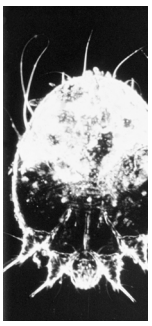
Chapter **37**

Skin Diseases



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In assigning health priorities, skin diseases are sometimes thought of, in planning terms, as small-time players in the global league of illness compared with diseases that cause significant mortality, such as HIV/AIDS, community-acquired pneumonias, and tuberculosis. However, skin problems are generally among the most common diseases seen in primary care settings in tropical areas, and in some regions where transmissible diseases such as tinea imbricata or onchocerciasis are endemic, they become the dominant presentation. For instance, the World Health Organization's 2001 report (WHO 2005) on the global burden of disease indicated that skin diseases were associated with mortality rates of 20,000 in Sub-Saharan Africa in 2001. This burden was comparable to mortality rates attributed to meningitis, hepatitis B, obstructed labor, and rheumatic heart disease in the same region. Using a comparative assessment of disability-adjusted life years (DALYs) from the same report, the World Health Organization recorded an estimated total of 896,000 DALYs for the region in the same year, similar to that attributed to gout, endocrine disease, panic disorders, and war-related injuries. As noted later, those figures require confirmation by more detailed studies, and their practical application to health interventions needs to be tested.

Assessing the impact of skin disease on the quality of life in comparison with that of chronic nondermatological diseases is difficult; however, the study by Mallon and others (1999), which was not carried out in a developing country, compares the common skin disease acne with chronic disorders such as asthma, diabetes, and arthritis and finds comparable deficits in objective measurements of life quality. Skin disease related to HIV, which may constitute an important component of the skin disease burden in developing countries, particularly in Sub-Saharan Africa, leads to a similar impact on life quality compared with non-HIV-related skin problems, although the use of antiretroviral therapy significantly improves quality of life (Mirmirani and others 2002). Those findings indicate that skin diseases have a significant impact on quality of life.

Although mortality rates are generally lower than for other conditions, people's needs for effective remedies for skin conditions should be met for a number of important reasons.

- First, skin diseases are so common and patients present in such large numbers in primary care settings that ignoring them is not a viable option. Children, in particular, tend to be affected, adding to the burden of disease among an already vulnerable group.
- Second, morbidity is significant through disfigurement, disability, or symptoms such as intractable itch, as is the reduction in quality of life. For instance, the morbidity from secondary cellulitis in lymphatic filariasis, which may lead to progressive limb enlargement, is severe, and subsequent immobility contributes to social isolation.
- Third, the relative economic cost to families of treating even trivial skin complaints limits the uptake of therapies. Generally, families must meet such costs from an overstretched household budget, and such expenses in turn reduce the capacity to purchase such items as essential foods (Hay and others 1994).
- Fourth, screening the skin for signs of disease is an important strategy for a wide range of illnesses, such as leprosy, yet a basic knowledge of the simple features of disease whose presenting signs occur in the skin is often lacking at the primary care level.

A shortage of elementary skills in the management of skin diseases is a further confounding problem. A number of studies assessing success in the management of skin diseases in primary care settings in the developing world find that treatment failure rates of more than 80 percent are common (Figueroa and others 1998; Hiletework 1998). An additional point, often overlooked, is that skin diseases in the developing world are often transmissible and contagious but are readily treatable (Mahé, Thiam N'Diaye, and Bobin 1997).

A number of common diseases account for the vast majority of the skin disease burden; therefore implementing effective treatments targeted at those conditions results in significant gains for both personal and public health. Even where eradication is impossible, control measures may be important in reducing the burden of illness; yet few systematic attempts have been made to validate control programs for skin diseases as public health interventions.

PREVALENCE OF SKIN DISEASES

Few studies aimed at estimating the prevalence of skin diseases have been carried out in Western societies. However, Rea, Newhouse, and Halil's (1976) study in Lambeth, south London, which used a questionnaire-based, population-centered approach backed by random examination, reveals an overall 52 percent prevalence of skin disease, of which the investigators judged that just over half the cases required treatment. Studies from developing countries have generally adopted a more inclusive approach that uses systematic, community-based surveys backed by examination. Published figures for the prevalence of skin diseases in developing countries range from 20 to 80 percent.

In a study in western Ethiopia, between 47 and 53 percent of the members of two rural communities claimed to have a skin disease (Figueroa and others 1998), but when they were examined, 67 percent of those who denied having skin problems were found to have treatable skin conditions, most of which were infections. However, prevalence alone does not equate with disease burden. For instance, most communities recognize scabies as a problem because of its intractable itching and secondary infection, whereas they may ignore tinea capitis, which is equally common among the same populations, because they are aware that it follows a benign and asymptomatic course in many patients.

Researchers agree about the main risk factors associated with skin disease in developing countries, the most important of which appears to be household overcrowding. In primary schools in western Ethiopia, more than 80 percent of randomly examined schoolchildren had at least one skin disease, which was usually caused by one of four conditions: scabies, pediculosis capitis, tinea capitis, or pyoderma (Figueroa and others 1996). Those figures mirror work carried out elsewhere. For instance, in Tanzania, in a survey of two village communities, Gibbs (1996) found that 27 percent of patients had a treatable skin disease, and once again, infections were the most common diseases. Overcrowding was a major risk factor in that survey. A similar community-based survey in Sumatra, Indonesia, showed a 28 percent prevalence of skin disease (Saw and others 2001). What seems to influence the overall prevalence and pattern of skin conditions in certain areas is the existence of a number of common contagious diseases, notably, scabies and tinea capitis. Hot and humid climatic conditions may also predispose populations to pyoderma, thereby affecting the distribution of disease.

PATTERNS OF SKIN DISEASES AT THE COMMUNITY LEVEL

A recent (unpublished) survey by the International Foundation of Dermatology designed to provide information about community patterns of skin disease in nine different countries across the world—Australia (Northwest Territory), Ethiopia, Indonesia, Mali, Mexico, Mozambique, Senegal, Tanzania, and Thailand)—and poor regions in other tropical environments from Mexico to Madagascar indicates that the following were the main skin conditions at community level:

- *Scabies.* Although scabies was often the commonest skin disease, it was completely absent in some regions.
- *Superficial mycoses.* This group of infections was usually reported as one of the three commonest diseases.
- *Pyoderma.* This disease was often, but not invariably, associated with scabies.
- *Pediculosis.* This disease was the subject of much variation but is often overlooked in surveys. Firm, community-level data on the prevalence of pediculosis are deficient; thus, this disease is not discussed further in this chapter.
- *Eczema or dermatitis.* Although this disease was usually unclassified, irritant dermatitis and chronic lichen simplex were often cited.
- *HIV-related skin disease.* This disease was reported mainly in Africa. The pruritic papular dermatitis of AIDS is a specific problem.
- *Pigmentary anomalies.* Three different problems were cited: hypopigmentation, often diagnosed as pityriasis alba, a form of eczema; melasma; and dermatitis caused by cosmetic bleaching agents (Mahé and others 2003).
- *Acne.* This disease was reported as an emerging and common problem.

