30
Atopic dermatitis	31
Seborrhoeic dermatitis	32
Scaling diseases	34
Ichthyosis	34
Xerosis	34
Papulosquamous diseases	36
Lichen planus	36

Contents *(continued)*

Pityriasis rosea	36
Psoriasis	37
Cutaneous reactions to drugs	40
Pigmentary disorders	42
Vitiligo	42
Melasma	42
Albinism	43
Premalignant lesions and malignant tumours	44
Actinic keratosis	44
Basal cell and squamous cell carcinomas	45
Malignant melanoma	45
Photodermatoses	47
Solar urticaria	47
Polymorphous light eruptions	47
Actinic prurigo	48
Chemical photodermatoses	48
Bullous dermatoses	50
Pemphigus	50
Bullous pemphigoid	51
Dermatitis herpetiformis	52
Alopecia areata	53
Urticaria	54
Conditions common in children	56
Diaper dermatitis	56
Haemangiomas	56
Miliaria	57
Pityriasis alba (patchy hypochromia)	58
Acne vulgaris	59
Pruritus	63
Tropical ulcers	64

Contents *(continued)*

Antimicrobial drugs	65
aciclovir	65
benzylpenicillins	66
clioquinol	68
erythromycin	68
methylrosanilinium chloride (gentian violet)	70
neomycin + bacitracin	70
tetracycline	71
tiabendazole	73
Antifungal drugs	74
amphotericin B	74
benzoic acid + salicylic acid (Whitfield's ointment)	76
clotrimazole	76
econazole	77
fluconazole	78
flucytosine	79
griseofulvin	81
itraconazole	83
ketoconazole	84
miconazole	86
nystatin	87
potassium iodide	88
selenium sulfide	89
sodium thiosulfate	90
terbinafine	90
Antiseptic agents	92
aluminium diacetate	92
potassium permanganate	92
silver nitrate	93
Keratoplastic and keratolytic agents	94
benzoyl peroxide	94
coal tar	94
dithranol	95
salicylic acid	96
tretinoin	97
Scabicides and pediculicides	99
benzyl benzoate	99
lindane	100
permethrin	101
Anti-inflammatory and antipruritic drugs	102
betamethasone	102
calamine lotion	103
hydrocortisone	103
prednisolone	104

Contents *(continued)*

Antiallergics and drugs used in anaphylaxis	107
chlorphenamine	107
alternative antihistamines	108
epinephrine	108
Ultraviolet radiation-blocking agents (sunscreens)	110
<i>p</i> -aminobenzoic acid (PABA)	110
benzophenones, cinnamates, dibenzoylmethanes, salicylates	111
titanium dioxide	111
zinc oxide	112
Miscellaneous drugs	113
dapson	113
fluorouracil	114
methoxsalen	115
podophyllum resin	116
Annex	117
Classification of topical corticosteroids	117
Index	119

Preface

WHO's revised drug strategy, as adopted in resolution WHA39.27 of the Thirty-ninth World Health Assembly in 1986, calls for the preparation of model prescribing information which is being developed to complement WHO's Model List of Essential Drugs.¹ The objective is to provide up-to-date source material for adaptation by national authorities, particularly in developing countries, that wish to develop national drug formularies, drug compendia and similar material.²

The information is to be regarded as illustrative rather than normative. It is appreciated that it is not possible to develop an information sheet on a specific drug that is appropriate to circumstances prevailing in each of WHO's Member States and that some countries have already formally adopted texts of their own that have a statutory connotation.

This volume has been reviewed by internationally accredited experts and by certain nongovernmental organizations in official relations with WHO, including the International League of Dermatological Societies, the International Federation of Pharmaceutical Manufacturers Associations, the International Pharmaceutical Federation, the International Union of Pharmacology and the World Federation of Proprietary Medicine Manufacturers.

¹ *The use of essential drugs. Seventh report of the WHO Expert Committee.* Geneva, World Health Organization, 1997 (WHO Technical Report Series, No. 867).

