STANDARD
NURSE PROTOCOLS
FOR CHILD HEALTH

THIS PAGE INTENTIONALLY LEFT BLANK

2011-2012 CHILD HEALTH CLINICAL REVIEW TEAM

Sandra Metcalf, RN, BSN
Maternal and Child Health Program-Two Peachtree

Seema Csukas, MD, PhD
Maternal and Child Health Program-Two Peachtree

Paula Young, RN, MSN, ARNP, NNP-BC
Coffee Wellness Center

Rise Wood, B.S, Pharm
Northwest Health District

Charlotte Law, RN
Southwest Health District

Kay Davis, RN, MSN
Southeast Health District

Linda Norton, RN
Cobb-Douglas Health District

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

STANDARD NURSE PROTOCOL FOR ACNE, MILD

DEFINITION Comedones (blackheads, whiteheads), pimples and tender red bumps on the face, chest or back, or a combination of these. Usually occurs during puberty and can last until age 20-30.

ETIOLOGY The primary event is the obstruction of the sebaceous follicle outlet. Due to increasingly active androgenic hormones, there is increased activity of sebaceous glands with obstruction of the sebaceous glands of the skin. This leads to rupture of the gland and release of fatty acids into the surrounding tissue resulting in an inflammatory reaction producing an acne nodule. Bacterial colonization of the trapped sebum may produce inflammation.

SUBJECTIVE

1. Lesions on face, back, chest.
2. Use of acne-causing medications (e.g., corticosteroids, phenytoin, greasy cleansing creams, cosmetics, oils).
3. Underlying endocrinopathy (e.g., Cushing Syndrome, Stein-Leventhol Syndrome).
4. Condition often worsens during periods of stress or cyclic menstrual flares.
5. Psychological distress caused by presence of facial lesions.
6. Family history of acne.
7. Assess pregnancy status.

OBJECTIVE Increasing number of blackheads, whiteheads, pimples and tender red bumps on the face, chest or back are noted. Lesions may lead to pitted scars. One type of lesion may be predominant or all may be present. Determine if acne is mild, moderate or severe. Cystic acne requires prompt attention; ruptured cysts may result in scar formation. (Cysts extend deep into the dermis and are best appreciated by palpation. Papules and pustules extend primarily above the surface of the skin.)

ASSESSMENT Acne, Mild Inflammatory

PLAN **THERAPEUTIC**

PHARMACOLOGIC

Non-prescription products

1. If 12 years of age or older, for mild acne (fewer than 20 papules and nonpustular pimples): Benzoyl peroxide gel or cream, 5-10% (available over-the-counter as Oxy-5, Oxy-10 and Persa-Gel) topically. (Gel for oily skin, cream for

dry skin.) Begin with 5% gel or cream every day. Leave initial application on for 15 minutes. Increase exposure time in 15-minute increments as tolerance allows. Once tolerated for 2 hours, it can be left on the skin overnight. If necessary, advance to 2 times a day. Increase or decrease the strength and/or frequency of application depending on tolerance and response. (**Note:** for **clients** with predominantly whiteheads and blackheads [Comedonal Acne] with very few inflammatory components [erythematous papules, pimples or small pustules], this therapy will not be effective. Topical retinoids are required and referral is indicated if treatment is desired.)

Prescription products

1. If step #1 above yields an insufficient response after a trial of at least 4-6 weeks: Each morning wash with Benzoyl peroxide, pat dry and apply a thin layer of either Clindamycin Topical Gel 1% or Erythromycin Topical Gel 2%. Each evening apply Benzoyl peroxide gel or cream as described above. May apply Clindaymcin Topical Gel 1% or Erythromycin Topical Gel 2% either once daily or twice daily depending on irritation and effectiveness.

OR

Benzoyl peroxide plus erythromycin (Benzamycin®), contains 3% erythromycin and 5% benzoyl peroxide in gel form (alcohol base), generic available. Apply 1-2 times a day to clean, dry skin.

OR

5% benzoyl peroxide plus 1% clindamycin gel (BenzaClin®). Apply 1-2 times a day to clean, dry skin**.**

NON-PHARMACOLOGIC MEASURES

1. Shampoo hair regularly.

2. Wash face with water and mild soap or cleanser (e.g. Dove, Basis, Purpose, Cetaphil lotion) no more than 2-3 times a day**,** and shower or bathe daily.

CLIENT EDUCATION/COUNSELING.

1. **Keep hands off face. Avoid picking lesions which may lead to scar formation.**

2. **Avoid greasy cleansing oils, mousse and cosmetics because they block oil glands. Use non-acnegenic cosmetics and moisturizers, if needed.**

3. **Avoid scrubbing skin, because it irritates the openings of oil glands and can cause them to be more tightly closed.**

4. **Do not expect to completely prevent any new lesions.**

5. **Eat a well-balanced diet. There is no evidence that certain foods can cause acne.**

6. **Educate client about increased photosensitivity with use of products listed above.**

7. **Contact clinic if any problems obtaining medications.**

FOLLOW-UP:

Return to clinic in 2 to 4 weeks after initiating therapy, then every 1 to 2 months.

CONSULTATION/REFERRAL

1. If client is less than 12 years of age.

2. If no improvement in mild acne in 8-12 weeks.

3. If acne is moderate, severe or cystic, refer to MD or **APRN**.

4. If underlying condition suspected, refer to MD **or APRN.**

5. When blackheads and whiteheads are the predominant lesions refer **to MD or APRN**.

6. In cases of psychological stress, refer for counseling.

7. Refer to Family Planning if indicated. Some adolescent girls benefit from oral contraceptives.

8. Pregnancy **or breastfeeding client**.

9. Secondary bacterial infection.

10. Any female with acne, menstrual irregularities (primarily oligomenorrhea) or hirsutism (unusual body hair), that may be suggestive of Polycystic Ovary Syndrome, refer to MD **or APRN**.

REFERENCES

1. American Society of Health-Systems Pharmacists, *American Hospital Formulary Service,* 2011, pp. 3466-3467.
2. Constance R. Uphold and Mary Virginia Graham, *Clinical Guidelines in Family Practice,* 4th ed., Barmarrae Books, Inc., Gainesville, Florida, 2003, pp. 265-267. **(Current)**
3. Facts and Comparisons, **"***Facts and Comparisons*,**"** Wolters Kluwer Health, Inc., 20**11, <**http://online.factsandcomparisons.com/index.aspx> **(February 25, 2011)**.
4. A. C. Yan**, "**Current Concepts in Acne Management,**"** *Adolescent Medicine Clinics*, 2006, pp. 613-637. **(Current)**
5. Thomas K. McInery, et al., *American Academy of Pediatrics Textbook of Pediatric Care,* Elk Grove Village, IL, 2009, pp. 1802-1807 and 1809.
6. **Carol K. Taketomo, et al., "Pediatric Dosage Handbook, 17th ed., Lexi-Comp, Hudson, Ohio, 2010, pp.184-185.**

STANDARD NURSE PROTOCOL FOR ALLERGIC RHINITIS (PEDIATRIC)

DEFINITION An allergic disease affecting the nasal mucosa and often the conjunctiva. It may be seasonal or perennial (non-seasonal).

ETIOLOGY

1. Seasonal
   Pollens that depend on wind for cross-pollination. In the eastern United States, the following are the most common causes, with pollination time varying by several months depending on location:
   a. Ragweed, August - October.
   b. Grasses, May - July.
   c. Trees, March - July.
   d. Combinations of a, b and c.

2. Perennial
   a. House dust/house-dust mites.
   b. Feathers.
   c. Mold spores.
   d. Animal dander.
   e. Foods. Most authorities believe that if foods are causative, other signs of hypersensitivity occur with allergic rhinitis (e.g., urticaria, asthma, gastro-intestinal symptoms).

3. Aggravating factors:
   a. Tobacco smoke.
   b. Air pollutants.
   c. Sudden temperature changes.
   d. Wood heaters, fireplaces, carpets, etc.

SUBJECTIVE

1. History of onset of symptoms in childhood and young adulthood, with symptoms decreasing with age.

2. Commonly have family history of allergic diseases.

3. Seasonal symptoms tend to occur the same time each year and are frequently more severe than those of the perennial form.
   a. Sneezing.
   b. Nasal itching.
   c. Watery rhinorrhea.
   d. Nasal stuffiness.

e. Occasionally may report:
   1) Itching of eyes, palate and throat.
   2) Snoring and sniffing.
   3) Increased tearing and photophobia.
   4) Non-productive cough.
   5) Fatigue, irritability, anorexia and headache.

OBJECTIVE

1. Clear, thin nasal discharge.

2. Pale, edematous nasal mucosa.

3. Enlarged nasal turbinates.

4. “Allergic salute" - rubbing of the nose upward and outward (seen especially in children) and "wrinkling" of the nose.

5. Mouth-breathing.

6. Conjunctival injection and edema. Occasionally granular, erythematous conjunctivae and dark semi-circles (“allergic shiners") under the eyes.

7. Allergic facies with perennial allergic rhinitis:
   a. Mouth-breathing.
   b. Prominent maxilla, high arched palate.
   c. Dull expression.
   d. Broad mid-section of nose, with horizontal crease across lower portion.

8. Interference with sleep.

9. Interference with school performance.

ASSESSMENT

Allergic Rhinitis

Seasonal - differentiate from upper respiratory tract infection and infectious conjunctivitis.

Perennial - differentiate from:
1. Recurrent upper respiratory tract infection.
2. Vasomotor rhinitis (of unknown cause, non-infectious, non-seasonal, and non-allergenic).
3. Deviated nasal septum.
4. Side effects of medications, such as overuse of vaso-constricting nose drops.
5. Chronic sinusitis.
6. Chronic contact with tobacco smoke (smoke is a primary irritant,

allergy not required).

PLAN **THERAPEUTIC**

PHARMACOLOGIC

1. For age 2 and over with seasonal allergic rhinitis, a nasal corticosteroid is now regarded as first-line therapy (before using oral antihistamines).

   For the following inhaled corticosteroids, it is recommended that once optimal symptomatic relief is achieved, dosage of the drug should be gradually reduced to the lowest effective dose.

   Do not provide to clients who are pregnant or breastfeeding.

   (The preparations **listed below** are preferred because of low systemic bioavailability and therefore less risk of systemic complications with chronic use. If adequate relief of symptoms has not been obtained after 3 weeks of treatment, discontinue use.

   a. Mometasone furoate nasal spray, (Nasonex®)

      Children 2-11 years of age**,** 50 mcg (1 spray) in each nostril once daily (total daily dose 100 mcg).

      Children 12 years of age and older, 100 mcg (2 sprays) in each nostril daily (total daily dose 200 mcg).

      Priming: Prior to initial use, the pump must be primed by actuating 10 times or until a fine spray appears. The pump may be stored unused for up to 1 week without repriming. If unused for more than 1 week, reprime by actuating 2 times, or until a fine spray appears.

OR

b. Fluticasone propionate nasal spray, (Flonase®)

Children 4 years of age and older: Initial: 50 mcg (1 spray) in each nostril once daily (total daily dose 100 mcg). **Clients** not responding adequately to the 100 mcg daily dose or those with more severe symptoms may use 100 mcg (2 sprays) in each nostril daily (2 sprays in each nostril once daily or 1 spray in each nostril twice daily). Total daily dosage should not exceed 2 sprays in each nostril (200 mcg)/day. Dosing should be at regular intervals. Once adequate control is achieved, the dosage should be decreased to 100 mcg (1 spray in each nostril) daily.

OR

Fluticasone furoate, Veramyst®

Children 2-11 years: Initial: 1 spray (27.5 mcg/spray) per nostril once daily (55 mcg/day); **clients** not adequately responding may use 2 sprays per nostril once daily (110 mcg/day). Once symptoms are controlled, dosage may be reduced to 55 mcg once daily. Total daily dosage should not exceed 2 sprays in each nostril (110 mcg)/day.

Children 12 years of age and older: Initial: 2 sprays (27.5 mcg/spray) per nostril once daily (110 mcg/day). Once symptoms are controlled, dosage may be reduced to 1 spray per nostril once daily (55 mcg/day). Total daily dosage should not exceed 2 sprays in each nostril (110 mcg)/day.

Prime before using for the first time by shaking the contents well and releasing 6 test sprays into the air away from the face. When fluticasone has not been used for more than 30 days or if the cap has been left off the bottle for 5 days or longer, prime the pump again until a fine mist appears. Shake well before each use.

OR

c. Triamcinolone acetonide aqueous suspension nasal spray**,** (Nasacort AQ®)

Children 2-5 years: 55 mcg (1 spray) each nostril once daily (total daily dose 110 mcg).

Children 6-11 years: Initial: 110 mcg/day as 1 spray in each nostril once daily; may increase to 220 mcg/day as 2 sprays in each nostril if response not adequate; once symptoms controlled may reduce to 110 mcg/day.

Children 12 years and older: Initial: 220mcg/day as 2 sprays in each nostril once daily; titrate to lowest effective dose once symptoms are controlled; usual maintenance dose: 110mcg/day as 1 spray in each nostril once daily.

Prime before using for the first time by shaking the contents well and releasing 5 sprays into the air, away from the face. It will remain adequately primed for 2 weeks. If the product is not used for more than 2 weeks, then it can be adequately reprimed with 1 spray.

2. Antihistamines:

a. Cetirizine/Zyrtec® Liquid 5mg/5mL, chewable 5mg tablet**,** tablet 5mg or 10 mg

6 months: ½ teaspoon (2.5mg) every day.
12-23 months: ½ teaspoon (2.5mg) every day or ½ teaspoon (2.5mg) PO every 12 hours.
2 years- 5 years: ½ - 1 teaspoon (2.5 to 5mg) PO every day or ½ teaspoon every 12 hours.
6 years-11 years: 5 to 10mg PO every day.
12 years or older: 1 tab (10 mg) PO every day.

OR

b. Loratadine/Claritin® Liquid 5 mg/5 mL, chewable 5mg tablet, orally disintegrating 5mg tablet, tablet 10mg (available OTC):

2 years-5 years: 1 teaspoon (5mg) PO every day
6 years-11 years: 10mg PO every day.

12 years or older: 10 mg PO every day.

NOTE: Manipulation of dosage within the prescribed ranges may be necessary to achieve symptomatic relief with a minimum of side effects (e.g., drowsiness, dry mouth, nervousness). Medication should be taken for several days/weeks at a time during symptomatic periods; intermittent single dose usage will not be as effective in controlling symptoms as regular dosing.

OR

c. Desloratadine/Clarinex Tablets 5 mg, RediTabs (orally-disintegrating tablets) 5 mg,RediTabs (orally-disintegrating tablets) 2.5 mg,Oral Solution 0.5 mg/1 mL.

Perennial Allergic Rhinitis:
Children 6 to 11 months: 2 mL (1 mg) once daily.
Children 12 months to 5 years:
½ teaspoonful (1.25 mg in 2.5 mL) once daily.
Children 6 to 11 years: 1 teaspoonful (2.5 mg in 5 mL) once daily or one 2.5-mg tablet once daily.
12 years of age and over: 1 table (5mg) once daily.

Seasonal Allergic Rhinitis:
2 to 5 years: ½ teaspoonful (1.25 mg in 2.5 mL) once daily.
Children 6 to 11 years: 1 teaspoonful (2.5 mg in 5 mL) once daily or one 2.5-mg tablet once daily.
12 years of age and over: 1 tablet (5mg) once daily.

3. For children 6 years of age and older: If cost is a factor then another OTC antihistamine such as diphenhydramine or chlorpheniramine may be considered. They have two major disadvantages, however. First, they must be reliably administered q 4-6 hours. Secondly, they may be substantially sedating or, in some children, may cause irritability and hyperactivity. Consult packaging for the appropriate dose and any contraindications. Begin with a single-drug preparation. If necessary, progress to an antihistamine/decongestant combination drug preparation.

CLIENT COUNSELING/EDUCATION

1. Identification and avoidance of the offending antigen.

2. Most antihistamines cause drowsiness. Zyrtec and loratidine are known to be the least sedating. Counsel against driving or other activities that would present a risk if drowsy.

3. For nasal corticosteroids, educate on the importance of priming and shaking the containers before administering medication; necessity of reporting to primary care provider recurrent epistaxis, nasal septum discomfort, irritation, burning and/or stinging; females of child-bearing potential informing clinician if they are or plan to become pregnant or plan to breastfeed. Remind client to drink a few sips of water or liquid after using the nasal spray to help reduce throat irritation. Optimal technique: 1) direct away from the septum, and 2) tilt head slightly forward to prevent swallowing the spray.

