

Topical Drugs Used in the Treatment of Skin Disorders

Key Terms

<i>antipsoriatics</i>	<i>immunocompromised</i>
<i>antiseptic</i>	<i>keratolytic</i>
<i>bactericidal</i>	<i>necrotic</i>
<i>bacteriostatic</i>	<i>proteolysis</i>
<i>dermis</i>	<i>proteolytic</i>
<i>epidermis</i>	<i>purulent exudates</i>
<i>germicide</i>	<i>superinfection</i>
<i>hypersensitivity</i>	

Chapter Objectives

On completion of this chapter, the student will:

- List the types of drugs used in the treatment of skin disorders.
- Discuss the general drug actions, uses, and reactions of and any contraindications, precautions, and interactions associated with drugs used in the treatment of skin disorders.
- Discuss important preadministration and ongoing assessment activities the nurse should perform on patients receiving a drug used to treat skin disorders.
- List some nursing diagnoses particular to a patient using a drug to treat a skin disorder.
- Discuss ways to promote an optimal response to therapy and important points to keep in mind when educating the patient about a skin disorder.

The skin forms a barrier between the outside environment and the structures located beneath the skin. The **epidermis** is the outermost layer of the skin. Immediately below the epidermis is the dermis. The **dermis** contains small capillaries, which supply nourishment to the dermis and epidermis, sebaceous (oil-secreting) glands, sweat glands, nerve fibers, and hair follicles. Because of the skin's proximity to the outside environment, it is subject to various types of injury and trauma, as well as changes in the skin itself. Each of the following sections discusses only select topical drugs. See the Summary Drug Table: Dermatologic Drugs for a more complete listing of the drugs and additional information.

TOPICAL ANTI-INFECTIVES

Localized skin infections may require the use of a topical anti-infective. The topical anti-infectives include antibiotic, antifungal, and antiviral drugs.

ACTIONS AND USES

Topical Antibiotic Drugs

Topical antibiotics exert a direct local effect on specific microorganisms and may be bactericidal or bacteriostatic. Bacitracin (Baciguent) inhibits the cell wall synthesis. Bacitracin, gentamicin (G-mycticin), erythromycin (Emgel), and neomycin are examples of topical antibiotics. These drugs are used to prevent superficial infections in minor cuts, wounds, skin abrasions, and minor burns. Erythromycin is also indicated for treatment of acne vulgaris.

Topical Antifungal Drugs

Antifungal drugs exert a local effect by inhibiting growth of the fungi. Examples of antifungal drugs and their uses are:

- Amphotericin B (Fungizone)—used for treatment of mycotic infections (fungal)

SUMMARY DRUG TABLE DERMATOLOGIC DRUGS

GENERIC NAME	TRADE NAME*	USES	ADVERSE REACTIONS	DOSAGE RANGES
Antibiotic Drugs				
azelaic acid <i>az-e-lak'</i>	Azelex	Acne vulgaris	Mild and transient pruritus, burning, stinging, erythema	Apply twice daily
bacitracin <i>ba-ci-tra'-sin</i>	Baciguent, <i>generic</i>	Relief of skin infections	Rare; occasionally redness, burning, pruritus, stinging	Apply 1–5 times daily
benzoyl peroxide <i>been'-zoyl per-ox'-ide</i>	Acne-5, Benzac, Desquam-X 10% Wash, Dryox Wash, Exact, Laroxide Neutrogena, Acne Mask, <i>generic</i>	Mild to moderate acne vulgaris and oily skin	Excessive drying, stinging, peeling, erythema, possible edema, allergic dermatitis	Use once to three times daily
clindamycin, topical <i>clin'-da-my-sin</i>	Cleocin T, Clinda-Derm, Clindets, C/T/S, <i>generic</i>	Acne vulgaris	Dryness, erythema, burning, peeling, oiliness/oily skin, diarrhea, bloody diarrhea, abdominal pains, colitis	Apply a thin film twice daily to affected area
erythromycin <i>ee-rith-ro-my'-sin</i>	Akne-Mycin, Emgel, Erygel	Acne vulgaris	Skin irritation, tenderness, pruritus, erythema, peeling, oiliness and burning sensations	Clean affected area twice daily
gentamicin <i>jen-ta-my'-sin</i>	G-myticin, <i>generic</i>	Relief of primary skin infections	Mild and transient pruritus, burning, stinging, erythema, photosensitivity	Apply 1–5 times daily to affected area
metronidazole <i>meh-trow-nye'-dah-zoll</i>	Metro-Gel, MetroLotion, Noritate	Rosacea	Watery (tearing) eyes, transient redness, mild dryness, burning, skin irritation	Apply a thin film twice daily to affected areas
mupirocin <i>mew'-pie-ro-sin</i>	Bactroban	Impetigo, infections caused by <i>Staphylococcus aureus</i> and <i>S. pyogenes</i>	Ointment: burning, stinging, pain, itching, rash, nausea, erythema, dry skin Cream: headache, rash, nausea, abdominal pain, burning at application site, dermatitis Nasal: headache, rhinitis, respiratory disorders, such as pharyngitis, taste perversion, burning, stinging, cough	Ointment: apply 3 times daily for 3–5 d Cream: apply 3 times daily for 10 d Nasal: divide the single-use tube between both nostrils and apply twice daily for 5 d
neomycin <i>knee-oh-my'-sin</i>	Myciguent, <i>generic</i>	Relief of skin infections	Mild and transient pruritus, burning, stinging, erythema	Apply 1–3 times daily
sulfacetamide sodium <i>sul-fah-see'-ta-mide</i>	Sebizon	Seborrheic dermatitis, seborrhea sicca (dandruff), bacterial infections of the skin	Rare: skin rash, nausea, vomiting	Apply 2–4 times daily
Antifungal Drugs				
amphotericin B <i>am-fo-ter'-eye-sin</i>	Fungizone	Mycotic infections	Rare; drying effect, local irritation, including erythema, pruritus, burning sensation	Apply liberally to lesions 2–4 times daily for 2–4 wk
butenafine HCl <i>beu-ten'-ah-feen</i>	Mentax	Dermatologic infections	Burning, stinging, itching, worsening of the condition, contact dermatitis, erythema, irritation	Apply 1 time daily for 4 wk