These diseases are the same as those recorded in the literature described previously. Other skin conditions cited by different members of the group surveyed follow:

- *Tropical ulcer.* The incidence was highly variable, but tropical ulcer can account for a huge workload in primary care centers in endemic areas.
- *Nonfilarial lymphoedema.* This condition was mainly confined to Ethiopia.
- *Onchodermatitis, filarial lymphoedema, endemic treponematoses, Buruli ulcers, and leprosy.* These conditions are discussed in detail elsewhere in this book, but note that they often present with skin changes and symptoms.

According to World Bank (2002) figures for low-income populations in 2000, the estimated numbers of individuals infected with pyoderma and scabies, based on the highest prevalence figures from community surveys in the developing world, are 400 million and 600 million, respectively. Based on the lowest prevalence figures, these estimated numbers are 40 million and 50 million, respectively. For tinea capitis, the estimated number of cases based on the highest estimates of prevalence for Sub-Saharan Africa alone is 78 million.

Overall, these data suggest that significant changes could be made in reducing the burden of skin diseases by focusing on the small group of conditions, particularly infections, that account for the bulk of the community case load. This chapter concentrates on those conditions for which such a strategy could be implemented—namely, scabies, pyoderma, fungal infections, tropical ulcers, HIV/AIDS-related dermatoses, and pigmentary disorders.

EFFECTIVE THERAPIES

In considering the evidence for effective treatment, a subgroup of the team (Bendeck, Chen, and McLeod) undertook a data search to establish the evidence base for treatment of the common conditions. They carried out comprehensive searches of the MEDLINE (1966–April 2003) and EMBASE (1980–April 2003) databases to identify therapeutic studies on scabies, pyodermas, and superficial mycoses (but note that many of the studies were performed in industrial countries). They used foreign-language articles if an English abstract was provided. Table 37.1 shows search terms for each of the skin diseases common in the developing world and for treatment.

The team members reviewed study titles and abstracts to select relevant articles and scrutinized the bibliographies of selected articles to identify pertinent studies not captured in the initial literature search. They defined admissible evidence as primary therapeutic studies, based on clinical evaluation, of the treatment of each disease.

Table 37.1 Search Strategy for Therapies

Disease	Search term for disease	Search term for treatment
Scabies	["scabies"]	["treatment of" or "ivermectin" or "permethrin" or "Lindane" or "malathion" or "benzoyl benzoate" or "crotamiton" or "sulfur"]
Pyoderma or bacterial skin infections	["skin diseases, bacterial" or "ecthyma" or "staphylococcal skin infections" or "impetigo" or "pyoderma" or "folliculitis"]	["drug therapy" or "prevention & control" or "therapy"]
Tinea capitis:	["tinea capitis"]	["drug therapy" or "therapy" or "prevention & control"]
Tinea imbricata:	["tinea imbricata.mp"]	
Tropical ulcer	["tropical ulcer$.ti"] or ["skin ulcer(explode)" and "tropic$.mp"]	

Source: Authors.
Note: Terms in brackets are medical subject heading terms. If no standard medical subject heading terms were available, databases were searched either using the title option (denoted as ".ti") or the keyword option (denoted as ".mp").

SKIN DISEASES

Scabies

Scabies is a common ectoparasitic infestation caused by *Sarcoptes scabei,* a human-specific mite that is highly prevalent in some areas of the developing world. Scabies is transmitted by direct contact. In industrial societies, it is usually seen in sexually active adults, although it may also appear in the form of clusters of cases among the elderly in residential homes. Peaks of infection in communities may be cyclical. The ease of transmission appears to depend, in part, on the parasitic load, and some patients, including the elderly, may have large numbers of parasites present. By contrast, in healthy adults, the total parasite load may be low, but they, nonetheless, may suffer from highly itchy lesions. The organisms can also reach high densities in patients suffering from a severe depression of immunological responses, as in HIV infection. In this crusted or Norwegian form of scabies, lesions may present with atypical crusted lesions that itch little.

In developing countries, transmission commonly occurs in young children and infants and their mothers and is related to close contact, overcrowding, and shared sleeping areas. Sexual contact is less important as a means of transmission. Scabies is also a scourge of prisons in developing countries, where it is

associated with overcrowding (Leppard and Naburi 2000). No evidence exists that transfer is related to inadequate hygiene.

The most important complication of scabies is secondary bacterial infection, usually caused by Group A streptococci. Evidence from studies among the indigenous population of northern Australia indicates that this infection is not always benign and that persistent proteinuria is associated with past scabies infestation, suggesting that nephritis related to secondary infection of scabies may cause long-lasting renal damage (White, Hoy, and McCredie 2001).

The disease presents with itchy papules and sinuous linear tracks in the skin that can be highly pruritic and particularly troublesome at night. Often more than one member of a household has the disease.

Treatment. The treatments used for scabies are mainly applied topically. Treatment is not based on treating just affected individuals, both because of the ease with which scabies spreads and because symptoms may develop days or weeks after infection. The advice given to patients always includes a recommendation to treat the entire household with a similar medication, a difficult problem when many people live in the same dwelling. The treatments commonly available include the following:

- *Sulfur ointments.* There are no controlled clinical studies of the use of this cheap medication, which is usually made up in an ointment base. Soap containing sulfur is available in some areas. Anecdotally, sulfur ointment needs to be applied for at least one week to the entire body. Irritation is a common side effect, and lower concentrations, such as 2.5 percent, are applied to infants.
- *Benzyl benzoate.* A 10 to 25 percent benzyl benzoate emulsion is applied over the entire body and left on the skin for up to 24 hours before washing off. Current recommendations suggest that one to three applications may be sufficient, but consensus on the optimal treatment regimen would be useful. Benzyl benzoate emulsion is an irritant and can lead to secondary eczema in some patients.
- *Gamma benzene hexachloride (Lindane).* This product is widely available and is used as a single application washed off after 12 to 24 hours. Concerns have arisen about the increasing risk of drug resistance and the absorption of the drug through the skin. It is also not used in children because of reports of neurotoxicity and fits. This product is not available in many countries.
- *Malathion (0.5 percent) in an aqueous base.* The highly purified commercial forms are effective after a single application, although a second is advised. No data are available on the use of this preparation in developing countries.
- *Crotamiton cream or monosulfiram 25 percent.* These alternative therapies have highly variable efficacy rates.
- *Permethrin 5 percent cream.* This effective, nonirritant treatment is usually administered as a cream applied all over the body. A single application washed off after 8 to 12 hours is used. The tubes are small, and adequate quantities should be prescribed. This treatment is also the most costly of the topical therapies.