4. Some of the OTC products contain phenylalanine, check product labeling for ingredients.

5. Take the following measures as appropriate:
   a. Seasonal
      1) Avoid areas of heavy concentration of ragweed, trees or grass during pollinating season.
      2) Sleep with bedroom windows closed during the appropriate pollinating seasons.
      3) Use an air conditioner with an electrostatic precipitating filter to avoid pollen. Clean filter often.
      4) Change clothes and bathe after long periods outside.
      5) Do not hang clothes or bedding outside.

   b. Perennial
      Create a dust-free bedroom. Use a mouth-and-nose mask when cleaning.
      1) Remove everything from the room, including floor coverings, curtains, drapes, and closet contents. Keep door closed at all times.
      2) Clean the room thoroughly - walls, woodwork, ceiling, floor and closet. Wash the floor.
      3) Cover the mattress, box spring, and pillows with plastic dust-proof covers.
      4) Make sure the room contains a minimum of furniture, washable rugs and curtains. Avoid bed pads, heavy rugs, drapes, upholstered furniture, toys and knick-

knacks.

5) Clean the room daily using a vacuum cleaner, damp cloth or damp mop. Do not use a broom or duster.
6) Keep bedroom windows and doors closed. If hot-air heating is used, cover vents with coarse muslin which is changed frequently.
7) Change furnace air filter frequently.
8) Vacuum stuffed furniture and rugs frequently.
9) Keep pets (dogs and cats) outside, if possible.
10) Avoid damp and dusty places (e.g., attics, basements, closets, storerooms).
11) No stuffed toys if client is dust-sensitive.
12) Use an air conditioner with an electrostatic precipitating filter to avoid dust.
13) No smoking in the house, especially in child's bedroom.

6. **Contact clinic if any problems obtaining medications.**

FOLLOW-UP

Return visit in one week, and periodically as needed.

CONSULTATION/REFERRAL

1. Failure to respond to treatment, or severe/prolonged periods of symptoms not controlled by the above treatment measures (in particular, persistent interference with sleep or school performance).

2. Consideration for immunotherapy (hyposensitization), or leukotriene receptor antagonist.

3. Inability to tolerate antihistamines.

4. Clients requiring almost daily medication for perennial symptoms.

5. Pregnant or breastfeeding **client**.

6. Complications:
   a. Otitis media.
   b. Sinusitis.
   c. Nasal or sinus polyps from longstanding perennial allergic rhinitis.
   d. Asthma.
   e. **History of anaphylaxis.**

REFERENCES

1. Constance R. Uphold and Mary V. Graham, *Clinical Guidelines in Family Practice*, 4th ed., Barmarrae Books, Gainesville, FL, 2003, pp. 362-367. **(Current)**
2. Facts and Comparisons, ***"****Facts and Comparisons*,**"** Wolters Kluwer Health, Inc., 20**11**, http://online.factsandcomparisons.com**/index.aspx** **(March 10, 2011).**
3. **Lexi-Comp, Inc.,** *"Lexi-Comp Online,"* Lexi-Comp, Inc., **Hudson, Ohio,** 20**11,** <http//lexicomponline.com**/crlsql/servlet/crlonline**> **(March 10, 2011)**.
4. L. Lai, T. Casale, J. Stokes, "Pediatric Allergic Rhinitis: Treatment," Immunology and Allergy Clinics of North America, 2005, 25:283-299. **(Current)**
5. Thomas K. McInery, et al, *American Academy of Pediatrics Textbook of Pediatric Care,* Elk Grove Village, IL, 2009, pp. 1818-1821.
6. American Academy of Allergy Asthma and Immunology, "Outdoor allergens," *Tips to remember: Outdoor allergens*, 20**10**, <http://www.aaaai.org/clients/publicedmat/tips/outdoorallergens.stm> (March **10**, 20**11**).
7. D. V. Wallace, M. S. Dykewicz, D. I. Bernstein, J. Blessing-Moore, L. Cox, D. A. Khan, et al., "The Diagnosis and Management of Rhinitis: An Updated Practice Parameter," *Journal of Allergy and Clinical Immunology,* 122(2), August, 2008. **(Current)**
8. *Nasonex*, Schering Corporation, **Whitehouse Station**, NJ, **January** 20**11**.
9. *Veramyst,* GlaxoSmithKline, Research Triangle Park, NC, **February 2011**.
10. **Carol K. Taketomo, et al., "Pediatric Dosage Handbook, 17th ed., Lexi-Comp, Hudson, Ohio, 2010, pp. 283-284, 607-611, 942-945, 1376-1380.**
11. **CLARINEX Tablets and Oral Solution Package Insert, 2010, Schering Corp., a subsidiary of Merck & Co., Inc. Whitehouse Station, NJ, 08889**.

STANDARD NURSE PROTOCOL FOR IMPACTED CERUMEN/EARWAX

DEFINITION Ear wax is a protective waxy secretion produced in the ear canal. It is a lubricant that in most cases eliminates naturally. Because it is a hydrophobic agent (repels water) it serves to protect the delicate skin of the ear canal from maceration secondary to over-hydration.

ETIOLOGY Excessive production of sebum by the sebaceous glands and apocrine sweat glands which may cause occlusion in the external auditory canal. Impaction often occurs after objects are inserted into the ear canal in attempts to clean the ear.

SUBJECTIVE **Client**/care-giver may have:

1. Observed soft, yellow wax or a drier, black and brown wax on the outer surface of the external auditory canal.
2. Noticed hearing impairment or ear fullness.

OBJECTIVE

1. Yellow wax or a drier, black and brown wax on the outer surface of the ear, or in the auditory canal.
2. May or may not detect hearing impairment.
3. Will not be able to see/examine tympanic membrane. (Note: if the TM can be visualized, then by definition, cerumen impaction is not present.

ASSESSMENT Excess Cerumen or Impacted Cerumen

PLAN **THERAPEUTIC**

PHARMACOLOGIC (These agents should be avoided if there is a reason to believe that the tympanic membrane is not intact such as a H/O ventilation tube placement or recent ear discharge.) Also, do not use if there is ear pain, irritation, rash in the ear, or any suspicion of ear drum perforation.

1. Tilt head sideways and instill 4 to 5 drops of Colace, Debrox, hydrogen peroxide **diluted with water as 2 equal parts 50/50**, or mineral oil. Allow the drops to remain in the ear for 15 minutes, **unless using hydrogen peroxide diluted with water then allow drops to remain in the ear for 30 minutes.**

   THEN

2. Gently irrigate the ear with water at body temperature (important) using an ear syringe, or a 25 cc syringe with a butterfly attachment. (Cut off needle **and wings**, insert tube no more than ¼ inch into the ear). **The stream is directed at the ear canal wall adjacent to the cerumen plug, not the tympanic membrane.** May need to repeat after 24 hours.

CLIENT COUNSELING/EDUCATION

1. Instruct to clean the ears properly, preferably with a washcloth.

2. Instruct not to insert Q-tips or other objects in ears; explain that this can cause impaction or injury.

3. Offer reassurance that cerumen production is a normal process.

4. Excessive cerumen production does not equal impaction. If any portion of the eardrum can be visualized or if there is no hearing impairment or discomfort, there is no need to be aggressive about cerumen removal.

5. Occasionally, it may be necessary to instill 1-2 drops hydrogen peroxide **(diluted with water as 2 equal parts 50/50)** 1-2 times/wk to manage recurrent cerumen impaction or to facilitate examination of the middle ear in a child with recurrent ear infections.

6. **Contact clinic if any problems obtaining medications.**

FOLLOW-UP:

As needed.

CONSULTATION/REFERRAL

1. If ear remains impacted, refer to MD/NP for dry technique removal and examination of the tympanic membrane.

2. If tympanic membrane is not intact, ear tube is in place, ear pain, irritation, rash in the ear, or any suspicion of ear drum perforation.

3. **Diabetic or immunocompromised client.**

4. **Client history of injury from syringing.**

5. **Foreign bodies.**
6. **History of ear surgery.**
7. **History of chronic otitis media or other middle ear diseases.**
8. **Uncooperative client.**
9. **Pregnant client.**

REFERENCES

1. William W. Hay et al., *Current Diagnosis & Treatment: Pediatrics*, **20th** ed**.,** McGraw-Hill, **United States of America,** 20**11, <**http://www.accessmedicine.com.medlib-proxy.mercer.edu/resourceTOC.aspx?resourceID=14**>, accessed on March 8, 2011.**
2. Lexi-**Comp, Inc.**, ***"****Lexi-Comp* ***Online," Lexi-Comp, Inc., Hudson, Ohio,*** 20**11,** <**http://lexicomponline.com/crlsql/servlet/crlonline**> **(February 28, 2011)**.
3. Facts and Comparisons, ***"****Facts and Comparisons*,***"*** Wolters Kluwer Health, Inc., 20**11**, <http://online.factsandcomparisons.com**/index.aspx**> **(February 28, 2011).**
4. Thomas K. McInery, et al., *American Academy of Pediatrics Textbook of Pediatric Care,* Elk Grove Village, IL, 2009, p. 121.
5. Constance R. Uphold and Mary V. Graham, *Clinical Guidelines in Family Practice*, 4th ed., Barmarrae Books, Inc., Gainesville, FL, 2003, pp. 348-350. **(Current)**
6. **Lawrence R. Lustig and Joshua Schindler, "Chapter 8. Ear, Nose, & Throat Disorders" (Chapter). S. J.** McPhee **and M. A. Papadakis,** *Current Medical Diagnosis & Treatment* 20**11**, McGraw-Hill, **United States of America,** 20**11, <**http://www.accessmedicine.com.medlib-proxy.mercer.edu/resourceTOC.aspx?resourceID=**1>, accessed on June 8, 2011.**
7. A. J. Singer, E. Sauris, A. W. Viccellio, "*Ceruminolytic Effects of Docusate Sodium: A Randomized, Controlled Trial*," *Annals of Emergency Medicine*, 2000, Volume 36, Issue 3, pp. 228-232. **(Current)**
8. **James R. Roberts, Jerris R. Hedges et. al, " *Clinical Procedures in Emergency Medicine,"* 5th ed. Saunders, an imprint of Elsevier Inc., 2009.< http://www.mdconsult.com/books/page.do?eid=4-u1.0-B978-1-4160-3623-4..00073-0&isbn=978-1-4160-3623-4&uniqId=254566339-4#4-u1.0-B978-1-4160-3623-4..00073-0>, accessed June 8, 2011.**
9. **Mark Silverberg and Michael Lucchesi, "Chapter 237. Common Disorders of the External, Middle, and Inner Ear" (Chapter). J. E. Tintinalli et al: *Tintinalli's Emergency Medicine: A Comprehensive Study Guide, 7th ed.,*< http://www.accessmedicine.com.medlib-proxy.mercer.edu/content.aspx?aID=6387747>, accessed June 8, 2011.**
10. **Timothy C. Stallard "Chapter 30. Emergency Disorders of the Ear, Nose, Sinuses, Oropharynx, & Mouth" (Chapter). C. K. Stone, et al. *Current Diagnosis & Treatment: Emergency Medicine, 6th ed.,* <http://www.accessmedicine.com.medlib-proxy.mercer.edu/content.aspx?aID=3105811>, accessed June 8, 2011.**

11. Alan Williams et al., "Chapter 44. Hearing & Vision Impairment in the Elderly" (Chapter). J. E. South-Paul et al., *Current Diagnosis & Treatment in Family Medicine, 2nd ed.,* <http://www.accessmedicine.com.medlib-proxy.mercer.edu/content.aspx?aID=3036630>, accessed June 8, 2011.

12. Robert **M.** Kliegman, et al., *Nelson Textbook of Pediatrics,* 1**9**th ed., **Elsevier**, Saunders, Philadelphia, PA, 20**11**, <**http://www.mdconsult.com.medlib-proxy.mercer.edu/books/page.do?eid=4-u1.0-B978-1-4377-0755-7..00647-3--sc0020&isbn=978-1-4377-0755-7&sid=1181865590&uniqId=267673234-4#4-u1.0-B978-1-4377-0755-7..00647-3--s0030>, accessed on July 19, 2011.**

STANDARD NURSE PROTOCOL FOR CONJUNCTIVITIS

DEFINITION

Conjunctivitis is an inflammation and/or infection of the conjunctiva – the surface layer of the sclera (bulbar conjunctiva) or the inner surface of the eyelids (palpebral conjunctiva). It is the most common of all pediatric ocular disorders, usually due to a bacterial or viral infection. Less commonly it may result from an allergic reaction, physical or chemical irritation, or as a manifestation of a systemic infection.

Bacterial agents include pneumococcus, staphylococcus aureus, *H. influenza*e and streptococcus. Gonococcal infection in the eye of the newborn usually occurs approximately 48 hours after birth, having been contracted during birth. Discharge is a prominent feature of bacterial conjunctivitis and is purulent or mucopurulent in character.

Viral conjunctivitis is frequently due to adenoviruses and is highly contagious. It may be spread by the fingers of the examiner; therefore, careful hand washing before and after examination is essential. The most striking feature is conjunctiva hyperemia, with or without a watery or mucopurulent discharge.

ETIOLOGY

1. Bacterial infection (incubation period: 2-10 days; 80% of non-allergic conjunctivitis in children)
   a. *Streptococcus pneumonia.*
   b. *Hemophilus influenza.*
   c. *Staphylococcus aureus.*
   d. *Pseudomonas aeruginosa.*
   e. *Neisseria gonorrhoeae.*
   f. *Chlamydia trachomatis* (of particular concern during the first three months of age because of the risk of progression to pneumonia).

2. Viral infection (incubation period: 5-14 days; 20% of non-allergic conjunctivitis in children):
   a. Adenovirus.
   b. May be associated with upper respiratory-tract infection, sore throat, adenopathy, oral herpes simplex.

3. Allergic reaction: Usually associated with such allergens as pollen, molds, animal dander and dust.

4. Foreign body or trauma.

5. Chemical irritants (in newborns may be the result of Silver Nitrate Drops or Erythromycin Ointment).

6. Systemic conditions (see below).

7. Drug-induced.

8. Contact lenses over-wear.

SUBJECTIVE

1. Irritation and sensation of foreign body in eye.

2. Watery eyes.

3. Itching of eyes (more suggestive of allergic conjunctivitis).

4. Mild photophobia.

5. Eyelids stick together.

6. No complaints of decreased vision.

.

7. May have history of contact lens use (caution: high risk).

8. History of seasonal allergies.

OBJECTIVE

1. Infected conjunctivae.

2. Discharge (cannot be used as sole criterion for differentiating viral from bacterial **or** allergy):
   a. Purulent in bacterial infection (often unilateral at onset).
   b. Mucoid or watery in viral infection (often unilateral at onset).
   c. Stringy or watery in allergic reaction (usually bilateral at onset).

3. Chemosis (edema of the bulbar conjunctiva that can, at times, be marked when allergy is the cause).

ASSESSMENT

Conjunctivitis. Specify type of discharge, probably (viral) or (bacterial).

NOTE: Conjunctivitis may be a sign of a number of potentially serious illnesses, including the following:

1. Uveitis.
2. Stevens-Johnson Syndrome (a serious autoimmune condition; rash, toxicity).
3. Kawasaki Disease. (fever, rash, stomatitis).
4. Glaucoma.
5. Periorbital or orbital cellulitis.
6. Acute otitis media (check ears).

7. Herpes conjunctivitis (usually a vesicular rash proximal to the eye and eye pain).

Recheck in 24 hours if not considerably improved, or if worse. If no improvement, refer to a physician.

PLAN **THERAPEUTIC**

PHARMACOLOGIC

Bacterial:

1. Polytrim Opthalmic Solution, if **2** months of age or older: Instill 1 drop in affected eye(s) q **3**h while awake, (maximum of 6 doses/day) for 7-10 days.

OR

2. Polymixin B/Bacitracin (e.g., Polysporin) Opthalmic ointment if 3 months of age or older: Instill ½" ribbon in the affected eye(s) tid for 7-10 days. (Ointment is preferred if it can be safely instilled by the child's caregiver without risk of trauma to the eye in the process.)

If unable to take the above:

1. Erythromycin ointment (e.g., Emycin). Instill ½" ribbon in the affected eye four times daily for 7 –10 days.

OR

2. Tobramycin (e.g. Tobrex) Ophthalmic ointment, if 3 months of age or older: Apply a half-inch ribbon into the affected eye(s) 2 or 3 times a day for 7 days.

OR

3. Tobramycin Ophthalmic Solution, if 3 months of age or older: Instill 1 or 2 drops into the affected eye(s) every 4 hours for 7 days.

Allergic:
Olopatadine HCL 0.1%, (e.g., Patanol) Opthalmic Solution: For 3 years of age and older. Instill 1 drop in affected eye(s) twice daily **(allowing 6-8 hours between doses**). May be better tolerated when refrigerated before use.

If unable to take the above:

Nedocromil (Alocril) Ophthalmic Solution: For 3 years of age and older, instill 1-2 drops in affected eye(s) twice daily. May be better tolerated when refrigerated before use.

OR

Emedastine Difumarate Opthlamic Solution: For 3 years of age and older, instill 1-2 drops in affected eye(s) **up to 4 times a day.**

NOTE: If topical agents are not tolerated or not effective, then oral antihistamines, as recommended in the Allergic Rhinitis nurse protocol, may be used.