SUMMARY DRUG TABLE DERMATOLOGIC DRUGS (Continued)

GENERIC NAME	TRADE NAME*	USES	ADVERSE REACTIONS	DOSAGE RANGES
ciclopirox <i>sic-lo-peer'-ox</i>	Loprox, Penlac Nail Lacquer	Loprox: tinea pedis (athlete's foot), tinea cruris (jock itch), tinea corporis (ringworm), cutaneous candidiasis Penlac: mild to moderate onychomycosis of fingernails and toenails	Pruritus, burning, worsening of clinical signs and symptoms, periungual erythema, nail disorders, irritation, ingrown toenail, burning of the skin	Apply to affected areas 1–2 times daily
clioquinol <i>kli-oh-qwe'-knol</i>	Generic	Tinea pedis, tinea cruris, and other skin infections caused by ringworm	Burning, itching, erythema, worsening of the condition	Apply thin layer to affected areas BID for 4 wk
econazole nitrate <i>ee-kon'-a-zole</i>	Spectazole	Tinea pedis, tinea cruris, tinea corporis, cutaneous candidiasis, tinea versicolor	Local burning, itching, stinging, erythema, pruritic rash	Apply to affected areas 1–2 times daily
gentian violet <i>jen'-shun</i>	Generic	External treatment of abrasions, minor cuts, surface injuries, superficial fungus, infections of the skin	Local irritation or sensitivity reactions	Apply locally BID
haloprogin <i>ha-lo-pro'-jin</i>	Halotex	Tinea pedis, tinea cruris, tinea corporis, tinea manuum	Local irritation, burning sensation, vesicle formation, erythema, scaling, itching, pruritus	Apply twice daily for 2–4 wk
ketconazole <i>kee-toe-koe'-na-zole</i>	Nizoral, generic	Cream: tinea cruris, tinea corporis, and tinea versicolor Shampoo: reductions of scaling due to dandruff	Local burning, itching, stinging, erythema, pruritic rash	Cream: once daily to affected areas for 2 wk Shampoo: twice a week for 4 wk with at least 3 d between each shampoo
miconazole nitrate <i>mi-kon'-a-zole</i>	Fungoid-HC Creme, Lotrimin, Micatin, Monistat-Derm Cream, Tetterine, generic	Tinea pedis, tinea cruris, tinea corporis, cutaneous candidiasis	Local irritation, burning, maceration, allergic contact dermatitis	Cover affected areas twice daily
naftifine HCl <i>naf'-ti-feen</i>	Naftin	Topical treatment of tinea pedis, tinea cruris, tinea corporis	Burning, stinging, erythema, itching, local irritation, rash, tenderness	Apply BID for 4 wk
nystatin <i>nye-stat'-in</i>	Mycostatin, Nystex, generic	Mycotic infections caused by <i>Candida albicans</i> , and other <i>Candida</i> species	Virtually nontoxic and nonsensitizing; well tolerated by all age groups, even with prolonged administration; if irritation occurs, discontinue use	Apply 2–3 times daily until healing is complete
oxiconazole <i>ox-ee-kon'-ah-zole</i>	Oxistat	Tinea pedis, tinea cruris, tinea corporis	Pruritus, burning, stinging, irritation, contact dermatitis, scaling, tingling	Apply daily to BID 1 month
suconazole nitrate <i>sue-kon'-ah-zole</i>	Exelderm	Same as oxiconazole	Pruritus, burning, stinging, irritation	Apply 1–2 times daily for 2 wk
terbinafine HCl <i>ter-ben'-a-feen</i>	Lamisil	Same as oxiconazole	Same as oxiconazole	Apply twice daily until infection clears (1–4 wk)

(continued)

SUMMARY DRUG TABLE DERMATOLOGIC DRUGS (Continued)