² For details of volumes already published, see inside back cover.

Drug dosage

Most drug doses are given per kilogram of body weight or as fixed doses calculated for adults of 60 kg.

Storage conditions

Readers are referred to *The International Pharmacopoeia*, 3rd edition, vol. 4 (Geneva, World Health Organization, 1994) for definitions concerning containers for drugs.

Abbreviations used

i.m. intramuscularly
i.v. intravenously

Introduction

Considerable progress has been made in the treatment of skin diseases. Nevertheless, such diseases still remain common in many rural communities in developing countries, with serious economic and social consequences as well as health implications. Directly or indirectly, skin diseases are responsible for much disability (and loss of economic potential), disfigurement, and distress due to symptoms such as itching or pain.

The diseases covered in this volume are mostly very common, although some rare, life-threatening disorders such as pemphigus are discussed briefly. The aim is to provide the basic information necessary to treat skin diseases in the community, with particular emphasis on those diseases prevalent in developing countries. The book does not attempt to provide a detailed guide to the management of skin diseases.

Given reliable access to preparations contained in WHO's Model List of Essential Drugs,¹ many skin diseases are curable or controllable. However, it is recognized that factors such as poor housing, inadequate nutrition, unsanitary conditions and environmental pollution may also contribute to the prevalence of such diseases and should also be addressed when required.

In general, conditions in which skin involvement is only one manifestation of a more generalized systemic infectious disease, such as leprosy, mycobacterial diseases, leishmaniasis, onchocerciasis, human immunodeficiency virus (HIV) infection and syphilis, are excluded from this volume. Further

¹ *The use of essential drugs. Seventh report of the WHO Expert Committee.* Geneva, World Health Organization, 1997 (WHO Technical Report Series, No. 867).

details of the treatment of some of these conditions can be found in the volumes on drugs used in mycobacterial diseases,¹ parasitic diseases² and sexually transmitted diseases and HIV infection.³

¹ *WHO model prescribing information: drugs used in mycobacterial diseases*. Geneva, World Health Organization, 1991.

² *WHO model prescribing information: drugs used in parasitic diseases*, 2nd ed. Geneva, World Health Organization, 1995.

³ *WHO model prescribing information: drugs used in sexually transmitted diseases and HIV infection*. Geneva, World Health Organization, 1995.

Parasitic infections

Pediculosis

Head, body and pubic lice are blood-sucking ectoparasites that are species of Anoplura. They are usually transmitted directly, by person-to-person contact, but they may also be transmitted indirectly, via the clothing, towelling and bedding of infested persons. Infestations occur throughout the world, particularly where there is overcrowding. Poor hygiene tends to increase the incidence of body lice infestations. However, head lice have no preference for clean or dirty hair, and pubic lice infestations have become common within affluent societies.

Pediculosis is characterized by intense pruritus, which results in excoriations from scratching, hive-like lesions and dermatitis and often in secondary bacterial infections. Close inspection of the skin reveals both the characteristic red punctae from the bites and the species responsible.

Head, body and pubic lice infestations are caused by different species: *Pediculus humanus capitis*, *P. humanus corporis* and *Phthirus pubis* respectively. *Pediculus humanus corporis* is also a vector of louse-borne typhus, trench fever and relapsing fever. However, transmission of these diseases is now confined to foci mainly in east and north-east Africa where poor living conditions exacerbate the problem.

Prevention and management

Control depends largely on public education and improving housing. Infested individuals should be treated promptly and followed up to detect recurrences. Contacts should also be treated at the same time. Routine inspections for head lice should be conducted in schools at least annually and more often in epidemic areas. In institutions (e.g. boarding schools, hospitals), particular attention should be paid to the cleanliness of hair brushes, combs and clothing.