NON-PHARMACOLOGIC MEASURES

Cold compresses to relieve discomfort, if mild non-purulent conjunctivitis associated with an upper respiratory infection or allergic conjunctivitis.

CLIENT EDUCATION/COUNSELING

1. Viral conjunctivitis may last up to 12-14 days, but commonly for 3-5 days.

2. Bacterial conjunctivitis should respond to treatment within 2-3 days.

3. Hands must be washed before and after application of ophthalmic ointment or solution. Instruct in hand washing technique and disposal of contaminated tissues.

4. Do not share bath cloths/towels.

5. Seek care or return to clinic in 24 hours if no improvement.

6. School or daycare attendance: Check with school. **American Academy of Pediatrics** position is that children with infectious conjunctivitis under treatment may attend school provided reasonable precautions are taken to avoid close contact such as wrestling in physical education class. Children with allergic conjunctivitis may attend school. (A common school policy is to only allow a child to return if ‘treatment’ has been initiated. For

this reason it is reasonable at times to treat conjunctivitis with minimal discharge with an anti-bacterial eye drop so that the child may return to school.)

7. May use cold, wet compresses. To clean eyes, use cotton balls moistened with water. Use a fresh cotton ball with each wipe.

8. Do not use the child's eye medicine for anyone else.

9. Contact clinic if any problems obtaining medications.

FOLLOW-UP:

In 2 to 3 days if no improvement; call back sooner if symptoms worsen or there is increased pain.

CONSULTATION/REFERRAL

1. Infants less than three months of age (because of *Chlamydia trachomatis* concern). Refer urgently if purulent discharge started between 2 and 5 days of age. This could represent gonorrhea and may require systemic antibiotics without delay**. NOTE:** If the discharge started in the first 24 hours this is typical of chemical conjunctivitis secondary to the instillation of drops at birth to prevent gonorrhea infection and does not require referral or treatment.

2. If a physician's note is necessary to re-enter school.

3. No improvement in 24 hours after initiation of treatment.

4. Foreign body, trauma or chemical injury.

5. Moderate to severe eye pain; any visual disturbance, including blurring.

6. Any conjunctivitis that might be gonococcal, regardless of age, (very copious discharge, gonococcus exposure).

7. Any irregularities of pupil size or reaction to light.

8. All contact lens wearers (possible infected corneal abrasion).

9. Any redness of eyelids.

10. Marked photophobia.

11. Acting sick, with significant lethargy or headache

12. A vesicular rash near the eye (Herpes).

13. **Pregnant or breastfeeding client.**

REFERENCES

1. David L. Heymann, *Control of Communicable Diseases Man**ual***, 1**9**th ed., American Public Health Association, 200**8**, p**p**. **142-143**. (Current)
2. Constance R. Uphold and Mary V. Graham, *Clinical Guidelines in Family Practice*, 4th ed., Barmarrae Books, Gainesville, FL, 2003, pp. 326-329. **(Current)**
3. Sarah Long, *Principles and Practice of Pediatric Infectious Disease*, 3rd ed., **Elsevier, China,** 2008, **<http://www.mdconsult.com.medlib-proxy.mercer.edu/books/page.do?eid=4-u1.0-B978-0-7020-3468-8..50002-X&isbn=978-0-7020-3468-8&type=bookPage&sectionEid=4-u1.0-B978-0-7020-3468-8..50002-X&uniqId=236652941-2#4-u1.0-B978-0-7020-3468-8..50002-X>, accessed on March 4, 2011.**
4. **Committee on Infectious Diseases,** American Academy of Pediatrics**, Larry K. Pickering, ed.,** *Red Book®**: 2009** Report of the Committee on Infectious Diseases* **- 28th ed., American Academy of Pediatrics, United States of America, 2009, <http://online.statref.com/document.aspx?fxid=76&docid=59>, accessed on February 25, 2011.**
5. Lexi-**Comp, Inc., *"Lexi-Comp Online,"*** Lexi-Comp**,** Inc**., Hudson, Ohio,** 20**11**, <**http://lexicomponline.com/crlsql/servlet/crlonline**> **(April 20,).**
6. Facts and Comparisons, **"***Facts and Comparisons*,**"** Wolters Kluwer Health, Inc., 20**11**, **<**http://online.factsandcomparisons.com**/index.aspx**> **(February 25, 2011).**
7. Thomas K. McInery, et al., *American Academy of Pediatrics Textbook of Pediatric Care,* Elk Grove Village, IL, 2009, pp.1702-1706, 2222 and 2361.
8. Robert Kliegman, et al., *Nelson Textbook of Pediatrics,* 18th ed., Saunders, Philadelphia, PA, 2007, pp. 978, 2588-2590. **(Current)**
9. Rose W. Boynton, et al., *Manual of Ambulatory Pediatrics*, 6th ed., Wolters Kluwer Health, Philadelphia, 2009, pp. 264-269.
10. Children's Healthcare of Atlanta, et al., *Georgia School Health Resource Manual,* 2009. **(Current)**

STANDARD NURSE PROTOCOL FOR CONSTIPATION

DEFINITION Bowel movements which are associated with the passage of hard, dry, often painful, stools. Stool frequency is not a primary consideration when diagnosing constipation. Infrequent passage of stools that are soft and easily passed does not constitute constipation. In fact, in exclusively breastfed infants after the first month of life, this is common and not a concern.

ETIOLOGY Acute Constipation

1. Insufficient amount of fiber and/or fluid in the diet.
2. Decreased physical activity.
3. Emotional upset.
4. Uncomfortable circumstances for defecating.
5. Disruption of usual daily routine.
6. Aggressive toilet training techniques.

Chronic Constipation

1. Psychogenic stool-holding.
2. Chronic neuromuscular disorders.
3. Hirschsprung's disease.
4. Hypothyroidism.
5. Acute constipation that has not been adequately treated, resulting in an enlarged colon with decreased contractile strength (known as the 'vicious cycle' of constipation).

SUBJECTIVE Acute Constipation

1. Pain on defecation.
2. Stools are hard, dry.
3. Straining on defecation.
4. History of blood-tinged stools.

5. Mild abdominal pain.

6. Decrease in frequency of defecation from usual pattern may be taken as a sign of constipation if it is associated with other symptoms such as hard, dry stools.

Chronic Constipation

1. Psychogenic stool-holding:
   a. Onset in late infancy or early childhood.
   b. Large bowel movements at long intervals.
   c. Fecal incontinence (encopresis).
   d. Behavior problems.

2. Chronic neuromuscular disease:
   a. Other developmental problems.
   b. Mild abdominal pain.

3. Hirschsprung's disease:
   a. Abdominal distension.
   b. Soiling and retentive behavior – rare.
   c. May present at any age but most become apparent at birth or in early infancy.
   d. Anorexia and vomiting in early infancy.
   e. First stool more than 24 hours after birth.

4. Hypothyroidism:
   a. Poor feeding.
   b. Vomiting.

OBJECTIVE

Acute Constipation

1. Physical exam may be normal.

2. Anal fissure, marked diaper dermatitis or perianal abscess.

3. Mild abdominal distention with a palpable, firm stool apparent on abdominal and rectal exam.

Chronic Constipation

1. Physical exam may be normal.

2. Abdominal distention with a palpable firm stool apparent on abdominal and rectal examination. With Hirshprung's disease

there will be no stool in the rectum on rectal examination. The obstruction is above the rectum.

3. Muscle weakness, sluggish reflexes (hypothyroidism), dimple on lower back.

ASSESSMENT

1. Can be a normal child with a variation of defecation patterns that is within normal limits. (If normal variation is in pattern only, then BMs should be soft and not painful.)

2. Intestinal obstruction (usually associated with abdominal pain and vomiting).

3. Constipation, acute or chronic.

PLAN **THERAPEUTIC**

NON-PHARMACOLOGIC MEASURES

1. Encourage increased water intake.

   a. Breastfed infants - Extra water supplementation is usually not necessary with adequate breast milk supply.
   b. Formula fed infants - 1-2 oz of water between feedings. Ensure proper mixing/concentrating of infant formula prior to recommending additional water.
   c. Children - Offer water frequently during the day.

2. If anal fissure, suggest warm Sitz baths, gentle cleansing, petroleum jelly to anus.

3. Increase in the diet the amount of fruits and vegetables and other high fiber foods such as whole grains. Restrict milk to normal volume for age. Add 2-4 oz per day of apple, prune, pear or plum juice. Use a dropper if not yet introduced to an artificial nipple.

PHARMACOLOGIC

For client with acute constipation (**w**ith symptoms such as pain, irritability, malaise)

1. Stimulation of stool passage:

a. **Infants and children**-1 month to 2 years: Glycerin

Suppository: **1 infant suppository once per day until stool appears up to a maximum of 3 days.**

b. **Children** 2 **through 5** years: **1 infant suppository (Fleet Pedialax or Colace Infant/Children**)
OR
2 to 5 ml of rectal solution (Fleet **Baby Lax**) **once per day until stool appears up to a maximum of 3 days.**

c. **Children 6 years or older**: **1 adult suppository (Fleet Glycerin, Colace Adult/Children, Sani-Supp)**
OR
5-15 ml rectal solution as enema (Fleet Liquid Glycerin Suppositories) once per day until stool appears up to a maximum of 3 days.

2. For use after initial relief from above. **A brief course of the Sorbitol 70% solution or Docusate sodium (as below) may be helpful to restore regularity. Should not use for more than 5-7 days.**

a. **Sorbitol 70% Solution**
Children 2-11 years: Oral: 2 mL/kg/day in 2 divided doses
Children 12 years of age and older and Adults: Oral: 30-150 mL daily either as one dose or 2 divided doses

OR

b. Docusate sodium (Colace) 5 mg/kg/day.
- **1)** Age less than 3 years: Orally 10-40 mg/day, **in** divided **doses** from 1-4 times a day.
- **2)** Ages 3 **through 5** years: Orally 20-60 mg/day, **in** divided **doses** from 1-4 times a day.
- **3)** Ages 6-12 years: Orally 40-150mg/day, **in** divided **doses** from 1-4 doses a day.

NOTE: This softens and prevents excessive drying of the stool. It is effective unless there is voluntary stool retention. Effect should be apparent 1-3 days after first dose.

CLIENT EDUCATION/COUNSELING

1. Infants

    a. Explain the need for adequate fluid intake.

    b. Do not use laxatives such as Castoria or Fleet Phosphate enemas; do not use mineral oil for infants (risk of aspiration pneumonia).

    c. Counsel on overall quality of diet and dietary needs appropriate for the age of the infant:
        1) limit milk intake to that appropriate for age;
        2) avoid constipating fruits such as bananas, apple sauce and pears;
        3) encourage fruit juices with sorbitol such as prune, plum and some apple juices;
        4) discontinue solids if introduced too early;
        5) if infant is consuming milk-based formula, encourage use of formula with prebiotics (e.g., **Gerber Good Start Gentle Plus**), which have been shown to decrease the risk of constipation.

    d. Honey or homegrown herbal teas should not be served to an infant less than 1 year of age since it may contain botulism spores that may cause infantile botulism.

    e. Controlled trials with infant formula have not shown a relationship between iron in the formula and constipation.

    f. Explain vicious cycle: constipation enlarges the colon; an enlarged colon is weaker leading to more constipation. If the cycle is not interrupted, the result can be debilitating for a child and family.

2. Children

    a. Increase fluid (especially water and fruit juices) and fiber intake.

    b. Limit milk intake to that appropriate for age.

    c. Increase intake of whole grains/cereals, dried beans, raw/dried fruits and vegetables, nuts/seeds (if age-appropriate). Add high fiber foods gradually. Encourage a wide variety of foods. Consume fruits and vegetables with peel or skin whenever possible.

d. Increase and encourage regular physical activity when appropriate.

e. Follow-up for several weeks. Acute constipation can evolve into a major problem if not treated properly. (Explain 'vicious cycle' as described above for infants.)

f. Contact clinic if any problems obtaining medications.

FOLLOW-UP:

In 2 to 3 days if no improvement. Seek prompt medical attention if symptoms worsen.

CONSULTATION/REFERRAL

1. Refer to MD/APRN if no improvement in 2-3 days.

2. Acute constipation with symptoms should be referred to MD/APRN promptly (same day) if there is not relief of symptoms with the acute therapy described above **or if symptoms worsen**. Pain or other symptoms, if secondary to constipation, should be entirely relieved with the passage of stool. If this is not the case, then the cause of the child's symptoms may not be constipation and needs prompt diagnosis.

3. Chronic constipation.

4. Signs of emotional/family issues.

5. Infants with any of the following: recurrent constipation, history of first bowel movement after 24 hours of age, any systemic signs such as vomiting or failure to gain weight.

6. Exclusively breastfed infants who clearly have constipation, not just infrequent, soft, easily passed stools.

7. Substantial rectal bleeding – such as blood throughout the stool or blood clots equivalent to one teaspoon or more of blood.

8. Pregnant or breastfeeding.

9. Neonates.

REFERENCES

1. William W. Hay, et al., *Current Pediatric Diagnosis and Treatment*, **20**th ed., McGraw-Hill, **United States of America**, 2011, <**http://www.accessmedicine.com.medlib-proxy.mercer.edu/resourceTOC.aspx?resourceID=14>, accessed on March 8, 2011.**
2. Carol K. Taketomo et al., *Pediatric Dosage Handbook,* , 17th ed., Lexi-Comp, Inc., Cleveland, OH, 2010, pp.194, 468, 650, 1185, . **(Current)**
3. Georgia Dietetic Association, *Diet Manual & Nutrition Practice Guidelines*, 2004. **(Current)**
4. Lexi-**Comp, Inc.,** "*Lexi-Comp* ***Online****,"* Lexi-Comp, Inc., Hudson, Ohio, 20**11**, <**http://www.lexicomponline.com/crlsql/servlet/crlonline**> **(February 25, 2011).**
5. Thomas K. McInery, et al., *American Academy of Pediatrics Textbook of Pediatric Care,* Elk Grove Village, IL, 2009, pp. 1424-1432.
6. Robert **M.** Kliegman, et al., *Nelson Textbook of Pediatrics,* 1**9**th ed., **Elsevier**, Saunders, Philadelphia, PA, 20**11**, <**http://www.mdconsult.com.medlib-proxy.mercer.edu/books/page.do?eid=4-u1.0-B978-1-4377-0755-7..00647-3--sc0020&isbn=978-1-4377-0755-7&sid=1181865590&uniqId=267673234-4#4-u1.0-B978-1-4377-0755-7..00647-3--s0030>, accessed on July 19, 2011.**
7. Constance R. Uphold and Mary V. Graham, *Clinical Guidelines in Family Practice*, 4th ed., Barmarrae Books, Gainesville, FL, 2003, pp. 559-563. **(Current)**
8. R. N. Ashraf, et al., "Additional Water Is Not Needed for Healthy Breast-Fed Babies In A Hot Climate." *Acta Paediatrica*, Dec. 1993, pp. 1007-11. **(Current)**
9. **Baker, Susan S. et. al., Journal of Pediatric Gastroenterology and Nutrition, Clinical Practice Guideline Evaluation and Treatment of Constipation in Infants and Children: Recommendations of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition , Vol. 43, No. 3,_ September 2006 Lippincott Williams & Wilkins, Philadelphia http://www.naspghan.org/user-assets/Documents/pdf/PositionPapers/constipation.guideline.2006.pdf > accessed June 5, 2011.**
10. **Porter, Robert S., Kaplan, Justin L. et. al., The Merck Manual Online, *"Constipation in Children,"*Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc.,Whitehouse Station, N.J., U.S.A. <http://www.merckmanuals.com/professional/sec19/ch266/ch266g.html?qt=constipation%20infant&alt=sh > accessed June 6, 2011.**
11. **Culbert, Timothy P., Banez, Gerard A., "Integrative Approaches to Childhood Constipation and Encopresis", Pediatric Clinics of North America, Vol. 54, Issue 6, December 2007, Saunders Company, http://www.mdconsult.com/das/article/body/257070195-16/jorg=clinics&source=MI&sp=20186634&sid=1167715466/N/620167/1.html?issn=0031-3955> accessed June 7, 2011.**

STANDARD NURSE PROTOCOL FOR CRADLE CAP

DEFINITION A form of seborrheic dermatitis that most babies show at some time during infancy. It is a result of excessive discharge from the sebaceous glands, but the cause is not really understood. The lesions are usually multiple, discrete, circumscribed oval or nummular patches covered with fine, yellowish, slightly-oily scales on an erythematous base.

ETIOLOGY The actual cause is unknown.

SUBJECTIVE As described by the parent/care-giver:

1. Rash on scalp.
2. Dry, scaly flakes that do not resolve with normal shampooing of the head.

OBJECTIVE

1. Dry, scaly, sometimes greasy flakes on the scalp.
2. Running the finger firmly across the scalp surface will loosen the flakes.
3. Thick, yellowish, crusted lesions on the scalp, with scaling.
4. Papules or fissuring behind the ears and on the face.
5. Examine other body areas, seborrheic dermatitis can be focal or spread. Other common sites include: forehead, eyebrows, nasolabial folds, neck, axillae, and diaper area.