GENERIC NAME	TRADE NAME*	USES	ADVERSE REACTIONS	DOSAGE RANGES
tolnaftate <i>tole-naf'-tate</i>	Aftate, Genaspor, Tinactin, Ting, generic	Same as oxiconazole	Same as oxiconazole	Apply twice daily for 2–3 wk (4–6 wk may be needed)
Antiviral Drugs				
acyclovir <i>ay-sye'-kloe-veer</i>	Zovirax, generic	Herpes genitalis, herpes simplex virus infections	Mild pain with transient burning/ stinging, pruritus, rash, vulvitis, edema or pain at application site	Apply to all lesions q3h 6 times daily for 1 wk
penciclovir <i>pen-sye'-kloe-veer</i>	Denavir	Herpes labialis (cold sores)	Irritation at application site, headache, mild erythema, rash, taste perversion	Apply q2h for 4 d
Antiseptic and Germicides				
benzalkonium chloride (BAC) <i>benz-al-cone'- e-um</i>	Benza, Mycocide NS, Ony-Clear, Zephiran, generic	Asepsis of skin, mucous membranes, and wounds; preoperative preparation of the skin; surgeon's hand and arm soaks; preservation of ophthalmic solutions; irrigations of the eye; vaginal douching	Well tolerated in most individuals; occasionally mild sensitivity reaction	Varies, depending on administration
chlorhexidine gluconate <i>klor-hex'-e-deen</i>	Bacto Shield 2, Betasept, Exidine-2 Scrub, Hibiclens	Surgical scrub, skin cleanser, preoperative skin preparation, skin wound cleanser, preoperative showering and bathing	Irritation, dermatitis, photosensitivity (rare), deafness, mild sensitivity reactions	Varies, depending on administration
povidone-iodine <i>pov-e-don</i>	Acu-Dyne, Aerodine, Betadine, generic	Microbicidal against bacteria, fungi, viruses, spores, protozoa, yeasts	Dermatitis, irritation, burning, sensitivity reactions	Varies, depending on administration
triclosan <i>trye'-klo-san</i>	Clearasil Daily Face Wash	Skin cleanser, and skin degermer	None significant	5 mL on hands or face and rub thoroughly for 30 seconds, rinse thoroughly, pat dry
Corticosteroids, Topical				
alclometasone dipropionate <i>al-kloe-met-a-son die-pro'-pee-oh- nate</i>	Aclovate	Treatment of various allergic/immunologic skin problems	Allergic contact dermatitis, burning, dryness, edema, irritation	Apply 1–6 times daily according to directions
amcinonide <i>am-sin'-oh-nide</i>	Cyclocort	Same as alclometasone	Same as alclometasone	Apply 1–6 times daily according to directions
augmented betamethasone dipropionate <i>bay-ta-meth'-a- sone</i>	Diprolene	Same as alclometasone	Same as alclometasone	Apply 1–4 times daily according to directions
betamethasone dipropionate <i>bay-ta-meth'-a- sone</i>	Alphatrex, Diprosone, Maxivate, generic	Same as alclometasone	Same as alclometasone	Apply 1–4 times daily according to directions

SUMMARY DRUG TABLE DERMATOLOGIC DRUGS (Continued)

GENERIC NAME	TRADE NAME*	USES	ADVERSE REACTIONS	DOSAGE RANGES
betamethasone valerate <i>bay-ta-meth'-a- sone-val'-eh-rate</i>	Betatrex, <i>generic</i>	Same as alclometasone	Same as alclometasone	Apply 1–4 times daily according to directions
desoximetasone <i>dess-ox-i-met'-a- sone</i>	Topicort, <i>generic</i>	Same as alclometasone	Same as alclometasone	Apply 1–4 times daily according to directions
dexamethasone sodium phosphate <i>dex-a-meth'-a- sone</i>	Decadron Phosphate	Same as alclometasone	Same as alclometasone	Apply 1–4 times daily according to directions
diflorasone diacetate <i>dye-flor'-a-sone</i>	Florone, Maxiflor	Same as alclometasone	Same as alclometasone	Apply 1–4 times daily according to directions
fluocinolone acetonide <i>floo-oh-sin'-oh-lone</i>	Fluonid, Flurosyn, Synalar, <i>generic</i>	Same as alclometasone	Same as alclometasone	Apply 1–4 times daily according to directions
fluocinonide <i>floo-oh-sin'-oh-nide</i>	Lidex, <i>generic</i>	Same as alclometasone	Same as alclometasone	Apply 1–4 times daily according to directions
flurandrenolide <i>floo-an-dren'-oh- lide</i>	Cordran, <i>generic</i>	Same as alclometasone	Same as alclometasone	Apply 1–4 times daily according to directions
hydrocortisone <i>hye-droe-kor'-ti- sone</i>	Bactine Hydrocortisone, Cort-Dome, Hytone, <i>generic</i>	Same as alclometasone	Same as alclometasone	Apply 1–4 times daily according to directions
hydrocortisone buteprate <i>hye-droe-kor'-ti- sone</i>	Pandel	Psoriasis and other deep-seated dermatoses	Same as alclometasone	Apply once or twice daily
hydrocortisone butyrate <i>hye-droe-kor'-ti- sone</i>	Locoid	Same as alclometasone	Same as alclometasone	Apply 2–3 times daily
triamcinolone acetonide <i>trye-am-sin'-oh- lone</i>	Aristocort, Flutex, Kenalog, Triacet, <i>generic</i>	Same as alclometasone	Same as alclometasone	Apply 1–4 times daily according to directions
Anti-psoriatic Drugs				
ammoniated mercury <i>ah-mo'-ne-at-ed mer-ku-re</i>	Emersal	Psoriasis	Ammoniated mercury is a potential sensitizer that can cause allergic reactions	Apply 1–2 times daily
anthralin <i>an-thra'-lin</i>	Anthra-Derm Dritho Creme, Miconal	Psoriasis	Few; transient irritation of normal skin or uninvolved skin	Apply once a day
calcipotriene <i>cal-cip-o-tri-een</i>	Dovonex	Psoriasis	Burning, itching, skin irritation, erythema, dry skin, peeling, rash, worsening of psoriasis, dermatitis, hyperpigmentation	Apply twice daily
selenium sulfide <i>se-le'-ne-um</i>	Exsel Head and Shoulders Intensive Treatment Dandruff Shampoo, Selsun Blue, <i>generic</i>	Treatment of dandruff, seborrheic dermatitis of the scalp, and tinea versicolor	None significant. Rare, some skin irritation	Massage 5–10 mL into wet scalp and allow to remain on scalp for 2–3 minutes, rinse