Head lice infestations can be treated with topical preparations

of permethrin, lindane, malathion or benzyl benzoate. Permethrin preparations should be applied to damp hair and left for 10 minutes before rinsing. Lindane and malathion preparations should be massaged into the scalp and left for at least 12 hours, while benzyl benzoate lotion should be left for 24 hours before rinsing. Household contacts should be treated at the same time and all combs and brushes should be soaked in a lotion of any of the above-mentioned preparations for at least 2 hours.

Body lice infestations are effectively treated with powdered preparations of lindane. Clothes should be dusted at the same time and subsequently washed in boiling water. If this is impractical, they should be air-dried for extended periods. An alternative to lindane treatment is permethrin, 5% cream, which is massaged thoroughly into all skin surfaces and left for at least 8 hours before rinsing. Benzyl benzoate lotion is also effective.

Lindane, malathion or benzyl benzoate preparations are also effective against pubic lice infestations. They should be applied to the pubic area and also to the thighs, axillae, trunk and head (including the eyebrows), if necessary. The duration of treatment is the same as for head lice infestations (see above). Sexual partners should be treated simultaneously.

Infestation of the eyelids by *Pthirus pubis* is not uncommon in children. A thick coat of petroleum jelly applied to the eyelids is often curative.

Scabies

Scabies is caused by a mite, *Sarcoptes scabiei hominis*, which burrows superficially into the skin and is transmitted by person-to-person contact. The finger webs of the hands, wrists, axillae, nipples, buttocks and genitalia (and the face in children) are most vulnerable. Involvement of the head and neck can occur in infants and in immunocompromised individuals. Intense itching, particularly at night, heralds the development of localized, erythematous, excoriated lesions which appear about 6–8 weeks after the initial infestation. Papular and urticarial lesions may later occur anywhere on the body. A

presumptive diagnosis can be made on the basis of clinical findings and a history of itching, particularly at night. Massive infestation, often associated with extensive crusting of the skin, sometimes occurs in elderly or immunocompromised patients.

Prevention and management

All persons in the household must be treated to prevent infestation or reinfestation. Benzyl benzoate is an inexpensive scabicide. It should be applied to all skin surfaces, from the scalp to the soles of the feet, and care should be taken to avoid contact with the eyes. It is not necessary to bathe before application; however, clothing and bedding should be washed or left outside exposed to the air for 72 hours to prevent reinfestation. A 25% lotion applied once daily at night on 2 consecutive days is commonly used. This is often followed by a single application at night 3 days later. Permethrin, 5% cream, is equally effective and less of an irritant, but more expensive. A cheaper alternative is lindane, but it should not be used in infants or young children since it may cause seizures. It also accumulates in the environment. A more suitable alternative for young infants is 6–10% precipitated sulfur in a cream or paste, which is applied once daily for 7 consecutive days.

Other scabicides and pediculicides which are formulated as lotions or shampoos include sulfiram, carbaril, crotamiton and phenothrin.

Cutaneous larva migrans (creeping eruption)

Cutaneous larva migrans results when the larvae of the hookworms *Ancylostoma braziliense* and *A. caninum*, which are excreted by infected dogs and cats, penetrate intact skin. Other nematode species have also been implicated. The condition is particularly prevalent in Central America, some countries of South America, the Caribbean and the south-eastern United States, and throughout tropical Africa. It is characterized by pruritic, winding, thread-like inflammatory lesions, most commonly on the feet.

In most cases, the larvae remain localized, causing only a

transient focal dermatitis of varying intensity. They do not mature into adult worms in humans but, occasionally, they migrate to the lungs to cause eosinophilia, cough and pulmonary infiltrates (Loeffler syndrome).

Control

Prevention is directed to interrupting transmission. Regular deworming of dogs and cats reduces contamination of soil and protective footwear reduces the likelihood of contact.

Treatment

Albendazole administered orally in a single dose of 400 mg cures almost all cases.¹ Tiabendazole may also be of value when administered topically twice or three times daily for 7–10 days. Calamine lotion provides symptomatic relief.