ASSESSMENT Cradle Cap

PLAN **THERAPEUTIC**

NON-PHARMACOLOGIC MEASURES

1. Mild Cases:
   a. Massage mineral oil or petroleum jelly into scalp 20 to 30 minutes prior, then shampoo head daily with warm water and baby shampoo using a soft brush.
   b. Rinse well and pat dry after each shampooing.

PHARMACOLOGIC

1. Severe or Unresolved Cases:

a. Use **ketoconazole 1%** shampoo over the counter **(i.e. Nizoral A-D) shampoo scalp twice weekly (at least 3 days should elapse between each shampoo) up to 1 – 2 weeks.**

b. Antibiotic therapy may be indicated for secondary infection.

c. For minor localized areas of seborrhea of the scalp, apply **hydrocortisone 1% cream daily or every other day for a maximum of 2 weeks.**

CLIENT EDUCATION/COUNSELING

1. Review instructions for management.

2. Teach parents that gentle scrubbing over the fontanels is safe.

3. Reassure parents that if proper washing is done faithfully for one week, the scalp should clear.

4. Teach parent to continue treatment for several days after condition clears.

5. **Contact clinic if any problems obtaining medications.**

FOLLOW-UP

In 1 to 2 weeks if no improvement.

CONSULTATION/REFERRAL

1. If no improvement after 10 to 14 days of proper management.

2. Presence of secondary infection.

REFERENCES

1. William W. Hay, et al., *Current Pediatric Diagnosis and Treatment,* **20th** Edition, McGraw-Hill**, United States of America,** 20**11, <http://www.accessmedicine.com.medlib-proxy.mercer.edu/resourceTOC.aspx?resourcID=14>, accessed on March 7, 2011.**
2. Constance R. Uphold and Mary V. Graham, *Clinical Guidelines in Family Practice*, 4th ed., Barmarrae Books, Inc., Gainesville, FL, 2003, pp. 278-279. **(Current)**
3. Thomas K. McInery, et al., *American Academy of Pediatrics Textbook of Pediatric Care,* Elk Grove Village, IL, 2009, pp. 2485-2488.
4. Robert **M.** Kliegman, et al., *Nelson Textbook of Pediatrics,* 1**9**th ed., **Elsevier**, Saunders, Philadelphia, PA, 20**11**, <**http://www.mdconsult.com.medlib-proxy.mercer.edu/books/page.do?eid=4-u1.0-B978-1-4377-0755-7..00647-3--sc0020&isbn=978-1-4377-0755-7&sid=1181865590&uniqId=267673234-4#4-u1.0-B978-1-4377-0755-7..00647-3--s0030>, accessed on July 19, 2011.**
5. Rose Boynton, et al., *Manual of Ambulatory Pediatrics,* 6th ed., Wolter Kluwer, Philadelphia, 2009, pp. 384-385.
6. **Thomas P. Habif, *Clinical Dermatology*. 5th ed. St. Louis, Mo: Mosby; 2009, <http://www.mdconsult.com/books/page.do?eid=4-u1.0-B978-0-7234-3541-9..00017-1--s0855&isbn=978-0-7234-3541-9&type=bookPage&sectionEid=4-u1.0-B978-0-7234-3541-9..00017-1--p312&uniqId=236194843-9#4-u1.0-B978-0-7234-3541-9..00017-1--p312>, accessed on February 25, 2011.**
7. **Nina O'Connor, et al., "Newborn Skin: Part I. Common Rashes*", American Academy of Family Physicians*, 2008, 77(1):47–52*, <http://www.mdconsult.com/das/citation/body/257604937-7/jorg=journal&source=MI&sp=20393975&sid=1168597849/N/20393975/1.html?issn=0002-838X>,* accessed June 9, 2011. (Current)**
8. **G. B. Poindexter,et al., *"*Therapies for pediatric seborrheic dermatitis*", Pediatric Annals*, 2009, 38(6): 333-8.**

STANDARD NURSE PROTOCOL FOR ATOPIC DERMATITIS (ECZEMA)

DEFINITION A chronic inflammatory disorder of the skin manifested by some or all of the following: pruritic, erythematous, papular, vesicular, weeping lesions with scaling or crusting. It tends to occur in **clients** with an inherited allergic predisposition.

ETIOLOGY In part, it is an atopic allergic response. The exact etiology is unknown. It is probably the most common problem in pediatric dermatology. It is not present at birth and usually does not occur before the age of three months. Dry skin resulting in a 'pruritis-scratching-inflammation-more pruritis' cycle clearly plays a role in the etiology of atopic dermatitis. Contrary to popular belief, recent evidence suggests that food allergy is a very uncommon cause of atopic dermatitis. Manifestations are usually secondary to pruritus and scratching of the sensitive skin. The following may initiate and aggravate the itching and inflammation:

1. Dry skin/cold weather.
2. Perspiration/hot humid weather.
3. Irritating clothing (wool, silk).
4. Certain soaps, detergents or cosmetics.
5. Respiratory infections.
6. Frequent bathing.

SUBJECTIVE

1. Pruritus, rash.

2. Often, family history of allergic diseases (asthma, allergic rhinitis, urticaria) or atopic dermatitis.

3. Ask about age of onset.

4. History of asthma or allergic rhinitis (about 50% of cases).

5. Ask about routine skin care, including frequency of bathing and products used.

OBJECTIVE Infancy (0 – 24 months)

1. Rough, erythematous, papular, and occasionally vesicular or scaling eruption, which frequently progresses to weeping and crusting.

2. Onset after two months of age.

3. Location: commonly on cheeks, scalp, post-auricular area, neck, and extensor surface of forearms and legs; occasionally trunk and diaper area.

4. Fairly rapid alternation between quiescent periods and exacerbations.

5. Frequent rubbing of involved areas by infant.

Childhood

1. Less weeping and crusting, and more dry, papular, scaling eruption with hyperpigmentation.

2. Intensely pruritic and excoriated lesions with lichenification due to scratching.

3. Location: Commonly on flexor surfaces of wrist and neck and on antecubital and popliteal areas.

Adolescence and Adulthood

1. Dry, thickening skin, with accentuation of normal lines and folds; often hyperpigmentation.

2. Location: commonly on flexor areas of extremities, eyelids, back of neck and dorsum of hands and feet.

ASSESSMENT Atopic Dermatitis (eczema)

Consider for differential diagnosis:

1. Seborrheic dermatitis (sometimes impossible to differentiate in infancy).

2. Fungal infections of the skin.

3. Contact dermatitis (e.g., poison ivy).

4. Irritant dermatitis (e.g., diaper dermatitis).

5. Xerotic dermatitis (dry skin).

6. Rare systemic diseases of infancy associated with atopic dermatitis-type rash.

7. Scabies.

PLAN THERAPEUTIC

PHARMACOLOGIC

1. Apply sparingly a low-potency steroid. **Do not use on the face, underarms, or groin areas.**

   Infants: 0.5%-**1%** hydrocortisone cream or ointment, twice daily, preferably after bath (cream during hot humid weather, otherwise ointment is best).

   Children **greater than 1 year of age** and **older:**

   1%-**2.5%** hydrocortisone cream or ointment twice to three times daily, preferably after bath (cream during hot humid weather, otherwise ointment is best). Apply until controlled. If treatment is required for more than 2-4 weeks for improvement of symptoms, the client should be counseled to contact the clinic for a referral so that treatment can be adjusted or prolonged.

   OR

   Children greater than 1 year of age and older: Alclometasone dipropionate (Aclovate®) - Apply a thin film of alclometasone cream or ointment to the affected skin areas two or three times daily; massage gently until the medication disappears. Do not use for longer than 3 weeks. If treatment is required for more than 2-3 weeks for improvement of symptoms, the client should be counseled to contact the clinic for a referral so that treatment can be adjusted or prolonged. Do not use on the face, underarms, or groin areas.

2. To help control pruritis use an over-the-counter antihistamine such as diphenhydramine (e.g., Benadryl) orally. The non-sedating antihistamines appear to have only a very modest influence on atopic dermatitis symptoms.
   - **a. Adults and children 12 years of age and older: Diphenhydramine hydrochloride 25-50 mg orally 3 or 4 times a day (not to exceed 300 mg/day).**
   - **b. Children 6 years of age to younger than 12 years of age: Diphenhydramine hydrochloride elixir 12.5 mg/5 mL. May give 12.5 to 25 mg every 4 to 6 hours; do not exceed 150 mg/day.**
   - **c. Children 2 years of age to younger than 6 years**

of age: Diphenhydramine hydrochloride elixir 12.5 mg/5 mL. May give 6.25 mg every 4 to 6 hours; do not exceed 37.5 mg/day.

NOTE: Dosing should be based on severity of symptoms. Do not use topical diphenhydramine.

NON-PHARMACOLOGIC MEASURES

1. For infants:
   a. When adding a new food, try it for 2-3 days and check reactions before going on to another new food.
   b. Dietary restrictions are controversial in atopic dermatitis. Infants should not be given cow's milk, egg whites, chocolate, spiced foods, fish, and nuts during the first 12 months of life. Use caution with wheat, tomatoes, and citrus fruits.
2. Bathe using mild soap (Dove or Cetaphil) and add 1/2 to 1 capful of bath oil (Alpha-Keri or Aquaphor) in water. Apply moisturizer to wet skin after bath. Apply additional moisturizer (see below) three times daily. Avoid excessive bathing.

CLIENT EDUCATION/COUNSELING

1. Avoid factors that initiate pruritus and irritate skin; the key is to reduce or eliminate factors that promote dryness or increased scratching so a severe rash can be prevented.
   a. An environment that is slightly cool and well-humidified is best.
   b. Spend time indoors in warm weather. Humidify home in winter if heating system dries air.
   c. Use warm water for brief baths or showers; hot water causes itching.
   d. Use soft cotton clothing and bedding. Avoid wool, starched or rough clothing.
   e. Place a cotton pad under the bed sheets to further separate an infant from a plastic mattress.
   f. Keep fingernails short.
   g. Recognize that emotional stress can worsen but not cause the disease.
   h. Use liquid detergent when washing clothes plus a second rinse cycle.
2. Instructions for topical care of atopic dermatitis:

a. Wet the skin for 5-20 minutes twice a day.
b. Avoid excessive exposure to soap. Use a mild soap (e.g., Dove or Cetaphil) for cleaning dirty areas.
c. Pat dry and quickly apply the steroid preparation to the wet skin. Apply the steroid only on the areas of dermatitis.
d. Apply lubricant (Eucerin Cream, Cetaphil Cream, Aquaphor Ointment, Vaseline Intensive Care Ointment), to all areas prone to dermatitis, even those not currently inflamed. Avoid lotions (vs. creams and ointments) because their low oil content renders them poor moisturizers. (The lubricant may be applied over the steroid if the steroid is a cream.) Apply the lubricant while the skin is still wet, twice a day.
e. Reapply the lubricant throughout the day if the skin appears dry.
f. As the skin improves, continue the lubricant twice a day, or more frequently. Decrease the topical steroid to once a day, or less frequently, as needed. It may also be possible to decrease the potency of the topical steroid, if a medium or high-potency steroid has been prescribed.
g. Wash hands after applying steroid and lubricant.

3. Emphasize to child and family that this is a chronic condition and exacerbating factors must be controlled for successful management. Also emphasize that good skin care, as described above, will decrease flare-ups and the need for topical steroids.

FOLLOW-UP

Return in one week, or periodically as needed.

CONSULTATION/REFERRAL

1. Children and adolescents with severe skin eruptions. (A prescription for a medium or high-potency steroid may be necessary.)

2. Client with dermatitis with crusting or weeping lesions. Antibiotics may be necessary to treat secondary infection.

3. Ocular complications.

4. Any client with intense itching that may require prescription for antihistamine and/or topical steroids.

5. Client with mild dermatitis that worsens or does not improve after two weeks of treatment.

6. Any client with suspected bacterial or viral infection should be referred immediately to MD.

7. Any client with suspected underlying condition.

8. Consult nutritionist for food-related issues.

9. **Pregnant or breastfeeding client.**

REFERENCES

1. Robert Kliegman, et al., *Nelson Textbook of Pediatrics*, 18th ed., Saunders, 2007.
2. William Hay, et al., *Current Diagnosis & Treatment: Pediatrics*, **20**th ed., McGraw Hill, **United States of America,** 20**11, <**http://www.accessmedicine.com.medlib-proxy.mercer.edu/resourceTOC.aspx?resourceID=14**>, accessed on March 7, 2011**.
3. D. Y. M. Leung, et al., Atopic dermatitis (atopic eczema), I. K. Wolff et al., **(**eds.**)**, Fitzpatrick's Dermatology in General Medicine, 7th ed., Vol. 1, pp. 146–158, 2008. New York: McGraw-Hill. **(Current)**
4. Joseph Lam **and** Sheila F. Friedlander, Atopic Dermatitis: A Review of Recent Advances in the Field, Pediatric Health, 2008, 2(6): 733-747. **(Current)**
5. Thomas **P.** Habif**,** *Clinical Dermatology,* **5th** ed., Mosby, **St. Louis, Mo., 2009, <**http://www.mdconsult.com/books/page.do?eid=4-u1.0-B978-0-7234-3541-9..00017-1--s0855&isbn=978-0-7234-3541-9&type=bookPage&sectionEid=4-u1.0-B978-0-7234-3541-9..00017-1--p312&uniqId=236194843-9#4-u1.0-B978-0-7234-3541-9..00017-1--p312**>, accessed on February 25, 2011.**
6. **Lexi-Comp, Inc.,"*Lexi-Comp Online*," Lexi-Comp, Inc., Hudson, Ohio, 2011, <**http://lexicomponline.com/crlsql**/servlet/crlonline>, accessed on June 9, 2011.**

STANDARD NURSE PROTOCOL FOR MILD CONTACT DERMATITIS

DEFINITION

Acute or chronic inflammatory reaction to substances that come in contact with the skin.

ETIOLOGY

Irritant contact dermatitis is caused by local absorption of an irritant through a break in the skin. The inflammatory response may result from a single exposure to a caustic agent or repeated minor damage to the skin, such as frequent handwashing. Common offending agents include soaps, detergents and oral solvents. Everyone is at risk for developing irritant contact dermatitis, but people vary in their response to the irritant. One form common in infants is irritant diaper dermatitis, caused by trapped moisture and friction at the site of contact with the diaper.

Allergic contact dermatitis is a delayed cell-mediated hypersensitivity reaction to an offending agent. During the sensitization phase, an allergen penetrates the epidermis and produces proliferation of T-lymphocytes. The T-lymphocyte cells enter the blood circulation, so that all the skin becomes hypersensitive to the allergen. This phase may take days or months, depending on the individual's sensitivity, the amount and concentration of the allergen, and the amount of penetration. In the elicitation phase, the antigen specific T-lymphocytes react to subsequent allergen exposure and produce the inflammatory response.

Poison ivy, oak and sumac produce many cases of allergic dermatitis. Other allergens include: fur; leather; nickel; topical antibiotics, antihistamines and anesthetics; shoe dyes or glue; hair dyes; adhesive tape; parabens (found in sunscreens and lotions); and latex.

SUBJECTIVE

1. May have history of exposure to chemicals, detergents, medications, plants, lubricants, cleansers or rubber gloves, metal jewelry (zinc)**,** at home or at work.
2. May have previous history of contact dermatitis.
3. Itching, swelling, rash of varying severity and duration.
4. Ask about response to any treatment used.

OBJECTIVE

1. Note character of eruption. Irritant contact dermatitis usually causes an erythematous dry, scaling eruption with an indistinct margin. Fissures sometimes occur. Chronic exposure may cause weeping lesions. Allergic contact dermatitis usually causes more erythema and edema. Vesicles, characteristic in response to poison ivy, oak and sumac, often weep and form crusts.

2. Note location and pattern of the eruption, which suggest the cause:
   a. Scalp/ears: hair care products, jewelry.
   b. Eyelids: cosmetics, contact lens solutions.
   c. Face/neck: cosmetics, cleansers, medications, jewelry.
   d. Trunk/axilla: deodorants, clothing.
   e. Arms/hands: poison ivy/oak/sumac, soaps, detergents, chemicals, jewelry, rubber gloves.
   f. Legs/feet: clothing, shoes.

ASSESSMENT Contact Dermatitis

PLAN **DIAGNOSTIC STUDIES**

Scraping of lesion for microscopic exam if scabies is suspected.

THERAPEUTIC

PHARMACOLOGIC

1. Lesions occupy less than 2% body surface area (less than 2x size of client's palm) and do not involve the face, apply triamcinolone 0.1% **2 to 3** times daily until clear (usually at least 2 weeks). Use ointments on dry or cracked skin and creams on inflamed or weeping lesions. **Many clients prefer the cream.** May need to taper application (twice daily and once daily) to avoid flare-up.