(continued)

SUMMARY DRUG TABLE DERMATOLOGIC DRUGS (Continued)

GENERIC NAME	TRADE NAME*	USES	ADVERSE REACTIONS	DOSAGE RANGES
Enzyme Preparations				
collagenase <i>koll-ah-gen'-ase</i>	Santyl, <i>generic</i>	For debriding chronic dermal ulcers and severely burned areas	Well tolerated and nonirritating; transient burning sensation may occur	Apply once daily according to directions
enzyme combinations	Accuzyme, Granulderm, Granulex, Panafil	Debridement of necrotic tissue and liquefaction of slough in acute and chronic lesions such as decubitus ulcers, varicose and diabetic ulcers, burns, wounds, pilonidal cyst wounds, and miscellaneous trauma of infected wounds	Well tolerated and nonirritating; transient burning sensation may occur	Apply once or twice daily
Keratolytic Drugs				
diclofenac sodium <i>dye-kloe'-fen-ak</i>	Solaraze	Actinic keratoses	Usually well tolerated; transient burning sensation, rash, dry skin, scaling, flu syndrome	Apply twice daily
masoprocol <i>ma-so-pro-kol</i>	Actinex	Actinic keratoses	Erythema, flaking, dryness, itching, edema, burning, soreness, bleeding, crusting, skin roughness	Apply twice daily
salicylic acid <i>sal-i-sill'-ik</i>	DuoFilm, Wart Remover, Fostex, Fung-O, Mosco, Panscol	Aids in the removal of excessive keratin in hyperkeratotic skin disorders, including warts, psoriasis, calluses, and corns	Local irritation	Apply as directed in individual product labeling
Local Anesthetics				
benzocaine <i>benz-o-kaine'</i>	Lanacane	For topical anesthesia in local skin disorders	Rare; hypersensitivity, local burning, stinging, tenderness, sloughing	Apply to affected area
dibucaine <i>di-bu-kaine'</i>	Nupercainal, <i>generic</i>	For topical anesthesia in local skin disorders, local anesthesia of accessible mucous membranes	Same as benzocaine	Topical: apply to affected area as needed; mucous membranes: dosage varies and depends on the area to be anesthetized
lidocaine <i>lie'-doe-kaine</i>	ELA-Max, Lidocaine Viscous, Xylocaine, <i>generic</i>	For topical anesthesia in local skin disorders, local anesthesia of accessible mucous membranes	Same as benzocaine	Topical: apply to affected area as needed; mucous membranes: dosage varies and depends on the area to be anesthetized
lidocaine HCl <i>lie'-doe-kaine</i>	Dentipatch	Topical anesthesia of accessible mucous membranes of the mouth before dental procedures	Rare; local burning, stinging, tenderness	Apply to affected area
butamben picrate <i>byoo'-tam-ben</i>	<i>Generic</i>	Topical anesthesia	Rare; local burning, stinging, tenderness	Apply to affected area

*The term *generic* indicates the drug is available in generic form.

- Miconazole (Micatin), ciclopirox (Loprox), and econazole (Spectazole)—used for treatment of tinea pedis (athlete's foot), tinea cruris (jock itch), tinea corporis (ringworm), and superficial candidiasis
- Clioquinol—used for eczema, athlete's foot, and other fungal infections

Topical Antiviral Drugs

Acyclovir (Zovirax) and penciclovir (Denavir) are the only topical antiviral drugs currently available. These drugs inhibit viral replication. Acyclovir is used in the treatment of initial episodes of genital herpes, as well as herpes simplex virus infections in **immunocompromised** patients (patients with an immune system incapable of fighting infection). Penciclovir is used for the treatment of recurrent herpes labialis (cold sores) in adults.