Treatment failures in developing countries may be related to the lack of a suitable place in many communities where patients can apply treatment effectively over the entire body from the neck down in privacy.

Oral ivermectin, which is an important drug in the treatment of onchocerciasis, has also been used in patients with scabies, particularly those with the crusted form or in places such as prisons, where large numbers of infected individuals live in close proximity. It has also been applied as a community-based treatment and is reported to be effective as such (Hegazy and others 1999). It is not licensed for the treatment of scabies, and the lack of safety data on the use of ivermectin in infants limits its use. In addition, insufficient evaluations of its efficacy and cost-effectiveness in developing countries have been carried out.

Evidence for Effective Therapies. The team identified 56 articles on therapies for scabies and found the following to be the viable ones: oral and topical ivermectin, permethrin, gamma benzene hexachloride, benzyl benzoate, crotamiton, malathion, and topical sulfur. Table 37.2 summarizes the evidence for ivermectin versus a placebo or permethrin and for topical ivermectin, as well as for the less expensive topical sulfur.

Community-Based Treatments for Scabies. Few studies have addressed the problem of community-administered treatments for scabies, despite the argument that without a community approach to therapy in many developing countries, the successful management of scabies in areas where it affects more than 5 to 6 percent of the population is doomed to failure. Taplin and others' (1991) study of the use of 5 percent permethrin cream in the San Blas Islands, Panama, confirms this view. A three-year program of treatments backed by surveillance reduced the prevalence of scabies from 33 percent to less than 1 percent; however, a three-week break in regular treatment was followed by a rapid increase in prevalence to 3 percent. The results of treatments involving the application of similar protocols, but using other topical agents, are not available. Oral ivermectin lends itself to a community-based treatment approach and has been used in this way (Hegazy and others 1999; Usha and Gopalakrishnan Nair 2000), but insufficient follow-up data are currently available to comment further on this approach.

Bacterial Skin Infections or Pyoderma

Bacterial skin infections or pyoderma are common in most developing countries (Mahé, Thiam N'Diaye, and Bobin 1997).

Table 37.2 Evidence of the Efficacy of Treatments for Scabies

Treatment and average wholesale price	Strongest evidence	Number of people in study	Results	Comments
Ivermectin oral US$5.20 (3 mg), given at 200 μg/kg, one or two doses	Randomized clinical trial (versus placebo) (Hegazy and others 1999)	55	79.3 percent cure with single dose of ivermectin 200 μg/kg versus 16.0 percent cure with placebo ($p < 0.001$)	• Will treat concomitant strongyloidiasis and onchocerciasis • Not approved for scabies by the U.S. Food and Drug Administration • Safety not established for children under five and pregnant women
	Randomized clinical trial (versus permethrin) (Taplin and others 1991)	85	Single dose: 70.0 percent cure with ivermectin 200 μg/kg versus 97.8 percent cure with permethrin 5 percent Second dose (two-week interval): 95.0 percent cure with ivermectin 200 μg/kg (statistically equivalent cure rates with ivermectin and permethrin used as single dose/application)	• A single application of permethrin is superior to a single dose of ivermectin, which suggests that ivermectin may not be effective at all stages in the life cycle of the parasite
Ivermectin (topical)	Open-label, prospective, single group (Macotela-Ruiz and Ramos 1996)	32	100 percent cure rate with two doses of ivermectin 1 percent solution at six weeks (no statistics reported)	• Subjects treated with 1 percent ivermectin in a solution of propylene glycol at 400 μg/kg repeated once after one week • Well tolerated
Sulfur compounds (topical) Ointment (480 grams) US$2.32	Open-label, nonrandomized, prospective cohort (Usha and Gopalakrishnan Nair 2000)	102	71 percent cure at four weeks using sulfur, 5 percent in children younger than 12 months, and 10 percent in children older than 12 months	• Typically used as 5 percent to 10 percent in petrolatum • Messy and smelly • Must be applied repetitively for three nights • Mild local irritation may occur

Source: Authors.
μg = microgram; kg = kilogram; mg = milligram; *p* = probability.

Generally these infections arise as primary infections of the skin known as impetigo or as secondary infections of other lesions such as scabies or insect bites. The usual bacterial causes are Group A streptococci or *Staphylococcus aureus.* Bacterial infections are common in communities. In many cases, no bacteriological confirmation is available from cultures, but surveys show that Group A streptococci account for a substantial number of cases (Carapetis, Currie, and Kaplan 1999; Taplin and others 1973), which is not often the case in similar infections in temperate climates, where *S. aureus* dominates. This finding carries implications for the selection of treatment options. The reasons for this finding are not clear, although humidity and heat are associated with increased risk of bacterial skin infection. In addition to these superficial infections, *S. aureus* also causes folliculitis, or hair follicle infections and abscesses. Rarer causes of skin infection in developing countries include cutaneous diphtheria and anthrax, as well as necrotizing infection caused by *Vibrio vulnificus.*

Bacterial infection causes irritation and some discomfort. In some cases, the infection penetrates deep down through the epidermis, causing a necrotic ulcer—a condition known as ecthyma. However, some evidence suggests that streptococcal infection may cause additional long-term damage through the development of prolonged proteinuria, as described earlier in relation to scabies.

Treatment. Treatment with topical antibacterials, such as fusidic acid or mupirocin, is expensive; thus, the use of cheaper agents, such as antiseptics, is an important option but one that has been evaluated in only a few instances. Chlorhexidine and povidone iodine have both been used, but potassium permanganate is also said to be clinically effective. Gentian violet at concentrations of 0.5 to 1.0 percent is a cheap agent that is widely used, with proven in vitro efficacy against agents commonly involved in pyoderma. Most of those compounds have been used to prevent rather than to treat infections. The most extensively evaluated topical preparations are fusidic acid ointment and mupirocin, which are given daily for up to 10 days. Those drugs are effective in eradicating bacterial infections but, as noted, are not cheap options. Group A streptococci are still

sensitive to penicillin, which can be used for treatment, with alternatives for staphylococcal infections being cloxacillin, flucloxacillin, and erythromycin. Industrial countries largely view methicillin resistance among staphylococci as a nosocomial problem, yet it has now spread to the community, and skin infections provide an ideal medium for the spread of resistance, even in developing countries. *S. aureus* strains isolated from skin sites, even in remote tropical areas, are now resistant to beta-lactam penicillins and tetracyclines through the spread of resistance genes. Tetracycline ointment is still available in many rural pharmacies and is widely used to treat superficial skin lesions, even though some bacterial infections will be unresponsive. Topical neomycin and bacitracin are widely available, are associated with identifiable levels of treatment failure, and also carry a risk of sensitization or adverse effects.