2. Calamine lotion can be applied as an astringent, protectant, or soothing agent, for conditions such as poison ivy, poison oak, or minor skin irritations. Apply 1 to 4 times daily, avoid if skin is dry. **Do not use on open wounds. Educate client to ensure that they do not obtain Caladryl. Caladryl contains a topical analgesic and is not generally recommended for use in children.**

OR

Zinc oxide can be applied several times a day as required to soothe and promote healing of chapped skin.

3. **In the early stages if drainage is occurring**, wet dressings, using gauze soaked in Domeboro astringent, are an option to control itching when ointments and the measures described below are insufficient to control pruritis

during the first day or two of therapy. They have the advantage of blocking the child's ability to scratch the area. Change every 2-3 hours.

4. For relief of itching:
   a. Adults and children 12 years of age and older: Diphenhydramine hydrochloride 25-50 mg orally 3 or 4 times a day (not to exceed 300 mg/day). Do not give in third trimester of pregnancy or to breastfeeding mother.
   b. Children 6 years of age to younger than 12 years of age: Diphenhydramine hydrochloride elixir 12.5 mg/5 mL.
      May give 12.5 mg to 25 mg every 4 to 6 hours; do not exceed 150 mg/day.
   c. Children 2 years of age to younger than 6 years of age: Diphenhydramine hydrochloride elixir 12.5 mg/5 mL.
      May give 6.25 mg every 4 to 6 hours; do not exceed 37.5 mg/day.

NOTE: Dosing should be based on severity of symptoms. Do not use topical diphenhydramine.

NON PHARMACOLOGIC MEASURES

1. Apply cold, wet compresses for 15-20 minutes 3-4 times a day during the blistering and weeping stage.

2. Cool tub baths, with or without colloidal oatmeal (e.g., Aveeno), to decrease inflammation and itching.

3. Dress the area, if necessary, to control scratching. A wet dressing is least likely to aggravate pruritis (Domeboro solution preferred.)

CLIENT EDUCATION/COUNSELING

1. **Educate on potential causes.** Remove or avoid the irritant/allergen. Wear protective clothing and gloves.

2. For poison ivy, oak, etc:
   a. As soon as possible after exposure, wash the skin with lots of cold water and soap. To wash within 15 minutes is the most effective. If soap and water are not available, alcohol may be used.

b. Poison ivy dermatitis is not spread elsewhere on the body or to another person, by fluid in the blister. It is spread by any oil from the plant still on the skin, clothes or tub. (Taking a shower rather than a bath is less likely to leave resin around the tub.)
c. A rash will appear first on areas of skin which are thinner, or where the plant oil was more concentrated.
d. Teach how to identify poison ivy, oak and sumac.
e. Topical steroids do not work well on vesicles or weeping rashes, but may be used after the blistering stage.

3. Avoid use of topical preparations with benzocaines or other -caines.

4. Emollients (e.g. Eucerin, Lubriderm) can be used to protect and care for dry skin.

5. Advise that patch testing may be required to identify the irritant or allergen if more than one is possible.

6. Contact clinic if any problems obtaining medications.

FOLLOW-UP

Re-evaluate in 2-3 days, if no improvement or signs of bacterial infection occur.

CONSULTATION/REFERRAL

1. If moderate to severe dermatitis (greater than 2% body surface area) or significant involvement of the face (oral steroids can bring about dramatic improvement; the sooner oral steroids are started, the more effective they will be).

2. For suspected secondary bacterial infection (significant extension of erythema and/or tenderness beyond the initial border of the rash; fever [not always present], malaise).

3. If no response to treatment.

4. Pregnant or breastfeeding client.

REFERENCES

1. Klaus Wolff, et al., *Fitzpatrick's Dermatology in General Medicine,* 7th ed., McGraw Hill, **United States of America,** 2008, <**http://www.accessmedicine.com.medlib-proxy.mercer.edu/resourceTOC.aspx?resourceID=505>, accessed on February 25, 2011.**
2. William W. Hay, et al., *Current Pediatric Diagnosis and Treatment*, **20th** ed., McGraw Hill, **United States of America,** 20**11, <http://www.accessmedicine.com.medlib-proxy.mercer.edu/resource TOC.aspx?resourceID=14>, accessed on March 7, 2011**.
3. Facts and Comparisons, ***"****Facts and Comparisons*," Wolters Kluwer Health, Inc., 20**11**, <http://online.factsandcomparisons.com**/index.aspx**> **(February 25, 2011)**.
4. **Carol K. Taketomo, et al., "Pediatric Dosage Handbook, 17th ed., Lexi-Comp, Hudson, Ohio, 2010, pp. 227, 448-450, 1445.**

STANDARD NURSE PROTOCOL FOR DIAPER DERMATITIS (Diaper Rash)

DEFINITION Inflammation of the skin within the area usually covered by the diaper.

ETIOLOGY It can be caused, and aggravated by, many factors acting separately or in combination. Contact irritants such as urine, stool and chemicals may be involved. Bacterial, fungal or viral infections may also cause diaper dermatitis. Other causes include seborrheic dermatitis or atopic dermatitis.

SUBJECTIVE

1. May be no symptoms.
2. Pruritis.
3. Irritability.

OBJECTIVE

1. Irritant contact diaper dermatitis will show mild erythema, especially on the buttocks, genitalia and lower abdomen with sparing in the creases.
2. Bacterial infection will show vesicles and/or pustules in the diaper area.
3. Monilial (candidal) infection will show smooth, shining, “fire-engine” red, papular and nummular rash, with well-circumscribed borders, that extends into creases, and satellite lesions that are outside the margin of the erythema. Oral thrush may also be present. Small pustules are often present on the periphery. Antibiotic use is a predisposing factor.
4. Affected area may be moist and exudative.
5. During healing of moderate to severe dermatitis, skin may be dry and scaly.

ASSESSMENT Diaper dermatitis.

PLAN **THERAPEUTIC**

NON-PHARMACOLOGIC MEASURES

General Treatment and Prevention

1. Keep diaper area dry and free from urine and stool:

    a. Change diapers frequently.

    b. Cleanse diaper area with warm water with each diaper change. Avoid use of soap which can be irritating to skin, and use mild, non-perfumed, non-medicated soap only if absolutely necessary.

    c. Air drying is useful.

    d. Avoid starch, other powders and petroleum jelly.

2. Apply bland ointment (e.g., A&D ointment) or a barrier cream (e.g., zinc oxide or Desitin©) after each diaper change.

3. Avoid the use of commercial diaper wipes, which are often perfumed and irritating.

4. Infants using super absorbent disposable diapers have a significantly lower frequency and severity of diaper rash when compared with infants using cloth diapers. These should be recommended if the dermatitis is recurrent or severe.

PHARMACOLOGIC

1. Hydrocortisone cream 1% (available OTC) should be applied four times a day for rashes with moderate-to-severe inflammation, for 1 to 2 days only.

2. The fixed-combination medications, Mycolog II and Lotrisone, should NOT be used. **(The steroids in combination antifungal-steroid agents are too potent to be used in an occlusive diaper area.)**

NOTE: For cases of diaper dermatitis that have the typical appearance of monilial infection (satellite lesions, etc.) OR for cases of diaper dermatitis that have been present for more than 3 days without improvement add the following to the therapy above:

3. Apply nystatin 100,000 units/gm (e.g., Mycostatin©) cream lightly to affected area under the barrier ointment 3 times a day for 7-10 days. (May repeat cycle once.)

4. Hydrocortisone 1% cream or ointment may help decrease erythema and inflammation and can be applied at the same time

as the nystatin for the first 2 days of treatment.

5. Treat for oral thrush, if evident. (See Thrush - Oral Candidiasis protocol.)

CLIENT EDUCATION/COUNSELING

1. Assure that parent/caregiver knows how to treat, as above.

2. Teach parent to promptly change diapers as needed.

3. Teach parent to gently wash area (do not scrub). If rash is severe and to avoid rubbing – to clean and rinse, use a water bottle to squirt warm water gently and pat dry.

4. Teach parent to use mineral oil on a cotton ball to remove dried feces.

5. For cases of recurrent or severe diaper dermatitis a change in the type of diaper used is a reasonable consideration. Diaper rash is less common with use of super absorbent disposable diapers.

6. **Contact clinic if any problems obtaining medications.**

CONSULTATION/REFERRAL

1. Failure to respond to treatment.

2. If signs of bacterial infection are present.

3. Any rash that is unusual or severe.

FOLLOW-UP

1. **No follow-up needed if symptoms resolve within two weeks.**

2. **Reevaluate if symptoms persist or worsen beyond 2 weeks.**

REFERENCES

1. Robert **M.** Kliegman, et al., *Nelson Textbook of Pediatrics,* 1**9**th ed., **Elsevier**, Saunders, Philadelphia, PA, 20**11**, <**http://www.mdconsult.com.medlib-proxy.mercer.edu/books/page.do?eid=4-u1.0-B978-1-4377-0755-7..00647-3--sc0020&isbn=978-1-4377-0755-7&sid=1181865590&uniqId=267673234-4#4-u1.0-B978-1-4377-0755-7..00647-3--s0030>, accessed on July 19, 2011.**
2. William W. Hay, et al., *Current Pediatric Diagnosis and Treatment*, **20th** ed., McGraw Hill, **United States of America,** 20**11**, <**http://www.accessmedicine.com.medlib-proxy.mercer.edu/resourceTOC.aspx?resourceID=14>, accessed on March 7, 2011.**
3. American Society of Health-Systems Pharmacists, *American Hospital Formulary Service*, 200**11**, p. **3515-3517**.
4. Facts and Comparisons, **"***Facts and Comparisons,"* Wolters Kluwer Health, Inc., 20**11**, <http://online.factsandcomparisons.com**/index.aspx**.> **(February 25, 2011).**
5. Constance R. Uphold and Mary V. Graham, *Clinical Guidelines in Family Practice*, 4th ed., Barmarrae Books, Gainesville, FL, 2003, pp. 275, 286. **(Current)**
6. American Academy of Pediatrics, "Diaper Rash," *Patient Education Online*, June 20**10**, <http://www.patiented.aap.org/content.aspx?aid=5297> (**February 28, 2011**).
7. **Ruchir Agrawal, MD,Dirk M Elston, MD, et al., "Diaper Dermatitis", Medscape Reference, January 4, 2011, < http://emedicine.medscape.com/article/911985-treatment> , accessed on June 1, 2011.**

STANDARD NURSE PROTOCOL FOR DYSLIPIDEMIA SCREENING

DEFINITION **Dyslipidemia is a condition marked by abnormal elevations of Total Cholesterol, Low-Density Lipoprotein cholesterol (LDL), or Triglycerides, or deficiency of High-Density Lipoprotein cholesterol (HDL) in the blood.**

ETIOLOGY **Research indicates that atherosclerosis (fatty deposits of plaque in arterial walls) begins in childhood and progresses over the lifespan. Exact causes of atherosclerosis are not known, but certain factors that may damage arterial walls and lead to atherosclerosis are: smoking, high amounts of certain fats and cholesterol in the blood, high blood pressure and high amounts of sugar in the blood.**

Dyslipidemias are disorders of lipoprotein metabolism that result in high levels of Total Cholesterol, LDL or Triglycerides and low levels of HDL. Dyslipidemia is a risk factor for cardiovascular disease (CVD) in adults. Early identification of youth with dyslipidemia can lead to interventions that may prevent or delay the progress of atherosclerosis and CVD.

The majority of youth will have idiopathic dyslipidemia. A minority of youth will have monogenic or secondary dyslipidemias.

Secondary causes are attributed to sedentary lifestyle, diets high in saturated fat and cholesterol, and conditions such as diabetes, nephrotic syndrome, hypothyroidism, and certain drugs may affect lipid profiles, e.g. progestins, anabolic steroids, corticosteroids and protease inhibitors.

SUBJECTIVE **Client may have:**

1. **Family history (parents or grandparents) of elevated blood cholesterol (level of 240 mg/dL or higher), or a family history (parents or grandparents) of taking cholesterol medication.**

2. **Family history (parents or grandparents) of premature (before 55 years of age) cardiovascular disease (e.g. coronary atherosclerosis, myocardial infarction, angina pectoris, peripheral vascular disease, cerebrovascular disease, or sudden cardiac death.)**

3. **History of tobacco use.**

4. **History of diabetes.**

5. **History of hypertension.**

6. **History of excess alcohol intake.**

7. **Low levels of physical activity (less than one hour of active play/physical activity per day).**

8. **Very high carbohydrate diet (greater than 60 percent of total energy.)**

9. **Diet that includes excessive consumption of saturated (solid) fats and cholesterol. (Greater than 10 percent of calories from saturated fatty acids)**

OBJECTIVE **Client may have:**

1. **BMI at or greater than the 85th percentile.**

ASSESSMENT **At Risk for Dyslipidemia**

PLAN **DIAGNOSTIC STUDIES**

1. **In accordance with the Bright Futures Periodicity Schedule, a routine fasting lipid profile is indicated for clients 18 through 20 years of age.**

2. **For clients 2 through 17 years of age with a positive risk assessment finding in Subjective #1 through #6 or Objective #1 above, obtain fasting lipid profile.**

3. **For clients 2 through 17 years of age with unknown family history, and a positive risk assessment finding in Subjective #1 through #6 or Objective #1 above, obtain fasting lipid profile.**

4. **For clients 2 through 17 years of age with a positive risk assessment finding in Subjective #7, #8 or #9 above consider fasting lipid profile.**

   NOTE: Order lipid profiles that include Total Cholesterol, LDL, HDL and Triglycerides.

Evaluate laboratory results according to the following reference tables:

For youth 2 through 19 years of age:		
	Total Cholesterol (mg/dL)	**LDL (mg/dL)**
Acceptable	**less than 170 mg/dL**	**less than 110 mg/dL**
Borderline	**170-199 mg/dL**	**110-129 mg/dL**
High	**200 mg/dL or greater**	**130 mg/dL or greater**
HDL levels should be greater than or equal to 35 mg/dL **Triglycerides should be less than or equal to 150 mg/dL**		
Adapted from National Cholesterol Education Program guidelines		

For youth 20 years of age:	
Total Cholesterol (mg/dL)	**LDL (mg/dL)**
	less than 100 mg/dL Optimal
less than 200 mg/dL Desirable	**100-129 mg/dL Near Optimal**
200-239 mg/dL Borderline	**130-159 mg/dL Borderline High**
240 mg/dL or greater High	**160 -189 mg/dL High**
	190 mg/dL+ Very High
HDL levels should be greater than or equal to 40 mg/dL **Triglycerides should be less than or equal to 150 mg/dL**	
Adapted from Third Report of the National Cholesterol Education Program Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults	

THERAPEUTIC

NON-PHARMACOLOGIC MEASURES

Initiate Therapeutic Lifestyle Changes for all clients as follows:

1. **Clients 2 years of age or older follow nutritional guidance in accordance with Dietary Guidelines for Americans 2010.**

2. **Physical activity recommendations for youth 2 years of age and older are 60 minutes or more of active play/physical activity per day.**

3. **Lifestyle changes to include smoking avoidance, tobacco use cessation, healthful food and beverage intake, and reducing overweight.**

CLIENT EDUCATION/COUNSELING

1. **Counsel clients and families:**
   a. **to balance caloric intake with physical activity.**
   b. **to consume more fruits, vegetables, fish, whole grains and low fat dairy products.**
   c. **on a low saturated fat, low cholesterol diet.**
      to avoid trans fatty acids; Keep *trans* fatty acid consumption as low as possible by limiting foods that contain synthetic sources of *trans* fats, such as partially hydrogenated oils, and by limiting other solid fats. A large source of trans fatty acids is partially hydrogenated fat used in fried and baked products.
      to consume less than 10 percent of calories from saturated fatty acids by replacing them with monounsaturated and polyunsaturated fatty acids. Foods made up mostly of monounsaturated and polyunsaturated fats are liquid at room temperature, such as:
         1) **olive oil.**
         2) **canola oil.**
         3) **safflower oil.**
         4) **peanut oil.**
         5) **corn oil.**

      Foods that are mainly oil include mayonnaise, certain salad dressings, and soft (tub or squeeze) margarine with no *trans* fats. Check the Nutrition Facts label to

find margarines with 0 grams of *trans* fat. Most oils are high in monounsaturated or polyunsaturated fats, and low in saturated fats. Oils from plant sources (vegetable and nut oils) do not contain any cholesterol. In fact, no foods from plants sources contain cholesterol. A few plant oils, however, including coconut oil and palm kernel oil, are high in saturated fats and for nutritional purposes should be considered to be solid fats.

d. to reduce the intake of calories from solid fats and added sugars to help reduce triglycerides in the bloodstream and assist with weight management. Solid fats are fats that are solid at room temperature, like butter and shortening. Solid fats come from many animal foods and can be made from vegetable oils through a process called hydrogenation. Some common solid fats are:

1) **butter.**
2) **beef fat (tallow, suet).**
3) **chicken fat.**
4) **pork fat (lard).**
5) **stick margarine.**
6) **Shortening.**

e. on ways to increase physical activity and decrease sedentary lifestyles.

f. about associated risk factors such as, smoking, obesity, diabetes and hypertension.