ADVERSE REACTIONS

Adverse reactions to topical anti-infectives are usually mild. Occasionally, the patient may experience a skin rash, itching, urticaria (hives), dermatitis, irritation, or redness, which may indicate a **hypersensitivity** (allergic) reaction to the drug. Prolonged use of topical antibiotic preparations may result in a superficial **superinfection** (an overgrowth of bacterial or fungal microorganisms not affected by the antibiotic being administered).

CONTRAINDICATIONS, PRECAUTIONS, AND INTERACTIONS

These drugs are contraindicated in patients with known hypersensitivity to the drugs or any components of the drug. Because neomycin toxicity can cause nephrotoxicity and ototoxicity, neomycin is used cautiously in patients with extensive burns or trophic ulceration when extensive absorption can occur.

The topical antibiotics are Pregnancy Category C drugs and are used cautiously during pregnancy and lactation. Acyclovir and penciclovir are Pregnancy Category B drugs and are used cautiously during pregnancy and lactation. The pregnancy categories of the antifungals are unknown except for econazole nitrate, which is Pregnancy Category C, and ciclopirox, which is Pregnancy Category B; both are used with caution during pregnancy and lactation. There are no significant interactions for the topical anti-infectives.

TOPICAL ANTISEPTICS AND GERMICIDES

An **antiseptic** is a drug that stops, slows, or prevents the growth of microorganisms. A **germicide** is a drug that kills bacteria.

ACTIONS

The exact mechanism of action of topical antiseptics and germicides is not well understood. These drugs affect a variety of microorganisms. Some of these drugs have a short duration of action, whereas others have a long duration of action. The action of these drugs may depend on the strength used and the time the drug is in contact with the skin or mucous membrane.

Benzalkonium

Benzalkonium (Zephiran) is a rapid-acting preparation with a moderately long duration of action. It is active against bacteria and some viruses, fungi, and protozoa. Benzalkonium solutions are **bacteriostatic** (slow or retard the multiplication of bacteria) or **bactericidal** (destroy bacteria), depending on their concentration.

Chlorhexidine

Chlorhexidine gluconate (Hibiclens) affects a wide range of microorganisms, including gram-positive and gram-negative bacteria.

Iodine

Iodine has anti-infective action against many bacteria, fungi, viruses, yeasts, and protozoa. Povidone-iodine (Betadine) is a combination of iodine and povidone, which liberates free iodine. Povidone-iodine is often preferred over iodine solution or tincture because it is less irritating to the skin. Unlike with the use of iodine, treated areas may be bandaged or taped.

USES

Topical antiseptics and germicides are primarily used to reduce the number of bacteria on skin surfaces. Some of these drugs, such as chlorhexidine gluconate, may be used as a surgical scrub, as a preoperative skin cleanser, for washing the hands before and after caring for patients, and in the home to cleanse the skin. Others may be applied to minor cuts and abrasions to prevent infection. Some of these drugs may also be used on mucous membranes.

ADVERSE REACTIONS

Topical antiseptics and germicides have few adverse reactions. Occasionally, an individual may be allergic to the drug, and a skin rash or itching may occur. If an allergic reaction is noted, use of the topical drug is discontinued.

CONTRAINDICATIONS, PRECAUTIONS, AND INTERACTIONS

These drugs are contraindicated in patients with known hypersensitivity to the individual drug or any component of the preparation. There are no significant precautions or interactions when used as directed.

TOPICAL CORTICOSTEROIDS

Topical corticosteroids vary in potency, depending on the concentration of the drug (percentage), the vehicle in which the drug is suspended (lotion, cream, aerosol spray), and the area to which the drug is applied (open or denuded skin, unbroken skin, thickness of the skin over the treated area).

Examples of topical corticosteroids include amcinonide (Cyclocort), betamethasone dipropionate (Diprosone), fluocinolone acetonide (Fluorosyn), hydrocortisone (Cort-Dome), and triamcinolone acetate (Aristocort).

ACTIONS AND USES

Topical corticosteroids exert localized anti-inflammatory activity. When applied to inflamed skin, they reduce itching, redness, and swelling. These drugs are useful in treating skin disorders, such as psoriasis, dermatitis, rashes, eczema, insect bite reactions, and first- and second-degree burns, including sunburns.

ADVERSE REACTIONS

Localized reactions may include burning, itching, irritation, redness, dryness of the skin, and secondary infection.

CONTRAINDICATIONS, PRECAUTIONS, AND INTERACTIONS

The topical corticosteroids are contraindicated in patients with known hypersensitivity to the drug or any component of the drug; as monotherapy for bacterial skin

infections; for use on the face, groin, or axilla (only the high-potency corticosteroids); and for ophthalmic use (may cause steroid-induced glaucoma or cataracts). The topical corticosteroids are Pregnancy Category C drugs and are used cautiously during pregnancy and lactation. There are no significant interactions when administered as directed.

TOPICAL ANTIPSORIATICS

ACTION AND USES

Topical **antipsoriatics** are drugs used in the treatment of psoriasis (a chronic skin disease manifested by bright red patches covered with silvery scales or plaques). These drugs help remove the plaques associated with this disorder. Examples of antipsoriatics include anthralin (Anthra-Derm) and calcipotriene (Dovonex).

ADVERSE REACTIONS

These drugs may cause burning, itching, and skin irritation. Anthralin may cause skin irritation, as well as temporary discoloration of the hair and fingernails.