Evidence for Effective Treatment. The team reviewed 727 studies of therapies for pyoderma or bacterial skin infections. These studies could be grouped into either prophylactic regimens or therapeutic trials. For the prevention of pyoderma, the studies surveyed included the following effective therapies: chlorhexidine solution, hexachlorophene scrubbing, and neomycin/polymyxin B-bacitracin (Neosporin) cream. For the treatment of pyodermas, a number of studies reported effective topical therapies, namely: povidone-iodine solution, hydrogen peroxide cream, electrolyzed strong acid aqueous solution, tea ointment, Soframycin ointment, honey, fusidic acid cream, trimethoprim-polymyxin B sulfate cream, rifaximin cream, sulconazole cream, miconazole cream, neomycin/polymyxin B-bacitracin (Neosporin) cream, terbinafine cream, and mupirocin. Systemic agents cited were cephalexin, erythromycin, penicillin, Augmentin, amoxicillin, sultamicillin, (di)cloxacillin, azithromycin, cefadroxil, cefpodoxime, cefaclor, ceftizoxime, clindamycin, clarithromycin, tetracycline, fluoroquinolones, and fusidic acid.

Table 37.3 presents the evidence for commonly used antiseptics and some of the specific antibacterial agents. In practice, topical treatments such as chlorhexidine, povidone, and in some cases neomycin or mupirocin will provide the most cost-effective control measures. For extensive infection, cloxacillin or erythromycin provides alternatives. However, current evaluations are subject to some weaknesses, such as a lack of large, comparative studies, particularly of the topical therapies, including antiseptics, used in developing countries.

Community-applied measures for managing skin infections have not been evaluated, but measures such as early treatment of scabies or basic wound care of sores might provide

Table 37.3 Evidence of the Efficacy of Topical Treatments for Pyoderma

Treatment, level of evidence, cost (manufacturer, formulation, average wholesale price)	Evidence	Number of people in study	Results	Comments[a]
Chlorhexidine gluconate (4 percent) detergent solution Level of evidence: VI	Open-label, prospective cohort (versus nothing) (Taplin and others 1973)	3,602	6.3 percent clinical pyoderma on postdischarge in the chlorhexidine group; 24 percent in the nonchlorhexidine group (no statistics reported)	• Neonatal cord pyoderma • Prophylaxis study
Cost: • Clay-Park • Liquid, topical, 4 percent • 120 ml, US$7.01	Open-label, prospective cohort (versus 70 percent ethanol and versus nothing) (Taplin and others 1973)	5,220	Hospital A: 15.2 percent of group without and 2.1 percent with chlorhexidine prevented cord pyoderma; hospital B: 21.0 percent with ethanol and 1.0 percent with chlorhexidine prevented pyoderma (no statistics reported)	• Neonatal cord pyoderma • Prophylaxis study • Performed and reported at two different hospitals
Povidone-iodine solution (Betadine) Level of evidence: II Cost: • Alpharma U.S. Pharmaceutical Directory • Solution, topical product, 10 percent, • 400 ml, US$5.46	Double-blind RCT (fusidic acid cream plus povidone iodine versus placebo cream plus povidone iodine) (Seeberg and others 1984)	160	92 percent improvement with fusidic acid and 88 percent with placebo	• Impetigo • 14 percent of placebo group versus 4 percent in fusidic acid group may have received antibiotics in weeks 2 and 4, potentially explaining the lack of difference in efficacy
	Open-label, prospective cohort (versus salicylic acid) (Linder 1978)	25	12/12 Betadine responded; 0/13 salicylic acid responded	• Disinfection of chronic wounds of lymphedematous patients • Outcome measure and statistics not clear

Table 37.3 Continued

Treatment, level of evidence, cost (manufacturer, formulation, average wholesale price)	Evidence	Number of people in study	Results	Comments[a]
Potassium permanganate Level of evidence: none Cost: • A-A Spectrum • Crystal, NA • 500 gm, US$16.10				
Mupirocin Level of evidence: I Summary: Efficacy supported by two RCTs and several comparison studies; some concern about resistance Cost: • GlaxoSmithKline (GSK) Pharmaceuticals • Ointment, TP, 2 percent • 22 gm, US$41.36	Double-blind RCT (versus placebo vehicle) (Koning and others 2002)	52	100 percent of mupirocin patients versus 85 percent of placebo (difference not significant)	• Impetigo/ecthyma • Outcome: cure or improvement • 38 in final evaluation; no ITT
	Double-blind, RCT (versus vehicle) (Daroczy 2002)	106	85 percent of mupirocin versus 53 percent vehicle-treated patients ($p = 0.007$)	• Secondarily infected dermatoses with *S. aureus* or *S. pyogenes* • Outcome: marked or moderate improvement • 92 in final evaluation; no ITT
	Open-label RCT (versus oral erythromycin) (Eells and others 1986)	97	90 percent of erythromycin and 96 percent for mupirocin (no statistics given); long-term follow-up: 9 erythromycin versus 3 mupirocin patients developed new lesions ($p = 0.05$)	• Impetigo contagiosa • Outcome: cure or clinical improvement • Also looked at long-term (up to one month) follow-up
	Open-label RCT (versus oral erythromycin) (Barton, Friedman, and Portilla 1988; Breneman 1990)	60	No significant difference in various evaluations of clinical efficacy except investigator's global evaluation (efficiency/safety performance) ($p = 0.01$)	• Impetigo • Both articles present the same research • More adverse effects with erythromycin
	Investigator-blinded, RCT (versus oral erythromycin) (McLinn 1988)	75	93 percent mupirocin versus 96 percent erythromycin (no statistical difference) Recurrence with erythromycin: 10 percent of patients with *S. aureus* and 6 percent of patients with *S. pyogenes*; recurrence with mupirocin: none.	• Impetigo • Also looked at bacterial recurrences • 53 patients clinically and bacteriologically assessable; no ITT

Source: Authors.
gm = gram; ITT = intent to treat; ml = milliliter; p = probability; RCT = randomized clinical trial; TP = topical product.
a. Comments include type of skin infection; indication of prophylaxis, otherwise therapeutic trial; ITT analysis; and other comments.

significant benefits. In this area, carefully designed pilot control programs would provide extremely valuable data.