2. Encourage family members with dyslipidemia risk factors to obtain medical evaluations as appropriate.

FOLLOW-UP

1. For client with lipid profile results that are acceptable/desireable values:
   a. Retest in 3 to 5 years per Plan Diagnostic Studies numbers 2 through 4 above.

2. For client with borderline Total Cholesterol or LDL:
   a. Follow-up in 6 to 12 weeks, to reinforce diet and physical activity recommendations.
   b. Retest in 1 to 2 years per Plan Diagnostic Studies numbers 2 through 4 above.

3. **For client with high Total Cholesterol, LDL or Triglycerides, or abnormal low HDL:**
   a. **Follow-up every 6 to 12 weeks, to monitor and reinforce diet and physical activity recommendations.**
   b. **Re-check fasting lipid profile in 6 months; if improving, but still abnormal recheck in 6 to 12 months.**

CONSULTATION/REFERRAL

1. **For client with abnormal lipid profile, referral to a registered dietitian or nutritionist if available for individual counseling and monitoring.**

2. **For client on oral contraceptives refer to Standard Nurse Protocol for Abnormal Lipid Tests While Using Hormonal Contraceptives.**

3. **If abnormal components of lipid profile are not improving on re-checks, refer to physician.**

4. **If client is a tobacco user, referral to local cessation program and/or Georgia Tobacco Quit Line, 1-877-270-STOP (7867).**

5. **Pregnant or lactating client.**

REFERENCES

1. **American Heart Association, "Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III) Final Report," *Circulation Journal of the American Heart Association*, Vol. 106, 2002, pp. 3143-3421. (Current)**

2. **American Health Association, "Cholesterol and Atherosclerosis in Children," 2011, <http://www.americanheart.org/presenter.jhtml?identifier=4499> (March 2, 2011).**

3. **Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. Executive summary of the third report of the National Cholesterol Education Program (NCEP) expert panel on detection, evaluation, and treatment of high blood cholesterol in adults (Adult Treatment Panel III). *JAMA*. 2001;285:2486-2497. Updated 2004. (Current)**

4. **Joseph R. Hagan, Jr., Judith S. Shaw, and Paula M. Duncan (eds.), *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents*, 3rd ed., The American Academy of Pediatrics, Elk Grove Village, IL, 2008, pp. 111, 228, and 235. (Current)**

5. **Stephen R. Daniels, Frank R. Greer and the Committee on Nutrition. Lipid Screening and Cardiovascular Health in Childhood, *Pediatrics,* Vol. 122, No. 1, July 2008, pp. 198-208. (Current)**

6. **U.S. Department of Health and Human Services, National Institutes of Health, National Heart, Lung and Blood Institute, "What Causes Atherosclerosis?" Atherosclerosis, <http://www.nhlbi.nih.gov/health/dci/Diseases/Atherosclerosis/Atherosclerosis_Causes.html> (March 2, 2011).**

7. **U.S. Department of Agriculture and U.S. Department of Health and Human Services, *Dietary Guidelines for Americans, 2010*, 7th ed., Washington, DC: U.S. Government Printing Office, December 2010. <http://www.cnpp.usda.gov/DGAs2010-PolicyDocument.htm> (March 2, 2011).**

STANDARD NURSE PROTOCOL FOR FEVER

DEFINITION

Fever is an elevation in normal body temperature. It is a defense mechanism indicating physiological changes in the body in response to a pathologic process. Fever is traditionally defined as body temperature greater than 38°Celsius (100.4°F) rectally, 37.8°Celsius (100°F) orally, or 37.2°Celsius (98.9°F) axillary.

ETIOLOGY

Varied. Most fevers in children are seen in conjunction with an acute, infectious process. Fever control is of secondary importance to identification and control of its underlying cause.

SUBJECTIVE

1. May have history of exposure to other ill children or adults.
2. May be lethargic and irritable.
3. May have symptoms of illness, such as rhinorrhea, cough, tachypnea, ear pain, dysuria, pain, chills, rash, urinary frequency and sudden enuresis.
4. Fever pattern may be continuous, remittent, intermittent or recurrent.
5. May have history of recent immunization. However, caution is advised when attributing fever to an immunization. Immunized infants can also harbor an infectious process.
6. May have decreased activity level and appetite.
7. May complain of pain or discomfort.

OBJECTIVE

1. Elevated temperature:
   37.2° Celsius (98.9°F) or higher axillary (less reliable than rectal/oral).
   38° Celsius (100.4°F) or higher rectally or 37.8° Celsius (100°F) or higher orally.

   NOTE: Rectal temperatures are recommended for infants and young children. If child is more than 3 years old and cooperative, may be able to obtain reliable oral temperature. Ear and skin temperatures are not reliable. Confirm initial temperatures before ordering diagnostic tests.
2. Diurnal variations; lowest body temperatures occur between 2:00 a.m. - 6:00 a.m.; highest occur between 5:00 p.m. and 7:00 p.m.

3. Assess vital signs (pulse and respiratory rate may be elevated).

4. Level of sensorium may be decreased.

5. Perform complete physical exam (focal findings do not rule out a more serious bacterial infection).

6. Observation is vitally important.

7. May appear toxic (e.g., lethargic or irritable, noninteractive, poor perfusion, hypotension, petechial rash, cardio-respiratory distress, rigors).

ASSESSMENT Fever/Elevated body temperature.

PLAN **DIAGNOSTIC STUDIES**

Laboratory tests as indicated by history and physical findings.

THERAPEUTIC

PHARMACOLOGIC

1. Aspirin should not be the drug of choice for children because of its association with Reye syndrome. When it is desirable to reduce fever for the child's comfort there are two choices: acetaminophen and ibuprofen. Both have high safety profiles but, like all medications, they are not totally benign. They should not be used solely because of an elevated thermometer reading. Ibuprofen has the advantage of every 6 hour administration AND it carries less risk if accidentally given in overdose. Acetaminophen is less prone to GI irritation. Under no circumstances should these two medications be given in alternating fashion to control temperature. **NOTE:** Pepto-Bismol© and Alka-Seltzer© contain aspirin; do not give them to a child with a fever.

2. The decision on whether to treat fever is individualized to each child. Antipyretics do not alter the course of disease, and can cause side effects and toxicity. Temperature elevations do not correlate with severity of cause. The most common reason for treating fever is that fever makes the child uncomfortable. The decision to treat for comfort's
3. sake should be based on how the child looks and behaves, not a temperature threshold. For anti-pyretic use refer to

recommendations in the following dosage charts.

NOTE: Children with phenylketonuira (PKU) should not take Children's Anacin-3©, Children's Tylenol©, Double Strength Tempra©, Junior Strength Tylenol© and Tempra© in the chewable form. These products, in this dosage form, contain aspartame, which is metabolized in the GI tract to phenylalanine following oral administration.

Many children's hospitals have modified their approach to the febrile infant over the past year or two. The reasons are two-fold. First, the *pneumococcal* vaccine has now clearly been shown to have a dramatic effect on the incidence of *pneumococcal* disease in infancy. Secondly, there is increasing concern regarding missed UTIs in infancy. These infections are now known to cause significant renal scarring and to be the cause of kidney problems later in life. For these reasons the new fever guidelines at children's hospitals have been de-emphasizing blood cultures for high fever in infants immunized against *pneumococcus* and have been emphasizing urinalyses and cultures on infants with moderate fevers and selected high-risk criteria for UTI.

DOSAGE RECOMMENDATIONS FOR RELIEF OF FEVER AND PAIN IN CHILDREN

ACETAMINOPHEN

NOTE: Healthcare Professionals should be aware that acetaminophen infant drop products with both the new and old concentrations may be available on pharmacy shelves and in the clinic medication room. Either product may be continued to be used, but the concentration must be verified and used according to labeled dosing directions. Healthcare professionals should verify product concentration prior to providing dosing information. Dose may be repeated every 4 hours, as needed, but do not give more than 5 doses in 24 hours.

Age	Weight	Acetaminophen (80 mg/0.8mL): Infant's Anacin - 3 Drops; Panadol Drops; Tempra Drops; Tylenol Drops.	Acetaminophen (160 mg/5 mL): Children's Anacin - 3 liquid; Panadol Liquid; Childrens Tempra Syrup; Children's Tylenol Suspension.
0-3 Months	6-11 lbs (2.5-5.4 kg)	1/2 dropperful 0.4 mL(40 mg)	1.25 mL (40 mg)
4-11 months	12-17 lbs (5.5-7.9 kg)	1 dropperful 0.8 mL (80 mg)	2.5 mL (80 mg)
12-23 months	18-23 lbs (8.0-10.9 kg)	1 1/2 droppersful 1.2 mL (120 mg)	3.75 mL (120 mg)
2-3 years	24-35 lbs (11-15.9 kg)	2 droppersful 1.6 mL (160 mg)	5 mL (160mg)
4-5 years	36-47 lbs (16 –21.4 kg)		7.5 mL (240 mg)
6-8 years	48-59 lbs (21.8-26.7 kg)		10 mL (320 mg)
9-10 years	**60**-71 lbs (26.6-32.5 kg)		12.5 mL (400mg)
11 years	72-95 lbs (32.6-43 kg)		15 mL (480mg)

Age	Weight	Acetaminophen 80mg Chewable or Disintegrating tablets	Acetaminophen 160mg Chewable or Disintegrating tablets
4-5 years	36-47 lbs (16 –21.4 kg)	(240 mg) 3 Chewable or Disintegrating 80mg tablets	(240 mg) 1 ½ Chewable or Disintegrating 160mg tablets
6-8 years	48-59 lbs (21.8-26.7 kg)	(320 mg) 4 Chewable or Disintegrating 80mg tablets	(320 mg) 2 Chewable or Disintegrating 160mg tablets
9-10 years	58-71 lbs (26.6-32.5 kg)		(400mg) 2 ½ Chewable or Disintegrating 160mg tablets
11 years	72-95 lbs (32.6-43 kg)		(480mg) 3 Chewable or Disintegrating 160mg tablets

IBUPROFEN CHILDREN'S SUSPENSION
(for children ages 6 months and older)
(100 mg/5 mL in 4 and 16 oz bottles, fruit flavored)

(**5-**10 mg/kg/dose q 6-8 hours)

NOTE: Dose may be given every 6 hours.

Age	Weight	Dose
6-11 months	1**2**-17 lbs (**5.5 – 7.9** kg)	1/2 teaspoon (50 mg)
12-23 months	18-23 lbs (8 – 10**.9** kg)	**3/4** teaspoon (**75** mg)
2-3 years	24-35 lbs (11–**15.9** kg)	1 teaspoons (1**0**0 mg)
4-5 years	36-47 lbs (16 – 21 kg)	**1 ½** teaspoons (**15**0mg)
6-8 years	48-59 lbs (22 – 27 kg)	2 teaspoons (2**0**0 mg)
9-10 years	60-71 lbs (27 – 32 kg)	**2 ½** teaspoons (**25**0 mg)
11-12 years	72-95 lbs (33 – 43 kg)	**3** teaspoons (**3**00 mg)

IBUPROFEN CHILDREN'S CHEWABLE TABLETS
(50mg and 100mg tablets)

Age	Weight	Ibuprofen 50mg chewable tablets	Ibuprofen 100mg **c**hewable tablets
4-5 years	36-47 lb(s) (16 – 21 kg)	(**150**mg) **3** chewable 50mg tablets	(**150**mg) **1 ½** chewable 100mg tablets
6-8 years	48-59 lb(s) (22 – 27 kg)		(2**0**0 mg) 2 chewable 100mg tablets
9-10 years	60-71 lb(s) (27 – 32 kg)		(**25**0 mg) **2 ½** chewable 100 mg tablets
11-12 years	72-95 lb(s) (33 – 43 kg)		**(300 mg)** **3** chewable 100mg tablets

NON-PHARMACOLOGIC MEASURES

1. Never use alcohol for sponging, alcohol can be absorbed through the skin.

4. Physical cooling, like sponging, is usually unnecessary and may even be harmful, causing discomfort and chilling. Sponging allows heat to escape without adjusting the hypothalamic thermostat. As cooling begins, the hypothalamus directs the body to produce more heat, causing muscular shivering and an increase in metabolic rate.

5. Give extra clear liquids such as Pedialyte, Enfalyte, water, juices and popsicles to prevent dehydration.

4. Avoid overdressing the febrile child.

CLIENT EDUCATION/COUNSELING

1. Comfort measures.
(Children with fever may not feel hungry and it is not necessary to force them to eat. Offer fluids frequently.

2. How to take rectal, oral, and axillary temperatures (depending on age of child) and to observe for other signs and symptoms which may develop.

3. Safety measures and keeping all medications out of reach of children at all times.

4. Teach parents to read labels and find other sources of acetaminophen that are often in over the counter medications and can cause toxicity.

5. Reinforce when parents should seek further medical evaluation.

6. Infants and children with fever should not attend daycare or school.

FOLLOW-UP

Return visit in 24-48 hours if no improvement.

CONSULTATION/REFERRAL

1. All infants under 3 months old with a temperature elevation.

2. Fever greater than 102.2° F (39° Celsius) and any of the following (high-risk UTI and bacteremia criteria):
   a) Age 3-6 months
   b) Age 6-12 months, uncircumcised male
   c) Age less than 24 months and female
   d) Age 12-24 months, female and temperature for more than 48hrs
   e) Age 6-24 months and less than 2 pneumococcal immunizations

3. Any child with signs of acute illness accompanying the fever, such as meningeal signs, alteration in neurologic status, lethargy, pain, rash, petechiae, dysuria, swollen joints, or tachypnea after fever control or other signs of respiratory distress.

4 Child appears ill and toxic or lethargic.

5. Child has a history of febrile seizures.

6. Any child who has a fever that lasts more than 3 days.

7. Child with immunosuppression, history of chronic conditions such as heart disease or sickle cell disease.

8. Child with prosthetic devices.

9. Note that failure of fever to respond to antipyretics is not predictive of severity of illness.

10. Child with an unusual exposure history (examples: tick bite, foreign travel, unusual animal exposure, etc.).

11. **Pregnant or breastfeeding client.**

REFERENCES

1. Thomas K. McInery, et al., *American Academy of Pediatrics Textbook of Pediatric Care,* Elk Grove Village, IL, 2009, pp. 418-422 and 1515-1528.
2. Rose W. Boynton, et al., *Manual of Ambulatory Pediatrics*, 6th ed., Wolters Kluwer Health, Philadelphia, 2009, pp. 299-302.
3. Constance R. Uphold and Mary V. Graham, *Clinical Guidelines in Family Practice*, 4th ed., Barmarrae Books, Gainesville, FL, 2003, pp. 61, 68, 245. **(Current)**
4. CDC, *Morbidity and Mortality Weekly Report*, "General Recommendations on Immunizations", Vol. 55, No.RR-15, December 1, 2006, pp. 14, 18. (**Current)**
5. **Committee on Infectious Diseases,** American Academy of Pediatrics**, Larry K. Pickering, ed.,** *Red Book®**: 2009** Report of the Committee on Infectious Diseases* **- 28th ed., American Academy of Pediatrics, United States of America, 2009, <http://online.statref.com/document.aspx?fxid=76&docid=59>, accessed on February 25, 2011.**
6. American Society of Health System Pharmacists, *American Hospital Formulary Service*, **2011, pp. 2125-2132, 2243-2250**.
7. **Lexi-Comp, Inc., *"Lexi-Comp Online,"* Lexi-Comp, Inc., Hudson, Ohio, 2011, <http://lexicomponline.com/crlsql/servlet/crlonline> (April 13, 2011).**
8. M. H. Gorelich, "Validation of A Decision Rule Identifying Young Girls At A High Risk for Urinary Tract Infection," *Pediatric Emergency Care*, 2003, Volume 19, pp.162-4. **(Current)**
9. S. C. Chang and L. D. Shortliffe, "Pediatric Urinary Tract Infections," *Pediatric Clinics of North America*, 2006, Vol. 53, pp. 379-400. **(Current)**
10. B. M. Melnyk, "Alternating Acetaminophen and Ibuprofen in The Febrile Child: Examination of the Evidence Regarding Efficacy and Safety," *Pediatric Nursing*, 2003, pp. 379-382. **(Current)**
11. American Academy of Pediatrics, "Febrile Seizures," **August** 20**10**, **http://www.healthychildren.org/English/health-issues/conditions/fever/pages/Febrile-Seizures.aspx?nfstatus=401&nftoken=00000000-0000-0000-0000-000000000000&nfstatusdescription=ERROR%3a+No+local+token,** accessed on March **3**, 20**11**.
12. American Academy of Pediatrics, "Fever**," December** 20**10**, **http://www.healthychildren.org/English/health-issues/conditions/fever/pages/How-to-Take-a-Childs-Temperature.aspx**, accessed on March **3**, 20**11**.
13. **Carol K. Taketomo, et al., "*Pediatric Dosage Handbook, 17th ed.,* Lexi-Comp, Inc., Hudson, Ohio, 2010, pp.36-38, 702-707.**

STANDARD NURSE PROTOCOL FOR IMPETIGO

DEFINITION

A condition involving the superficial layer of the skin and characterized by honey-colored, crusted lesions or seropurulent vesicles surrounded by a narrow margin of erythema. It occurs in two forms: bullous and nonbullous.