Gnathostomiasis

Gnathostomiasis, which is caused by the nematode *Gnathostoma spinigerum*, is acquired when raw or undercooked fish harbouring the larvae are eaten. The larvae migrate, often in the subcutaneous tissues, causing a creeping eruption, pruritus, urticaria and eosinophilia. Gnathostomiasis is common in Latin America, Japan and south-east Asia, where it is becoming an endemic health problem.

Treatment

Albendazole given orally in a single dose of 400 mg daily for 3 consecutive days is usually curative.¹

¹For further information, see *WHO model prescribing information: drugs used in parasitic diseases*, 2nd ed. Geneva, World Health Organization, 1995.

Insect and arachnid bites and stings

Mosquitos and other biting flies

Aside from being vectors of several of the most important parasitic diseases, including malaria, leishmaniasis, onchocerciasis, filariasis and African trypanosomiasis, mosquitos and other biting flies can induce florid local lesions in susceptible persons. Localized pruritus and urticaria-like papules are the characteristic signs of mosquito bites, while blood-sucking flies induce nodular or haemorrhagic lesions. The muscoid larvae that are responsible for myiasis live parasitically in human tissues. The flies are attracted to festering wounds, ulcers and other necrotic lesions, and they sometimes invade normal tissue. In certain areas of Africa and Central America cutaneous myiasis may occur, which is caused by larvae of the human botfly (*Dermatobia hominis*). The eggs are laid on the bodies of mosquitos, flies or ticks and subsequently transported to humans. This lesion appears as a folliculitis but exudes a serous fluid, and on close inspection, the larvae may seem to be pulsatile.

Popular urticaria, an insect-related, type IV hypersensitivity reaction, is commonly seen in children in developing countries. It is clinically characterized by crops of pruritic weals that evolve into serum-filled papules and, less frequently, vesicles. Excoriation due to scratching leads to secondary bacterial infections. Spontaneous desensitization usually occurs by the age of 7 years. In tropical climates, mosquitos are the main cause of popular urticaria, whereas flies and bedbugs are the common causes in temperate climates.

Prevention and management

Protection is enhanced by knowledge of the habitat and diurnal activity of the vector. Insect repellents and clothing provide some personal protection.

Screens and bednets impregnated with insecticide can be highly effective when used correctly. Secondary myiasis is rarely seen when good standards of personal hygiene are

maintained and wounds are covered to protect them from flies.

For papular urticaria, topical antimicrobials are useful to prevent secondary bacterial infection, and oral antihistamines may relieve the pruritus.

Bees, wasps, hornets and ants

Bees, wasps, hornets and ants are species of *Hymenoptera*. Their stings often cause intense and painful local reactions. In previously sensitized persons there is an associated danger of anaphylaxis, which can range in severity from mild pruritus and urticaria to potentially fatal shock characterized by severe hypotension associated with loss of fluid from the intravascular compartment, bronchoconstriction and laryngeal angio-oedema.

Management

When the sting remains implanted in the skin, it should be carefully removed with a needle or knife-blade. Topical administration of calamine lotion may be of symptomatic value. Cooling of the affected area provides some relief when local reactions are severe. Systemic antihistamines and analgesics can be given to relieve pruritus or pain. Topical antihistamines have no proven value. Systemic corticosteroids may be appropriate if there are severe side-effects. Patients who sustain multiple bee stings at the same time are particularly at risk for systemic reactions, and should be seen and kept under observation at a hospital or medical post, whenever possible.

Any person who collapses, or who complains of wheezing, a feeling of anxiety or faintness, generalized itching, or tightness in the chest within approximately 1 hour of being stung by an insect should be treated as having anaphylactic shock. All such patients should receive an immediate intramuscular injection of 0.5–1.0ml of epinephrine, 1:1000 solution. This promotes bronchodilatation and vasoconstriction and has a stimulant effect on the heart. It may also reduce the release of histamine and other vasoactive substances into the circulation by stabilizing the outer membrane of mast cells. Cardiac dysrhythmias