Fungal Infections

Fungal infections that affect the skin and adjacent structures are common in all environments. They include infections such as ringworm or dermatophytosis; superficial candidosis and infections caused by lipophilic yeasts and *Malassezia* species; and some other common causes of foot infection, such as *Scytalidium*. The clinical and social impact of fungal infections on individuals varies with local conditions. For instance, tinea pedis is a treatable condition that causes cracking and inflammation with itching between the toes. It is generally viewed as a nuisance that only marginally affects the quality of life; however, under certain conditions its significance is far greater. For example, fungal infections of the web spaces and toenails in diabetics provide a portal of entry for *S. aureus*, an event closely

related to the development of serious foot complications in patients with peripheral vascular disease and neuropathy. Similarly, foot infections originally caused by dermatophytes can develop into more serious disabling infections through secondary Gram-negative bacterial infection among certain occupational groups in the tropics, such as workers in heavy industry, the police, or the armed forces. Wearing heavy footwear is a risk factor for the emergence of this problem.

Other infections, such as oropharyngeal candidosis, are important complications of HIV. This commonest infectious complication of AIDS is a potential early marker. Whereas in many patients it may simply have nuisance value, in others it has a more serious impact and leads to dysphagia and loss of appetite. *Malassezia* infections such as pityriasis versicolor are also common in the developing world and often occur in more than 50 percent of the population; however, they are generally asymptomatic but cause patches of depigmentation, and patients seldom seek treatment.

Some fungal infections are extremely widely distributed or common in defined endemic areas. They include tinea capitis and tinea imbricata.

Tinea Capitis. Tinea capitis is a common, contagious disease of childhood that can spread extensively in schools. It is caused by dermatophyte fungi of the genera *Trichophyton* and *Microsporum* (Elewski 2000). Infections can spread from child to child (*anthropophilic infections*) or from animals to children (*zoophilic infections*). Anthropophilic infections tend to be endemic or epidemic, whereas the zoophilic forms occur sporadically. The commonest sources and causes of zoophilic infections are cats and dogs (*Microsporum canis*), cattle and camels (*Trichophyton verrucosum*), and rodents (*T. mentagrophytes*). The causes of the anthropophilic form of this infection vary in different areas of the world. Although in areas of the developing world this condition is endemic at high levels, in many parts of Africa it is a common condition affecting more than 30 percent of children in primary schools. The main African species are *M. audouinii, T. soudanense*, and *T. violaceum*. The last is also found in the Middle East and India. *T. tonsurans*, the form of tinea capitis endemic in the United States (Wilmington, Aly, and Frieden 1996) and in parts of Europe, such as France and the United Kingdom (Hay and others 1996), is extremely resistant to treatment. No evidence indicates that this form has spread to Africa yet, although this possibility exists.

Families of children with tinea capitis seldom present for treatment. However, in a small proportion of individuals, tinea capitis produces a highly inflammatory lesion with suppuration on the scalp along with permanent scarring and local hair loss. The numbers of infected individuals showing this highly symptomatic change are not known with any accuracy, but it is believed to occur in about 5 percent of cases, more with *T. tonsurans*. This factor poses a dilemma in management, because where the disease is common and endemic, a regular source will always exist for new, severe, inflammatory infections in children. Therefore, addressing this issue by tackling individual cases without addressing the reservoir, albeit illogical, may ultimately be the most practical approach.

The diagnosis of tinea capitis is difficult to make clinically in mild cases because the main presenting signs are localized patches of hair loss with fine scaling. In some children, the hair loss is more diffuse. With the inflammatory forms, circumscribed patches of hair loss with erythema and pustulation also occur, and the whole area is raised into a boggy mass. The only way to confirm the diagnosis accurately is to take hair samples for culture and microscopy, which is not possible in many areas because they lack laboratory diagnostic facilities. One specific form of tinea capitis, favus, is clinically recognizable and distinct, because the scalp is covered with white plaques called *scutula*. The infection is chronic and can develop into permanent, scarring alopecia. Inhabitants of endemic areas often recognize favus as a distinct condition that causes chronic illness, and as a result, the uptake of consultation for treatment is higher.

Highly effective, topically applied treatments for tinea capitis are unavailable, and even though simple remedies such as benzoic acid compound (Whitfield's ointment) may lead to clinical improvements, relapse is almost universal. Nevertheless, the use of topical therapies may limit the spread of tinea capitis. Treatment depends on the use of oral therapies. The most widely available of these is griseofulvin, which is given to children in doses of 10 to 20 milligrams per kilogram daily for a minimum of six weeks. Noncontrolled studies show that a single dose of 1 gram of griseofulvin given under supervision can eradicate infection in more than 70 percent of individuals, but such regimens have not been adequately assessed under trial conditions to determine their effect on community levels of infection, nor are follow-up data available.

Recent years have seen the development of a number of effective, new, oral antifungals, including terbinafine, itraconazole, and fluconazole. Terbinafine is a highly active agent that is effective in the treatment of dermatophyte infections. It is given in doses of 62.5 milligrams for those under 10 kilograms, 125 milligrams for those weighing 10 to 40 kilograms, and 250 milligrams for those over 40 kilograms. Evidence indicates that it is effective after one week of therapy in *T. violaceum* and *T. tonsurans* infections, but the best responses are seen when it is used for four weeks. Unfortunately, at these doses it is less effective for *Microsporum* infections, although some data suggest that responses are significant if the doses are doubled. This drug is, therefore, difficult to administer in standardized protocols when the cause of infection is uncertain. Itraconazole is also effective, but no suitable pediatric formulation is available because it is marketed in a capsule form that is difficult to administer to young children. Fluconazole is also effective,

although comparative studies of its use are not available. All three drugs are costly, and a community-based program that uses them would be difficult to fund and implement.

The team found a total of 432 articles for the treatment of tinea capitis. Table 37.4 presents key references for the oral therapies, the mainstay of therapy. The effective treatments included topical therapies (benzoic acid, bifonazole, selenium sulfide, ketaconazole shampoo, and miconazole shampoo) as well as systemic agents (griseofulvin, terbinafine, itraconazole, fluconazole, and ketoconazole). The results of topical treatments appear inferior to those of oral therapy, although they have not been directly compared, and some of the topical agents were applied to prevent transmission rather than to treat infection.