Impetigo may be a complication of insect bites, abrasions or dermatitis. Peak incidence is in late summer and early fall. Impetigo is most common in infants and children.

ETIOLOGY

Currently, the most common organism in crusted and bullous impetigo is *Staphylococcus aureus*. Earlier research suggested that most crusted impetigo was streptococcal in origin. Occasionally, both organisms may be found. Streptococcal impetigo is always crusted; bullous impetigo is virtually never streptococcus. Secondary impetigo is nearly always staphylococcal. Severe cellulitis may be a common complication of impetigo.

MRSA impetigo has been reported but, at this time, is a rare presentation of MRSA.

Impetigo may be spread by direct contact with infected persons or it may be secondary to infections of the upper respiratory tract. The incubation period is 2-10 days. The untreated **client** is contagious until lesions are healed; treatment shortens the period of contagiousness.

Acute glomerulonephritis (AGN) can follow streptococcal infections of either the skin or pharnyx. It can occur at any age and the incidence is variable, ranging from 0 to 28%. The median latent period between infection and the development of AGN is 10 days. It is characterized by hematuria and hypertension. Treatment, even early treatment, does little to prevent the occurrence of AGN in the **client** suffering from impetigo; however, it does reduce the spread of impetigo and therefore the development of AGN in other children.

SUBJECTIVE

1. Superficial lesions, anywhere on the body, commonly begin on face.

2. Itching is common, which may spread the infection.

3. Often a history of minor trauma such as insect bites or scratches, or scabies or herpes simplex lesions, provide an entry for the organism.

OBJECTIVE

1. Superficial clear vesicles are present, containing serous fluid that

becomes purulent. The base is erythematous and lesions are surrounded by areas of erythema. May also observe ruptured pustules that have dried centrally and formed a honey-colored crust.

2. Lesions may vary in size from a few millimeters to several centimeters.

3. May have regional lymphadenopathy, which occurs more often in streptococcal than in staphylococcal infections.

4. Bullous impetigo is characterized by very large vesicles (bullae) that rupture and form circular, raw lesions resembling a second degree burn; these eventually form a crust.

ASSESSMENT Impetigo

PLAN **DIAGNOSTIC STUDIES**

1. Check urine for blood and protein if there is any history of unusually dark (smokey) urine.

2. Check blood pressure.

Consider skin culture if there is reason to suspect MRSA: cellulitis, history of MRSA infection in the household, history of a local MRSA outbreak, failure to respond promptly to treatment.

THERAPEUTIC

PHARMACOLOGIC

1. Local treatment may be adequate when only one or two lesions are present and there is no fever present.

   a. Remove crusts by gentle washing with warm water and antiseptic soap.
   b. **Mupirocin** 2% ointment (prescription required) should be applied to bullous lesions 3 times a day for 7-10 days.

OR

Retapamulin 1% ointment (prescription required) Children 9 months of age and older: Topical: Apply to affected area twice daily for 5 days. Total treatment area should not exceed 2% of total body surface area.

c. Reevaluate clients not showing a response in 2 to 3 days. May need culture and sensitivity testing.

2. Systemic treatment is used for multiple lesions, widely separated lesions or lesions that are not showing rapid response to local therapy.

a. Cephalexin (Keflex), suspension of 125 or 250 mg/5 mL, or 500 mg capsules. Give 25-50 mg/kg/**day** orally, divided into 2 **equal** doses **every 12 hours** for 10 days or if younger than 1 year of age divided into 3-4 doses**.**

b. For severe infections, dosages may be increased to 50-100 mg/kg/day, divided into **3-4** doses for 10 days. Maximum dose is **4** gm/day.

c. If over 15 years of age, 500 mg orally **twice daily** for 10 days. Severe infections may require higher doses 250-1000 mg every 6 hours; maximum 4 g/day.

NOTE: Do not use keflex if allergic to penicillin or cephalosporins.

OR

b. Cefadroxil (Duricef), 125, 250, or 500 mg/5 mL suspension or 500 mg capsules. Give 30 mg/kg/**day** divided into two daily oral doses for 10 days. Maximum dose 2 gm/day.

Adult dose is 1 gm twice daily for 10 days.

NOTE: Do not use if allergic to penicillin or cephalosporins.

OR

c. **If allergic to penicillin or cephalosporins:** Erythromycin ethylsuccinate (EryPed, EES, Pediamycin) 200 or 400 mg/5 mL suspension or 200 mg chewable or 400 mg film-coated tablets.

Give 30-50 mg/kg/24 hours, orally in **four equally divided doses every 6 hours** for 10 days. **If twice-a-day dosage is desired, one-half of the total daily dose may be given every 12 hours. Doses may also be given three times daily by administering one-third of the total daily dose every 8 hours.** For more severe infections, the dose may be doubled but not to exceed 3.2 gm/day.

NOTE: Give after meals to decrease gastric upset.

Adolescents and Adults weighing 100 lbs or more: 400mg by mouth every 6 hours for 10 days. For more severe infections, the dose may be doubled but not to exceed 3.2 gm/day.

NOTE: Do not use if allergic to macrolides.

3. Treat all family/household members in close contact who also have impetiginous lesions, to avoid reinfection and further spread.

CLIENT EDUCATION/COUNSELING

1. Instruct family and child in hand-washing techniques.

2. Instruct in handling of linen and clothing separate from the rest of household.

3. Instruct in trimming and keeping nails clean.

4. Instruct in soaking and washing of lesions and application of ointment. Soaking is not indicated if treatment is an oral antibiotic.

5. Give parent information about symptoms of glomerulonephritis to observe for: hematuria; periorbital edema; headache; fever; malaise; or “smokey”-colored urine.

6. May return to school after 24 hours of start of oral or IM antibiotic treatment. No **physical education** until fully resolved.

7. Contact clinic if any problems obtaining medications.

FOLLOW-UP

1. Reevaluate if not showing a response in 2 to 3 days.

2. Recheck in 14 days, or sooner if rash/infection gets worse while on treatment. Note any signs or symptoms of glomerulonephritis (hematuria, periorbital edema, headache, malaise). Check blood pressure. If indicated, check urine for blood and protein (dipstick adequate).

CONSULTATION/REFERRAL

1. If rash is not completely resolved at end of medication regimen.

2. Infants under the age of 2 months.

3. Noncompliance with medication or instructions.

4. If extensive local inflammation or cellulitis.

5. If any signs/symptoms of glomerulonephritis.

6. If multiple recurrences, to evaluate child for nasopharyngeal carriage state of *S. aureus.*

7. Progression after 24 hours of treatment or a culture positive for MRSA.

8. **Pregnant or breastfeeding.**

REFERENCES

1. Constance R. Uphold and Mary V. Graham, *Clinical Guidelines in Family Practice*, 4th ed., Barmarrae Books, Gainesville, FL, 2003, pp. 280-281. **(Current)**
2. Rose W. Boynton, et al., *Manual of Ambulatory Pediatrics,* 6th ed., Wolters Kluwer Health, Philadelphia, 2009, pp. 322-325.
3. **Committee on Infectious Diseases,** American Academy of Pediatrics, **Larry K. Pickering, ed., 2009,** *Red Book®**: 2009** Report of the Committee on Infectious Diseases* **- 28th ed., American Academy of Pediatrics, United States of America, 2009, <http://online.statref.com/document.aspx?fxid=76&docid=59>, accessed on February 25, 2011.**
4. Facts and Comparisons, ***"****Facts and Comparisons*,**"** Wolters Kluwer Health, Inc., 20**11**, <http://online.factsandcomparisons.com**/index.aspx**> **(February 25, 2011**).
5. American Society of Health-Systems Pharmacists, *American Hospital Formulary Service*, **2011,** pp **93, 97-98, 3473-3477**.
6. Lexi-Comp, **Inc.**, ***"Lexi-Comp Online,"*** Lexi-Comp**,** Inc**.**, **Hudson, Ohio,** 20**11**, <**http://lexicomponline.com/crlsql/servlet/crlonline> (February 25, 2011).**
7. Thomas K. McInery, et al , *American Academy of Pediatrics Textbook of Pediatric Care,* Elk Grove Village, IL, 2009, pp. 1853-1855.
8. Robert **M.** Kliegman, et al., *Nelson Textbook of Pediatrics,* 1**9**th ed., **Elsevier**, Saunders, Philadelphia, PA, 20**11**, <**http://www.mdconsult.com.medlib-proxy.mercer.edu/books/page.do?eid=4-u1.0-B978-1-4377-0755-7..00647-3--sc0020&isbn=978-1-4377-0755-7&sid=1181865590&uniqId=267673234-4#4-u1.0-B978-1-4377-0755-7..00647-3--s0030>, accessed on July 19, 2011.**
9. **Carol K. Taketomo, et al., *Pediatric Dosage Handbook,* 17th ed., *Lexi-Comp Inc., Hudson, OH, 2010, pp. 261-262, 282***
10. **N. Scheinfeld, A Primer In Topical Antibiotics For The Skin And Eyes. *J Drugs Dermatol*, 2008, 7(4):409-415.**
11. **B. Boyd and J. Castañar, Retapamulin. *Drugs Future*. 2006, 31:107.**

STANDARD NURSE PROTOCOL FOR PREVENTION AND TREATMENT OF IRON DEFICIENCY WITH OR WITHOUT ANEMIA

DEFINITION

IRON DEFICIENCY ANEMIA is a condition in which there is a reduction in the number of circulating red blood cells secondary to an insufficient amount of body iron stores.

IRON DEFICIENCY WITHOUT ANEMIA in children under 36 months of age, represents a state of total body iron deficiency that has not yet progressed to frank anemia. Approximately 2/3 of children less than 36 months of age with iron deficiency fall into this category. Iron plays an important role in every cell in the body. Iron deficiency, even without frank anemia, can be detrimental to a child's growth and development.

ETIOLOGY

Anemia may result from excessive blood loss, excessive blood cell destruction, or decreased blood cell formation. The latter anemia may result from inhibition of or loss of, bone marrow function, defective nucleoprotein synthesis (as in pernicious anemia) or deficiency of iron in the diet. The most common anemia in children is iron deficiency anemia. **Healthy People 2020 includes the following** statistics **for the years 2005 to 2008**: Ages 1-2 years **– 15.9**% iron deficient**, ages 3-4 years – 5.3% iron deficient, females ages 12-49 years – 10.4% iron deficient. Healthy People 2020 goals are to reduce these rates to 14.3% in 1-2 year old children, 4.3% in 3-4 year old children and 9.4% in 12-49 year old females.**

Most children with iron deficiency are not anemic. Iron deficiency anemia represents the most severe end of the iron-deficiency spectrum. There is evidence that substantial iron deficiency during infancy and early childhood can have long term neurocognitive implications**, and it is likely that by the time iron-deficiency progresses to anemia the neurological consequences have already occurred. Some of these neurodevelopment and behavior effects may be irreversible.** It is, therefore, imperative that iron deficiency be prevented, and if not prevented then diagnosed early and treated aggressively.

Subsets at increased risk for iron deficiency include: infants of diabetic mothers, preterm infants and infants with growth restrictions; breastfed infants older than 6 months not receiving iron supplementation, children living at or below the poverty level, adolescents on low- or no-meat diets and postmenarchal girls.

SUBJECTIVE

1. May be asymptomatic.

2. May report:

a. Poor appetite, inadequate diet, or anorexia.
b. Irritableness or fussiness.
c. Excessive aspirin or antacid consumption.
d. History of intestinal parasites.
e. History of blood loss including GI bleeding or nose bleeds.
f. History of sickle cell anemia or thalassemia.
g. **Easy fatigue ability,** listlessness, decreased social interaction, poor attention to tasks, developmental delays.
h. Pica (**can be a symptom of** iron deficiency anemia **and/or** lead poisoning; iron deficiency anemia **increases risk for lead poisoning).**
i. Excessive milk/dairy intake and limited intake of iron-containing foods.
j. Poor weight gain.
k. Headaches.
l. Gestational severe maternal iron deficiency, maternal hypertension and maternal diabetes mellitus.
m. Infants six months and older and exclusively fed human milk without iron supplementation (e.g. iron fortified cereals, oral iron, pureed meats).
n. Consumption of cow milk in infancy.
o. Heavy menstrual blood loss (greater than or equal to 80mL per month).

OBJECTIVE

1. **In Iron Deficiency Anemia:**
   a. Hemoglobin/hematocrit below acceptable values (see chart on pages **8.77- 8.78**).

2. In Iron Deficiency without Anemia for children less than 36 months old:
   a. Hgb will be in the low-normal range, usually less than 11.5 gm/dL (see chart on pages 8.77- 8.78).

3. Skin pallor; pale mucous membranes.

4. Elevated blood lead level. (Obtain lead level if **indicated reference Georgia Childhood Lead Poisoning Prevention Program Guidelines.)**

5. Premature **(less than 37 weeks gestation)** or low birth weight **(less than 2,500 gm).**

6. Check stool for occult blood if abnormal stool history (tarry, bloody, chronic diarrhea).

7. Check Georgia newborn screening results (and other states as

available) for sickle cell and other hemoglobin variants.

ASSESSMENT

1. Iron deficiency anemia, presumptive **if hemoglobin or hematocrit are below acceptable values and** if:

   a. No suggestion of sickle cell, thalassemia or other chronic illness including recurrent nosebleeds;
   b. No recent infections or inflammatory conditions
   AND
   c. 3 negative stools for occult blood (if performed).

2. A diagnosis of iron deficiency anemia can be **confirmed** following a presumptive diagnosis, if **after iron supplementation** the hemoglobin increases **by at least 1.0 gm/dL or the hematocrit increases by more than 3% in one month.**

NOTE: Iron deficiency anemia may coexist when there is GI bleeding, chronic nosebleeds, lead poisoning or other chronic illness. However, these underlying causes should be addressed, usually by a referral, and the diagnosis of iron deficiency will commonly include a full CBC and reticulocyte count and, possibly, a serum iron measurement. Simple dietary iron-deficiency anemia is most common under 30 months of age. When iron deficiency anemia is identified after 30 months of age more aggressive efforts should be made to identify causes other than simple dietary deficiency such as occult GI blood loss or malabsorption.

3. Iron deficiency without anemia presumptive in a child less than 36 months with a Hgb less than 11.5 gm/dL if:

   a. No suggestion of sickle cell, thalassemia or other chronic illness including recurrent nosebleeds;
   b. No recent infections or inflammatory conditions;
   AND
   c. 3 negative stools for occult blood (if performed).

4. A diagnosis of iron deficiency without anemia can be made with certainty following a presumptive diagnosis, if the hemoglobin increases by 0.5 gm/dL after iron supplementation for 4-6 weeks.

PLAN

THERAPEUTIC

PHARMACOLOGIC

Treatment

1. **For Iron Deficiency with or without Anemia: e**lemental

iron, orally, between meals**.** See accompanying chart (pages **8.77-8**.**78**) for age-appropriate dose **of 3 to 6 mg/kg/day of elemental iron**. If compliance is a problem, the entire daily dose may be given as a single dose, with a meal. **Do not give if client has sickle cell or hemoglobin variants.**

2. Ideally, take iron supplement on an empty stomach to increase absorption. If gastric upset occurs, may take supplement after a meal or on a full stomach. See Client Education.

3. Recheck hemoglobin/hematocrit after 4 weeks of treatment to assess for therapeutic progress and emphasize compliance.

   a. **Iron Deficiency Anemia:** An increase in Hgb of 1gm/dL or more; or Hct 3% or more confirms the diagnosis of iron deficiency anemia.
   b. If confirmed, reinforce dietary counseling, continue iron treatment for 2 more months then recheck hemoglobin or hematocrit.
   c. **Iron Deficiency without Anemia in child less than 36 months old: If hemoglobin increased by 0.5gm/dL, continue iron supplementation for 2 months and recheck hemoglobin at that time.**

Prevention:

4. For prevention of Iron Deficiency in a term breastfed infant who by age 6 months, does not receive sufficient iron from supplementary foods (e.g., greater than or equal to 2 servings of iron-fortified infant cereal), suggest iron drops 1 mg/kg daily of elemental iron until iron-containing complementary foods have been introduced.