CONTRAINDICATIONS, PRECAUTIONS, AND INTERACTIONS

These drugs are contraindicated in patients with known hypersensitivity to the drugs. Anthralin and calcipotriene are Pregnancy Category C drugs and are used cautiously during pregnancy and lactation.

TOPICAL ENZYMES

ACTIONS AND USES

A topical enzyme aids in the removal of dead soft tissues by hastening the reduction of proteins into simpler substances. This is called **proteolysis** or a **proteolytic** action. The components of certain types of wounds, namely **necrotic** (dead) tissues and **purulent exudates** (pus-containing fluid), prevent proper wound healing. Removal of this type of debris by application of a topical enzyme aids in healing. Examples of conditions that may respond to application of a topical enzyme include second- and third-degree burns, pressure ulcers, and ulcers caused by peripheral vascular disease. An example of a topical enzyme is collagenase (Santyl).

ADVERSE REACTIONS

The application of collagenase may cause mild, transient pain. Numbness and dermatitis also may be seen. Collagenase has a low incidence of adverse reactions.

CONTRAINDICATIONS, PRECAUTIONS, AND INTERACTIONS

The topical enzyme preparations are contraindicated in patients with known hypersensitivity to the drugs, in wounds in contact with major body cavities or where nerves are exposed, and in fungating neoplastic ulcers. These drugs are Pregnancy Category B drugs and are used cautiously during pregnancy and lactation. Enzymatic activity may be impaired when these agents are administered with several detergents and antiseptics (benzalkonium chloride, hexachlorophene, iodine, and nitrofurazone).

KERATOLYTICS

ACTIONS AND USES

A **keratolytic** is a drug that removes excess growth of the epidermis (top layer of skin) in disorders such as warts. These drugs are used to remove warts, calluses, corns, and seborrheic keratoses (benign variously colored skin growths arising from oil glands of the skin). Examples of keratolytics include salicylic acid, masoprocol (Actinex), and diclofenac (Solaraze). Some strengths of salicylic acid are available as nonprescription products for the removal of warts on the hands and feet.

ADVERSE REACTIONS

These drugs are usually well tolerated. Occasionally a transient burning sensation, rash, dry skin, scaling, or flu-like syndrome may occur.

CONTRAINDICATIONS, PRECAUTIONS, AND INTERACTIONS

The keratolytics are contraindicated in patients with known hypersensitivity to the drugs and for use on moles, birthmarks, or warts with hair growing from them, on genital or facial warts, on warts on mucous membranes, or on infected skin. Prolonged use of the keratolytics in infants or patients with diabetes or impaired circulation is contraindicated. Salicylic acid

may cause salicylate toxicity (see Chap. 17) with prolonged use. These drugs are Pregnancy Category C drugs and are used cautiously during pregnancy and lactation.

TOPICAL LOCAL ANESTHETICS

A topical anesthetic may be applied to the skin or mucous membranes.

ACTIONS AND USES

Topical anesthetics temporarily inhibit the conduction of impulses from sensory nerve fibers. These drugs may be used to relieve itching and pain due to skin conditions, such as minor burns, fungus infections, insect bites, rashes, sunburn, and plant poisoning, such as poison ivy. Some are applied to mucous membranes as local anesthetics. Examples of local anesthetics include benzocaine (Lanacane), dibucaine (Nupercainal), and lidocaine (Xylocaine).

ADVERSE REACTIONS

Occasionally, local irritation, dermatitis, rash, burning, stinging, and tenderness may be noted.

CONTRAINDICATIONS, PRECAUTIONS, AND INTERACTIONS

These drugs are contraindicated in those with a known hypersensitivity to any component of the preparation. The topical anesthetics are used cautiously in patients receiving Class I antiarrhythmic drugs such as tocainide and mexiletine because the toxic effects are additive and potentially synergistic.

Herbal Alert: Aloe Vera

Aloe is used to prevent infection and promote healing of minor burns (eg, sunburn) and wounds. When used externally, the herb helps repair skin tissue and reduce inflammation. Aloe gel is naturally thick when taken from the leaf but quickly becomes watery because of the action of enzymes in the plant.

Commercially available preparations have additive thickeners to make the aloe appear like the fresh gel. The herb can be applied directly from the fresh leaf by cutting the leaf in half lengthwise and gently rubbing the inner gel directly onto the skin.

Commercially prepared products are applied externally as needed. Rare reports of allergy have been reported with the external use of aloe. Although available as an oral juice, its benefits have not been confirmed. Some individuals have reported the oral juice effective in healing and preventing stomach ulcers.

NURSING PROCESS

● The Patient Receiving a Topical Drug for a Skin Disorder

ASSESSMENT

Preadministration Assessment

The preadministration assessment involves a visual inspection and palpation of the involved area(s). The nurse carefully records the areas of involvement, including the size, color, and appearance. A specific description is important so that changes can be readily identified indicating worsening or improvement of the lesions. Terms used to describe skin lesions are found in Table 56-1. The nurse notes the presence of scales, crusting, drainage, or any complaint of itching. Some agencies may provide a figure on which the lesions can be drawn, indicating the shape and distribution of the involved areas.