Attempts at community control of tinea capitis have been devised but have not been monitored adequately. The methods have been based on surveillance through culture and treatment of all infected children. Culture-based diagnosis is difficult to implement regularly in developing countries. The treatment used for community therapy has been griseofulvin in conventional daily or large single doses, but those approaches have not been compared. In addition, control protocols usually advise treating carriers with topically applied agents such as selenium sulfide (which is relatively cheap) or a miconazole shampoo (which is moderately priced). In practice, some "carriers" are really patients with extremely localized and hard-to-detect infections, and such patients will not respond to topical treatment in the long term. A second problem is the absolute reliance on laboratory confirmation of cultures to direct treatment of carriers. Therefore, other strategies need to be evaluated, such as reducing the community load, perhaps by topical therapy or single-dose griseofulvin, to reduce the risk of spread. An alternative would be to continue with the existing practice of treating individual cases while recognizing that this process ignores the community reservoir.

Tinea Imbricata (Tokelau Ringworm). In many parts of the developing world, tinea imbricata is an exotic and unusual infection, with isolated foci occurring in remote areas of Brazil, India, Indonesia, Malaysia, Mexico, and the western Pacific. However, in some specific locations, it is common and endemic, reaching prevalence rates of more than 30 percent in some communities in the western Pacific. For example, extrapolating from a school survey in Goodenough Island, Papua New Guinea, Hay and others (1984) estimate that more than 7,000 people out of a population of about 20,000 were infected.

The disease presents in the form of widespread scaling, often arranged in concentric rings or with large sheets of desquamation. The infection may develop early in life and persist into old age without the development of effective immunity. Tinea imbricata often affects wide areas of the body, sparing only body folds and scalp skin. In those areas where it is endemic, it can be a significant problem occupying much of the time of health aid post staff.

Individual treatments have depended on the antifungals described earlier, including griseofulvin. Terbinafine and itraconazole are highly effective, but their cost has constrained their use. As table 37.5 shows, the relapse rates after itraconazole are also higher than after terbinafine (Budimulja and others 1994). Topical agents such as benzoic acid compound (Whitfield's ointment) are helpful, but are seldom curative and are difficult to apply over such large areas. Some patients may be treated with locally derived treatments, such as the sipoma paint used in Papua New Guinea, which contains salicylic acid, brilliant green, and kerosene. Traditional treatments have also been used, but never evaluated. The leaves of *Cassia alata,* for instance, are widely used in the western Pacific.

The team found studies of the use of griseofulvin, terbinafine, and itraconazole for tinea imbricata. Some studies did mention sipoma paint and *Cassia alata,* but no studies evaluating their efficacy have been performed. The team also found case reports supporting the use of griseofulvin.

Different treatments for use on a community basis need to be evaluated because the impact of this condition on local health services in areas of high prevalence is heavy in terms of both time and staff workload.

Tropical Ulcer

Tropical ulcer is a common condition found mainly in children and teenagers in well-defined tropical regions. It usually affects the lower limbs (Bulto, Maskel, and Fisseha 1993), causing the sudden appearance of regular and deep ulceration. It is mainly seen in Africa, India, and the western Pacific and in parts of Indonesia and the Philippines. The disease is caused by a combined infection of a number of different bacteria together with a fusiform bacterium, *Fusobacterium ulcerans*, and an as yet unidentified spirochete. The disease is associated with poor living conditions and exposure to water, particularly flood or stagnant water and mud. In endemic areas, it is a constant drain on resources. Morris and others' (1989) study of aid posts in East Sepik province, Papua New Guinea, shows that management of tropical ulcer was occupying a third of the posts' time and almost half their health care budgets.

The lesion usually starts with mild discomfort and overlying hyperpigmentation on the skin that progresses rapidly over a few days until the skin breaks down and sloughs, revealing an underlying ulcer. The lesion is often clean on first presentation and round with smooth edges. It generally starts on the lower leg or ankle, and in about 10 percent of cases, it progresses to become an irregular, enlarged, and chronic ulcer.

The condition heals well in most patients with simple cleansing and treatment with penicillin; however, early grafting

Table 37.4 Evidence of the Efficacy of Different Regimens for Tinea Capitis

Treatment, level of evidence, cost (manufacturer, formulation, average wholesale price)	Evidence	Number of people in study	Results	Comments
Benzoic acid compound (Whitfield's ointment) Level of evidence: III Cost: not found	Investigator-blinded RCT (versus miconazole cream) (Wilmington, Aly, and Frieden 1996)	41	Mycological cure: 12/20 using benzoic acid compound and 10/19 using miconazole cream	• Neither treatment is fully efficacious
	Observational study (Hay and others 1996)		Prevalence dropped from 7.8 percent to 5.8 percent ($p < 0.05$)	• Prevalence study of dermatophytomycoses in rural schools • After institution of treatment by 12 trained community health workers, only prevalence of tinea capitis dropped significantly
Griseofulvin Level of evidence: III Cost: • Pedinol, tablets, 125 mg, US$63.00 for 100 tablets • Martec, tablets, 125 mg, US$34.10 for 100 tablets	Multicenter, single-blinded, RCT (versus terbinafine, itraconazole, and fluconazole) (Wright and Robertson 1986)	200	Effective treatment: 46/50 (92 percent) griseofulvin, 47/50 (94 percent) terbinafine, 43/50 (86 percent) itraconazole, 42/50 (84 percent) fluconazole ($p = 0.33$)	• ITT analysis performed • Griseofulvin for six weeks similar in efficacy to terbinafine, itraconazole, and fluconazole for two to three weeks
	Single-cohort retrospective analysis (Schmeller, Baumgartner, and Dzikus 1997)	474	60.7 percent responded well; 39.3 percent returned less than eight months later; 10.7 percent had a recurrence later	• Observation over a two-year period • Conclusions: griseofulvin may be ineffective in one-third or more patients
	Multicenter, open-label, RCT (four weeks terbinafine versus eight weeks griseofulvin) (Gupta and others 2001)	210	No statistically significant differences (cure = 67 percent in both groups); however, graphical presentation of data demonstrates a slightly higher proportion of patients in terbinafine group achieved "cure" earlier	• 147 patients were evaluable; no ITT • Four weeks of treatment with oral terbinafine had a similar efficacy to eight weeks of treatment with griseofulvin
	Parallel-group, multicenter, double-blind RCT (versus terbinafine) (Abdel-Rahman, Nahata, and Powell 1997)	134	Terbinafine for six weeks had a similar efficacy to griseofulvin	• Four oral terbinafine groups (6, 8, 10, or 12 weeks) compared with 12 weeks of griseofulvin • ITT analysis performed • Six weeks of terbinafine could represent an alternative to griseofulvin
	Double-blind RCT (versus terbinafine) (Fuller and others 2001)	50	Week 8: 76 percent griseofulvin and 72 percent terbinafine (not statistically significant); week 12: 44 percent griseofulvin and 76 percent terbinafine ($p < 0.05$)	• Outcome: cure rates at weeks 8 and 12 • Terbinafine is a good alternative for less-frequent recurrences
	Double-blind RCT (versus itraconazole) (Lipozencic and others 2002)	35	88 percent itraconazole versus 88 percent griseofulvin	• Tinea corporis and tinea capitis evaluated together • Outcome measure: cure • 34 patients evaluable for efficacy; no ITT • Two griseofulvin patients discontinued therapy because of vomiting • Itraconazole has the same efficacy as griseofulvin and fewer side effects

Source: Authors.
ITT = intention to treat; p = probability; RCT = randomized clinical trial.

Table 37.5 Evidence of the Efficacy of Terbinafine for Tinea Imbricata

Treatment, level of evidence, cost (manufacturer, brand name, formulation, average wholesale price)	Evidence	Number of people in study	Results	Comments
Terbinafine Level of evidence: II Cost: • Novartis • Lamisil • Tablets, 250 mg, US$260.51 for 30 tablets (AWP) • Tablets, 250 mg, US$868.16 for 100 tablets (AWP) • Cream, TP, 1 percent, 15 gm, US$32.61 (AWP) • Cream, TP, 1 percent, 30 gm, US$58.40 (AWP)	Double-blind randomized clinical trial (terbinafine versus itraconazole) (Lopez-Gomez and others 1994)	83	Clinical and mycological cure rate: • 37/37 for terbinafine, 31/35 for itraconazole ($p = 0.05$) At week 17 follow-up, reinfection or relapse: • 6/37 (16 percent) evaluable terbinafine patients • 24/31 (75 percent) evaluable itraconazole patients ($p < 0.001$)	• Terbinafine has a slightly higher cure rate and a lower reinfection and relapse rate than itraconazole • 72 patients eligible for follow-up

Source: Authors.
AWP = average wholesale price; gm = gram; mg = milligram; p = probability.

may be necessary if healing is delayed. Treatment, therefore, consists of early treatment with penicillin, a strategy that may also fit with a syndromic approach to ulceration, because it will also be effective for yaws. The alternative is oral metronidazole, but no evidence of the comparative efficacy of these two approaches is available.

In searching the literature for effective remedies for tropical ulcer, the team found little evidence. The team did find studies evaluating metronidazole and topical dressings, and several articles mentioned the efficacy of penicillin and split skin grafting, but no randomized controlled trials have been performed. A single case report supports the use of co-trimoxazole. The management strategy thereafter depends on keeping the wound clean to allow appropriate healing using local antisepsis and cleansing, such as potassium permanganate solution, chlorhexidine, or even saline, and protecting the area from further abrasion or secondary infection with sterile dressings. Clinical experience suggests that if this regimen is not followed, the risk of developing chronic leg ulceration is substantial.

No community strategies for preventing tropical ulcer are known, although the process of infection suggests that simple, hygienic measures to disinfect and clean the affected limb, perhaps modified from those used in lymphatic filariasis, might be effective as a simple preventive regimen. The possible use of vaccines has been substantially researched for the animal counterpart, sheep foot rot, which is caused by a similar combination of organisms.

HIV-Related Skin Diseases

A wide range of skin conditions may develop as a consequence of HIV infection, but most are beyond the scope of this chapter. They include conditions that are a significant drain on scarce resources. These include Kaposi's sarcoma and toxic epidermal necrolysis, a potentially life-threatening form of skin failure that is often drug induced and requires the level of care and attention that would be deployed for patients with severe burns.

The commonest skin-related complication of HIV, particularly in Africa, is the itchy papular eruption or papular pruritic eruption of HIV. It presents with fiercely itchy multiple papules on the face and upper trunk. It is of unknown etiology and responds only to symptomatic treatment—for instance, antipruritic preparations such as antihistamines—although simple topical preparations, such as calamine or menthol creams, may alleviate the itching. Recognizing this condition is important, because it is seen only in HIV/AIDS cases and is often mistakenly treated as acne. It does not respond to treatments for acne.

Pigmentary Disorders

The development of pigmentary change is an important source of concern in many communities (Taylor 1999). Disorders associated with pigmentary changes are common and range from hereditary defects such as albinism (Lookingbill,

Lookingbill, and Leppard 1995) to increased pigmentation, or *hyperpigmentation*, associated with inflammatory skin lesions such as acne. Albinism is a significant cause of life-threatening skin cancer in the developing world.

For many of these conditions, no effective remedies are available. For instance, hyperpigmentation secondary to inflammation cannot be removed effectively, although it may fade with time. Similarly, no effective cure exists for vitiligo, a common disease involving loss of pigment, although experimental treatments such as melanocyte grafting do produce localized repigmentation. Therefore, advising patients of the current comparative ineffectiveness of treatments for these conditions is important. Preventing the use of therapies that do not lead to effective outcomes should be an important part of the strategy for treating skin diseases.

Some forms of increased pigmentation, such as melasma, which is hyperpigmentation of the cheek and forehead areas and is seen mainly in women, respond to the application of hydroquinone derivatives. However, because such treatments are often misused, they would not be used at the community level and would be used only with advice from a trained practitioner. Depigmenting creams, lotions, and emulsions are widely available as cosmetic preparations in many local markets and shops, and in a study in Dakar, Senegal, more than 50 percent of women questioned stated that they were regularly using bleaching creams ranging from hydroquinones to corticosteroids (Mahé and others 2003). Hydroquinones are potentially damaging to the skin and with continuous use cause patchy increased pigmentation and scarring of the facial skin. Similarly, misuse of corticosteroids is associated with a range of secondary effects from skin thinning to increased infection rates. Warning people about the potential risks of depigmenting creams would be a useful health promotion strategy in many communities.

Skin depigmentation is also a feature of leprosy. Thus, teaching health care workers responsible for leprosy surveillance to recognize skin patterns is a practical strategy of great potential value in continuing progress toward eliminating this disease.

ECONOMIC ASSESSMENTS AND SKIN DISEASES IN DEVELOPING COUNTRIES

Apart from the studies mentioned here in relation to families' costs for treating community-acquired skin diseases in Mexico (Hay and others 1994) and costs to health posts of managing tropical ulcer in Papua New Guinea (Morris and others 1989), no published studies are available of the economic burden of skin disease. An extensive literature search did reveal some studies related to diseases that affect the skin but discussed elsewhere in this work (Buruli ulcer and onchocercal skin disease), as well as a paper on the direct costs of treating scabies in Italy. These studies are shown in table 37.6.