Ongoing Assessment

At the time of each application, the nurse inspects the affected area for changes (eg, signs of improvement or worsening of the infection) and for adverse reactions, such as redness or rash. The nurse contacts the primary health care provider, and the drug is not applied if these or other changes are noted or if the patient reports new problems, such as itching, pain, or soreness at the site. The nurse may be responsible for checking the treatment sites 1 day or more after application and should inform the primary health care provider of any signs of extreme redness or infection at the application site.

NURSING DIAGNOSES

Drug-specific nursing diagnoses are highlighted in the Nursing Diagnoses Checklist. Other nursing diagnoses applicable to these drugs are discussed in depth in Chapter 4.

PLANNING

The expected outcomes of the patient may include an optimal response to drug therapy and an understanding of the application or the reason for use of a topical drug.

LESION	DESCRIPTION
Macule	Flat spot on the skin
Papule	Raised spot on the skin
Nodule	Small solid swelling on the skin
Pustule	Lesion containing pus
Petechia	Pinpoint hemorrhagic areas of the skin
Erythema	Redness
Ecchymosis	Bruised area
Vesicle	Fluid-filled swelling (blister)

Nursing Diagnoses Checklist

- ✓ **Impaired Skin Integrity** related to the inflammatory process (increased sensitivity to the drug)
- ✓ **Pain** related to skin condition or increased sensitivity to drug therapy
- ✓ **Risk for Infection** related to entry of pathogens into affected areas
- ✓ **Risk for Disturbed Body Image** related to the presence of skin lesions

IMPLEMENTATION

Promoting an Optimal Response to Therapy

Some patients may experience anxiety about the appearance of certain skin lesions or the symptoms of a specific dermatologic disorder. This may cause a negative body image. The nurse must allow time for the patient to verbalize concerns or ask questions concerning therapy. The nurse reassures the patient that the lesions are temporary and will diminish or disappear with treatment (if that is true).

TOPICAL ANTI-INFECTIVES. Before each application, the nurse cleanses the skin with soap and warm water unless the primary health care provider orders a different method. The nurse applies the anti-infective as prescribed (eg, thin layer, applied liberally) and the area is either covered or left exposed.

Nursing Alert

The nurse must exercise care when applying anti-infectives or any topical drug near or around the eyes.

TOPICAL ANTISEPTICS AND GERMICIDES. The nurse uses, instills, or applies antiseptics and germicides as directed by the primary health care provider or by the label on the product. Topical antiseptics and germicides are not a substitute for clean or aseptic techniques. Occlusive dressings are not to be used after application of these products unless a dressing is specifically ordered by the primary health care provider. For example, an occlusive dressing is not recommended after the use of benzalkonium. Iodine permanently stains clothing and temporarily stains the skin. The nurse should remove or protect the patient's personal clothing when iodine solution or tincture is applied.

Antiseptic and germicidal drugs kept at the patient's bedside must be clearly labeled with the name of the product, the strength, and when applicable, the date of preparation of the solution. The nurse replaces hard-to-read or soiled, stained labels as needed. These solutions

are not kept at the bedside of any patient who is confused or disoriented because the solution may be mistaken for water or another beverage.

TOPICAL CORTICOSTEROIDS. Before drug application, the nurse washes the area with soap and warm water unless the primary health care provider directs otherwise. Topical corticosteroids are usually ordered to be applied sparingly. The primary health care provider also may order the area of application to be covered or left exposed to the air. Some corticosteroids are applied as an occlusive dressing. The nurse applies the drug while the skin is still moist after washing with soap and water, covers the area with a plastic wrap, seals it with tape or bandage, and leaves it in place for the prescribed period of time.

TOPICAL ENZYMES. Certain types of wounds may require special preparations before applying the topical enzyme. The nurse cleanses or prepares the area and applies the topical enzyme as directed by the primary health care provider. If bleeding occurs with the use of sutilains, the nurse discontinues the ointment and contacts the primary health care provider.

TOPICAL ANTIPSORIATICS. The nurse may be responsible for applying the product and inspecting the areas of application. Care is exercised so that the product is applied only to the psoriatic lesions and not to surrounding skin. The nurse brings signs of excessive irritation to the attention of the primary health care provider.

TOPICAL ANESTHETICS. The nurse applies the anesthetic as directed by the primary health care provider. Before the first application, the nurse cleanses and dries the area. For subsequent applications, the nurse removes all previous residue.

When a topical gel, such as lidocaine viscous, is used for oral anesthesia for the control of pain, the nurse instructs the patient not to eat food for 1 hour after use because local anesthesia of the mouth or throat may impair swallowing and increase the possibility of aspiration.

Monitoring and Managing Adverse Reactions

Most topical drugs cause few adverse reactions and, if they occur, discontinuing use of the drug may be all that is necessary to relieve the symptoms. Occasionally, an increased skin sensitivity can occur, causing increased redness, discomfort, and itching. With itching and rash the nurse may use cool, wet compresses or a bath to relieve the itching. Keeping the environment cool may also make the patient more comfortable. Dry skin increases the risk of skin breakdown from scratching. The nurse can advise the patient to keep nails

short, use warm water with mild soap for cleaning the skin, and rinse and dry the skin thoroughly. Bath oils, creams, and lotions may be applied if necessary as long as the primary health care provider is consulted before use. Dry, flaky skin is subject to breakdown and infection. The nurse observes the skin for signs of infection (eg, redness, heat, pus, and elevated temperature and pulse) and immediately reports any sign of infection.



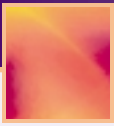
Gerontologic Alert

Adults older than 65 years have more skin-related adverse reactions to calcipotriene. The nurse should use calcipotriene cautiously in older adults.

Educating the Patient and Family

If the primary health care provider has prescribed or recommended the use of a topical drug, the nurse includes the following in a teaching plan:

- Wash the hands thoroughly before and after applying the product.
- If the enclosed directions state that the product will stain clothing, be sure clothing is moved away from the treated area. If the product stains the skin, wear disposable gloves when applying the drug.
- Follow the directions on the label or use as directed by the primary health care provider. Read any enclosed directions for use of the product carefully.
- Prepare the area to be treated as recommended by the primary health care provider or as described in the directions supplied with the product.
- Do not apply to areas other than those specified by the primary health care provider. Apply the drug as directed (eg, thin layer, apply liberally, and so on).
- Follow the directions of the primary health care provider regarding covering the treated area or leaving it exposed to air. The effectiveness of certain drugs depends on keeping the area covered or leaving it open (see Home Care Checklist: Using an Occlusive Dressing).
- Keep this product away from the eyes (unless use in or around the eye has been recommended or prescribed). Do not rub or put the fingers near the eyes unless the hands have been thoroughly washed and all remnants of the drug removed from the fingers. If the product is accidentally spilled, sprayed, or splashed in the eye, wash the eye immediately with copious amounts of running water. Contact the primary health care provider immediately if burning, pain, redness, discomfort, or blurred vision persists for more than a few minutes.
- The drug may cause momentary stinging or burning when applied.



Home Care Checklist

USING AN OCCLUSIVE DRESSING

In certain circumstances, the patient who requires a topical drug must also apply an occlusive dressing to enhance the drug's effectiveness. Although commercial-type occlusive dressings are available, they are expensive, especially if your patient requires frequent dressing changes at home. So, if appropriate, suggest these less costly home alternatives:



Plastic food wrap such as Saran wrap



Plastic food storage bags

After your patient gathers the necessary supplies, instruct him or her to do the following:



Wash hands before beginning care.



Remove the old dressing.



Cleanse the area as directed.



Apply the topical drug as ordered.



Cover the area with a dry gauze dressing.



Apply a skin adhesive to the area around the gauze dressing.



Cover the gauze dressing with the occlusive dressing, making sure that the occlusive dressing is approximately 1 inch larger than the gauze dressing on all sides. For example, if the gauze dressing is 4 inches × 4 inches, then the occlusive dressing should be 5 inches × 5 inches.



Check to make sure that the occlusive dressing lies flat without wrinkles.



Run fingers around all the edges of the occlusive dressing to ensure good adhesion.



Tape the edges of the occlusive dressing on all sides, preferably with paper tape, to secure it.

- Discontinue use of the drug and contact the primary health care provider if rash, burning, itching, redness, pain, or other skin problems occur.
- Gentamicin may cause photosensitivity. Take measures to protect the skin from ultraviolet rays (eg, wear protective clothing and use a sunscreen when out in the sun).

EVALUATION

- The therapeutic drug response is achieved.
- The patient or family member demonstrates an understanding of the use and application of the prescribed or recommended drug.

● Critical Thinking Exercises

1. A nurse tells you that she is upset because she was reprimanded about the labeling of a topical antiseptic used for cleaning a pressure ulcer and for leaving the solution

at the patient's bedside. She thinks her supervisor is unfair and the entire situation is not as serious as the supervisor contends. Analyze the situation to determine what you would say to this nurse.

2. Discuss the ongoing assessment activities you would include in the daily assessment of a patient prescribed a topical drug.
3. Describe important preadministration assessments that the nurse would make before administering a topical corticosteroid.

● Review Questions

1. What reaction could occur with prolonged use of the topical antibiotics?
 - A. Water intoxication
 - B. Superficial superinfection
 - C. An outbreak of eczema
 - D. Cellulitis

2. Which of the following drugs has a proteolytic action?
 - A. Amcinonide (Cyclocort)
 - B. Collagenase (Santyl)
 - C. Bacitracin (Baciguent)
 - D. Ciclopirox (Loprox)
3. A keratolytic agent would be safe to use on which of the following skin conditions?
 - A. Moles
 - B. Birthmarks
 - C. Facial warts
 - D. Calluses
4. What type of action do the corticosteroids have when used topically?
 - A. Bacteriocidal activity
 - B. Anti-inflammatory activity
 - C. Antifungal activity
 - D. Antiviral activity
5. Which of the following drugs is best suited to be used as a topical antiseptic?
 - A. Amphotericin B
 - B. Benzocaine
 - C. Iodine
 - D. Povidone-iodine