Examples of drug costs (tables 37.2 to 37.4) for tinea capitis, scabies, and pyoderma can be estimated as follows:

- Treatment of a single case of scalp ringworm using griseofulvin purchased from two differently priced U.S. sources to achieve the published efficacy rates (table 37.4) with a conventional therapeutic course of six weeks, assuming a daily dose of 250 milligrams, would provide between 61 and 92 percent efficacy at a drug cost per individual of US$29 or US$53, depending on the drug source. Alternatively, a single supervised dose of 1 gram would cost US$1.40 or US$2.50. With supervision of treatment, the total cost per cure using daily treatment ranges from US$35 to US$88 per patient.
- Treatment of 100 people with scabies using sulfur ointment, assuming 500 grams per individual, would cost US$58 or US$0.58 per person. This regimen would provide a 71 percent cure rate at three months and a cost per cure of $1.30 per patient.
- Treatment with povidone of an individual with pyoderma would cost US$0.68, assuming that 400 milliliters would treat eight people. This regimen would provide a cure rate of 88 percent at three months and a cost per cure of US$1.10 per patient.

These calculations have taken into account ideal community treatment conditions, where the recurrence rate is negligible. However, if such a community-based scheme is not effectively developed, more than 50 percent of those with scabies are likely to be reinfected. The figures are lower for tinea capitis (15 percent) and pyoderma (10 percent). Table 37.7 shows the costs of treating large populations.

Although little information is currently available, in particular about the effect of local pricing of medications on overall effective treatment costs, the studies cited in this chapter indicate that the financial burden of skin diseases within families may well be significant and that producing a series of robust analyses of the cost implications of both treatment and failure to provide adequate management strategies for these common conditions is critical.

The 1990 global burden of disease study estimated that the disability weighting associated with skin disease was at least 0.02. However, the disability weighting for severe scabies (25 percent of cases) and patients with ecthyma (10 percent of pyoderma cases) is 0.10. If we take skin cases with the lower disability estimates—for example, mild to moderate scabies and pyoderma—the cost per DALY gained would be about US$1.00 to US$1.50 (table 37.7). For tinea capitis, the cost per DALY gained using daily treatment would be considerably higher, US$175 at the lower drug cost.

Table 37.6 Literature Review on the Economic Impact of Skin Diseases

Disease	Author	Year of research	Country	Study type and population	Cost categories and indicators	Results
Buruli ulcer	Asiedu	1998	Ghana	Retrospective study of 102 cases at a district hospital in the Ashanti region	• Health care costs (inpatient services including medicines, surgery, laboratory) • Indirect costs (loss of productivity, food, miscellaneous)	• Total costs: US$783.27 per patient • Health care costs: US$233.78 per patient • Indirect costs: US$549.49 per patient • Percentage of total health care cost relative to district budget: 40 percent
Onchocerciasis (OSD)	Workneh	1993	Ethiopia	Males age 18 to 54 working at a coffee plantation with OSD and without OSD	• Days of leave • Income	• Those with OSD had significantly more days of leave and less income than controls
Onchocerciasis (OSD)	Oladepo	1997	Nigeria	Matched pairs of male farmers with OSD and without OSD	• Current cultivated farm size • Personal wealth	• Those with OSD had significantly smaller farm sizes and less personal wealth
Onchocerciasis (OSD)	Benton	1998	Ethiopia, Nigeria, and Sudan	Communities	• Educational impact • Direct costs • Indirect functional capacity costs, for example, from disability	• Children of OSD heads of household had double the risk of dropping out of school • People with severe OSD spend US$20 more per year on health (15 percent of their incomes) • People with severe OSD spend longer time seeking care
Scabies	Papini	1999	Italy	Outbreaks in two nursing homes	• Health care costs (medical consults, treatment, disinfestation procedures, laundry, extra staffing, disposable materials)	• US$151.17 per resident

Source: Asiedu 1998; Workneh 1993; Oladepo 1997; Benton 1998; and Papini 1999.
OSD = onchocercal skin disease.

Table 37.7 Cost of Cure and Impact on DALYs for the Three Most Common Skin Diseases, Using the Cheapest Effective Treatments

Disease	Cost of cure (US$/million population)	Number of people cured for US$1 million	Cost per DALY gained (US$)	Comment
Tinea capitis	5,250,000	285,000	175 (assuming cost per drug of US$29 for course of treatment)	Estimated on the basis of a high-prevalence (15 percent) region such as Ethiopia
Scabies	58,000	1,700,000	1.00–1.50	Estimated on the basis of a high-prevalence (10 percent) region
Pyoderma	55,000	900,000	1.00–1.50	Estimated on the basis of a high-prevalence (5 percent) region.

Source: Authors.

The benefits of devising control measures for treatable skin disease are also affected by the high prevalence figures for skin diseases in low-income countries with total populations of between 40 million and 600 million affected, depending on variations in disease prevalence.

CURRENT STATUS OF COMMUNITY CONTROL MEASURES IN DERMATOLOGY

Despite the logic of developing community-focused services for dermatology, such services have seldom been achieved (Hay, Andersson, and Estrada 1991). Perhaps the best current example of a concerted, community-based approach is the Regional Training Center for Dermatology in Moshi, Tanzania, which focuses on developing a primary care skills base in African countries for the care of patients with skin and sexually transmitted diseases (Kopf 1993). The program has now trained more than 100 medical assistants and nurses, who were placed in 15 different countries at the primary care level and who, in many cases, play key roles in developing local health programs. A key issue is that action proportional to the severity of the problem is needed. For instance, one option would be to help nonspecialized health workers significantly improve their skills in managing common skin diseases. That option would present a new challenge for the teaching of dermatology. Along those lines, a recent initiative to effect change through a control and education program in Mali targeted at pyoderma, scabies, and tinea capitis is currently being evaluated. Early assessments indicate that the teaching methods have been effective in instilling recognition skills among primary care health workers. The effect on community levels of skin diseases is not yet known.

Skin diseases remain a low priority for many health authorities, despite the large demand for services. Addressing the potential for controlling skin problems by means of simple and effective public health measures should be a realistic target for alleviating a common and solvable source of ill health. An effective plan, team, and basic dermatological formulary can do much to improve matters (Estrada and others 2000). This chapter outlines some of the challenges for such programs and some of the deficiencies of current provision.

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