NON-PHARMACOLOGIC MEASURES

1. Dietary counseling for iron deficiency anemia in children. Give list of iron-rich and vitamin C-rich foods. Reduce excessive dairy intake. **(e.g., Food Sources of Iron in WIC manual).**

2. Refer to **nutritionist and/or** WIC if child is under 5 years old and meets criteria.

CLIENT EDUCATION/COUNSELING

1. Poison control safety counseling; large doses of iron are poisonous. Store all medications out of reach of children.

2. The appropriate dose should be taken on an empty stomach; if GI upset occurs, advise to take after meals, with 4 oz. of vitamin C-rich juice (orange, pineapple, tomato, grapefruit or apple juice fortified with vitamin C) to increase absorption of iron and decrease gastric irritation. Taking iron with food can decrease the iron absorption by at least 50%. However, this may be preferred if compliance becomes a problem because of gastric discomfort when taking iron between meals. If iron must be given with food for improved compliance then avoid milk (including soy milk), milk products, **tea,** and cereals.

3. **The American Academy of Pediatrics supports exclusive breastfeeding for the first 4 to 6 months of life; if formula fed, only iron-fortified formula should be used.**

4. **Do not feed cow milk during first year of life.**

5. **For children ages 1 to 5 years: suggest limiting their daily total intake of cow's milk, goat's milk or soy milk to no more than 24 oz. per day.**

6. Eat nutritious meals and snacks; limit low nutrient density foods**.**

7. Iron containing liquids may temporarily stain the teeth (enamel is not affected). Can drink liquid iron preparations in water or juice and through a straw to prevent tooth staining.

8. Iron can cause black stools, constipation or diarrhea.

9. **Contact clinic if any problems obtaining medications.**

FOLLOW-UP

1. Repeat hemoglobin/hematocrit levels at two-month intervals.

2. Continue iron supplementation for 2 to 3 months after hemoglobin/hematocrit has normalized.

3. Reassess approximately 6 months after successful treatment is completed.

4. **For client with recent infection or inflammatory condition reassess Hgb/Hct in 4 weeks and follow interventions as per protocol.**

CONSULTATION/REFERRAL

1. For client with presumptive iron deficiency anemia, refer to physician if treatment has been given as directed and Hgb/Hct levels **are not improving or** have not returned to normal values after **one to two** months.

2. For client less than 36 months of age, with presumptive iron deficiency without anemia, refer to physician for further evaluation if treatment has been given as directed and Hgb is not improving or does not increase by 0.5 gm/dL after one month.

3. Consult with physician for any irregularity in response to therapy.

4. Refer if known HIV positive.

5. Chronic nosebleeds and/or GI bleeding.

6. **For prevention of iron deficiency, in breastfed preterm or low birth weight infant between 1 and 12 months of age and not receiving oral iron supplementation, refer to physician for iron supplementation evaluation.**

7. **For prevention of iron deficiency, in formula fed preterm infant in first year of life, and not receiving oral iron supplementation or vitamin preparation with iron, refer to physician for evaluation.**

8. **Infant less than 6 months of age with abnormal hemoglobin or hematocrit.**

9. **All ages with hemoglobin less than 9 grams or hematocrit less than 27%.**

10. **Presence of sickle cell or other hemoglobin variants.**

11. **For female client 18 years and over in Women's Health Program – see Standard Nurse Protocol for Iron Deficiency Anemia With or Without Anemia.**

Georgia D**epartment** of **Public Health** – Comprehensive Child Health Services Unit
Recommended Guidelines for Iron Supplementation (a)

Age	Weight Range (b)						
High risk infant Birth through 5 months	Variable	Premature and low birth-weight Infants, infants of multiple birth, and infants with suspected blood losses should be screened before 6 months of age, preferably at 6-8 weeks postnatal.					
	7 lbs - 17 lbs	Routine screening for iron deficiency anemia is not recommended in the first six months of life.					
		Hemoglobin		Hematocrit		Treatment Regimen (c), (d)	
Age	Weight Range (b)	Acceptable Value	Treatment Value	Acceptable Value	Treatment Value	Dosage	Daily Elemental Iron (Milligrams)
6 mos. through 11 mos.	16 lbs - 22 lbs	≥11.0 gms	10.9 gms or lower	≥ 32.9%	32.8% or lower	15mg**/**0.6 **mL** Ferrous Sulfate Drops bid	15 mg bid (30 mg daily)
12 mos. through 23 mos.	21 lbs - 28 lbs	≥11.0 gms	10.9 gms or lower	≥ 32.9%	32.8% or lower	15mg/0.6 **mL** Ferrous Sulfate Drops bid	15 mg bid (30 mg daily)
2 Years through 4 Years	26 lbs - 42 lbs	≥11.1 gms	11.0 gms or lower	≥ 33.0%	32.9% or lower	1.2 **mL** of 15mg/0.6**mL** Ferrous Sulfate Drops bid or ---------- 1 Ferrous Fumerate Chewable Tabs bid	30 mg bid (60 mg daily) or ---------- 33 mg bid (66 mg daily)
5 Years through 7 Years	40 lbs - 56 lbs	≥11.5 gms	11.4 gms or lower	≥ 34.5%	34.4% or lower	1 Ferrous Sulfate Tab every day	60 mg every day (60 mg daily)
8 Years through 11 Years	54lbs - 90 lbs	≥11.9 gms	11.8 gms or lower	≥ 35.4%	35.3% or lower	1 Ferrous Sulfate Tab every day	60 mg every day (60 mg daily)

a) Source: Centers for Disease Control and Prevention, Morbidity and Mortality Weekly Report. April 3, 1998, Vol. 47, No. RR-3.
b) Source: Growth Charts, Standardized. Department of Health and Human Services, National Center for Health Statistics.
c) Refer to the package insert of iron preparation to correctly calculate the appropriate dosage of elemental iron. Most pediatric chewable preparations (i.e. Foestat, 100 mg) contain 33 mg elemental iron per tablet as ferrous fumarate. Non-chewable preparations for older **clients (**i.e. Feosol, 300 mg) contain 60-65 mg of elemental iron per tablet or capsule as ferrous sulfate. There are many dosage forms of iron, make sure that the correct amount of elemental iron is prescribed. Many different concentration products are available in all forms (liquid, tablet). The doses for the liquid product referred to in the chart are based on the solution concentration of 15mg/0.6ml.
d) Treatment of iron deficiency anemia is 3 **to 6** mg per kilogram per day.

Georgia D**epartment** of **Public Health** – Comprehensive Child Health Services Unit
Recommended Guidelines for Iron Supplementation (a)

		Hemoglobin		Hematocrit		Treatment Regimen (c),(d)	
Age	Weight Range (b)	Acceptable Value	Treatment Value	Acceptable Value	Treatment Value	Dosage	Daily Elemental Iron (Milligrams)
12 Years through 14 Years (Male)	88 lbs - 125 lbs	≥12.5 gms	12.4 gms or lower	≥37.3%	37.2% or lower	1 Ferrous Sulfate Tabs bid	60 mg bid (120 mg daily)
12 Years through 14 Years (Female)	92 lbs - 118 lbs	≥11.8 gms	11.7 gms or lower	≥35.7%	35.6% or lower	1 Ferrous Sulfate Tabs bid	60 mg bid (120 mg daily)
15 Years through 17 Years (Male)	125 lbs - 152 lbs	≥13.3 gms	13.2 gms or lower	≥39.7 %	39.6% or lower	1 Ferrous Sulfate Tabs bid	60 mg bid (120 mg daily)
15 Years through 17 Years (Female)	118 lbs - 125 lbs	≥12.0 gms	11.9 gms or lower	≥35.9 %	35.8% or lower	1 Ferrous Sulfate Tabs bid	60 mg bid (120 mg daily)
18 Years or older (Male)	152 lbs and above	≥13.5 gms	13.4 gms or lower	≥39.9 %	39.8% or lower	1 Ferrous Sulfate Tabs bid	60 mg bid (120 mg daily)
18 Years or older (Female)	125 lbs and above	≥12.0 gms	11.9 gms or lower	≥35.7 %	35.6% or lower	1 Ferrous Sulfate Tabs bid	60 mg bid (120 mg daily)

a) Source: Centers for Disease Control and Prevention, Morbidity and Mortality Weekly Report. April 3, 1998, Vol. 47, No. RR-3.
b) Source: Growth Charts, Standardized. Department of Health and Human Services, National Center for Health Statistics.
c) Refer to the package insert of iron preparation to correctly calculate the appropriate dosage of elemental iron. Most pediatric chewable preparations (i.e. Foestat, 100 mg) contain 33 mg elemental iron per tablet as ferrous fumarate. Non-chewable preparations for older clients (i.e. Feosol, 300 mg) contain 60-65 mg of elemental iron per tablet or capsule as ferrous sulfate. There are many dosage forms of iron, make sure that the correct amount of elemental iron is prescribed. Many different concentration products are available in all forms (liquid, tablet). The doses for the liquid product referred to in the chart are based on the solution concentration of 15mg/0.6ml.
d) Treatment of iron deficiency anemia is 3 **to 6** mg per kilogram per day.

REFERENCES

1. American Society of Health-Systems Pharmacists, *American Hospital Formulary Service*, **2011, pp. 1449-1456.**
2. S. Zlotkin, et al., "Randomized Controlled Trial of Single Versus 3-Times Daily Ferrous Sulfate Drops For Treatment of Anemia," *Pediatrics*, 2001, Volume 108, pp. 613-616. **(Current)**
3. C. Sandoval, et al., "Trends In the Diagnosis and Management of Iron Deficiency Anemia of Infancy and Early Childhood," Hematology/Oncology Clinics of North America, 2004, Volume 18, pp. 1423-38. **(Current**)
4. CDC, "Iron Deficiency United States, 1999-2000", Vol. 51(40); 897-899, October 2002. **(Current)**
5. CDC, "Recommendations To Prevent and Control Iron Deficiency In the United States," *MMWR*, Vol. 47, No. RR-3, April 1998. **(Current)**
6. Thomas K. McInery, et al., *American Academy of Pediatrics Textbook of Pediatric Care,* Elk Grove Village, IL, 2009, pp. 2201-2210.
7. Carol Berkowitz, *Berkowtiz's Pediatrics: A Primary Care Approach,* 3rd ed., USA, 2008, pp. 413-414. **(Current)**
8. Constance R. Uphold and Mary V. Graham, *Clinical Guidelines in Family Practice*, 4th ed., Barmarrae Books, Gainesville, FL, 2003, pp. 925-929. **(Current)**
9. K. C. White, "Anemia Is A Poor Predictor of Iron Deficiency Among Toddlers In the United States: For Heme The Bell Tolls," *Pediatrics,* 2005, p. 315. **(Current)**
10. C. Algarin, et al., "Iron Deficiency Anemia In Infancy: Long-Lasting Effects on Auditory and Visual System Functioning," *Pediatric Research*, 2003, p. 217. **(Current)**
11. American Academy of Pediatrics, *Pediatric Nutrition Handbook*, 6th ed., 2009**, pp. 403-420.**
12. **U.S. Department of Health and Human Services, "Iron Deficiency," *Healthy People 2020,* http://healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicid=29 (March 31, 2011).**
13. **Robert Baker, Frank Greer, and The Committee on Nutrition, The American Academy of Pediatrics, "Clinical Report-Diagnosis and Prevention of Iron Deficiency and Iron-Deficiency Anemia in Infants and Young Children (0-3Years of Age), *Pediatrics*, 2010, pp. 1040-1050.**
14. **Philip Roth, "Anemia in Preterm Infants," *Pediatrics in Review,* Vol. 17, No. 10, October 1996, p. 370.**
15. **Georgia Department of Community Health, "Food Sources of Iron", *2011 Georgia WIC Procedures Manual and State Plan,* p. CT-227.**
16. **Georgia Childhood Lead Poisoning Prevention Program, 2004 Blood Lead Screening Guidelines for Georgia, http://health.state.ga.us/pdfs/epi/lead/approvedscreenguide.05.pdf (March 31, 2011).**
17. **Deepak Kamat, Henry Adam, et al., *American Academy of Pediatrics Quick***

***Reference Guide to Pediatric Care*, USA, 2010, pp. 65-69 and 777-785.**

18. U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, *The Guide to Clinical Preventive Services 2010-2011 Recommendations of the U.S. Preventive Services Task Force,* AHRQ Pub. No. 10-05145, August 2010, pp. 160-162.

STANDARD NURSE PROTOCOL FOR OTITIS EXTERNA

DEFINITION

Inflammation of the external auditory canal and auricle caused by a variety of infectious agents.

ETIOLOGY

The most common cause of otitis externa is accumulation of water in the ear, leading to maceration and desquamation of the lining and conversion of the pH from acid to alkaline (e.g., swimming or frequent showers). It also may be initiated by trauma from scratching (fingernail or cotton-tipped applicator) or poorly-fitting earplugs for swimming. It may also accompany the chronic drainage from a perforated eardrum.

NOTE: It is unusual for an infant to be diagnosed with otitis externa. Before making this diagnosis in an infant, other causes of ear drainage and pain should be ruled out, including perforated otitis media and mastoiditis.

Common causative agents are *Staphylococcus*, *Pseudomonas* species and fungi, such as *Candida albicans*.

SUBJECTIVE

1. Pain and itching in ear(s).
2. Purulent discharge from ear.
3. Occasionally, decrease in hearing, or a sensation of obstruction in the ear(s).

OBJECTIVE

1. Pain aggravated by movement of the pinna tragus (the most common finding).
2. Ear canal may be swollen and erythematous. The client may be resistant to any attempt to insert an ear speculum.
3. Debris and exudate may be seen in the canal; the drum may be impossible to visualize in severe cases.
4. Pre-auricular and/or post-auricular lymph nodes may be enlarged.
5. Swelling or pain over the mastoid should not be observed in uncomplicated otitis externa.

ASSESSMENT Otitis externa

PLAN **DIAGNOSTIC STUDIES**

NOTE: Tympanogram is contraindicated due to pain and need to avoid pressure.

THERAPEUTIC

Therapy centers around the basic principles of: local cleaning of debris and drainage of infection; restoration of the normal acidic protective barrier; judicious use of appropriate local and/or systemic antibiotics; and client education to prevent recurrent infection. Local cleaning is regarded by most otolaryngologists as an essential component of treatment. This is not easily accomplished in small children because of the tenderness of the ear canal. If the child will tolerate gentle irrigation with warm, dilute (1:1) peroxide solution, that would be beneficial. If not tolerated, but the canal is not totally obscured by exudates, it is reasonable to treat with antibiotic drops as advised below and follow-up by telephone in 24 hours. If there has been no improvement, then referral for debridement and instillation of a wick would be indicated.

PHARMACOLOGIC

NOTE: Desquamated epithelium and moist cerumen may need to be removed by gentle irrigation before treatment.

1. For those **clients** with an intact tympanic membrane:
   a. Cortisporin otic **suspension** (not the **solution**), instill 3 drops in affected ear canal 3-4 times a day for 10 days
      OR
   b. Children 1 year of age or older, Cipro HC otic suspension, 3 drops in the affected ear canal twice daily for 7 days.

2. **For each medication above, the bottle of medication should be warmed in hands for 1-2 minutes. Shake suspension well immediately before use.** The head should lie with the affected ear upward for medication instillation, and stay in that position for 1- 5 minutes to facilitate penetration of the drops into the ear canal.

3. May take age-appropriate doses of acetaminophen or ibuprofen for pain.

NON-PHARMACOLOGIC MEASURES

Preventing external otitis may be necessary for individuals susceptible to recurrences, especially children who swim. The most effective prophylaxis is to place ethyl alcohol 70% 1:1 solution with acetic acid 2% (household white vinegar) in the ear canal immediately after swimming or bathing. **OTC commercially prepared drops (such as Swim Ear and Auro-Dry) are also available. Place 4 to 5 drops into affected ears after bathing, showering and swimming.**

CLIENT EDUCATION/COUNSELING

1. Counseling is provided regarding the causes of otitis externa, administration of ear drops, and signs and symptoms which indicate the need for further evaluation.

2. Swimming, particularly during the acute phase, should be avoided. Bathing should be done in such a way as to keep the head out of the water, to avoid introducing soapy water and dirt into the ear canal.

3. Keep fingers and instruments (e.g., cotton swabs) out of the ear canals. There is no need to clean canals with swabs.

4. Contact clinic if any problems obtaining medications.

FOLLOW-UP

Follow-up visit in one week to assess and document effect of treatment.

CONSULTATION/REFERRAL

1. Severe pain, fever or swelling of canal extensive enough to prevent instillation of drops. A cotton wick may be required.

2. Cellulitis of ear or surrounding tissue.

3. Clients with diabetes or other conditions predisposing them to more severe infection.

4. Failure to respond to treatment in 3 days (24 hrs if significant exudate was present and local debridement was not tolerated).

5. More than one recurrence.

6. History or evidence of local sensitivity to neomycin in ear drops.

7. Tympanic membrane is perforated, not intact or not visualized.

REFERENCES

1. Lexi-**Comp, Inc., "***Lexi-Comp* ***Online*****,"** Lexi-Comp, Inc., Hudson, Ohio, 20**11**, <**http://lexicomponline.com/crlsql/servlet/crlonline**> (**February 21, 2011**).
2. Robert **M.** Kliegman, et al., *Nelson Textbook of Pediatrics,* 1**9**th ed., **Elsevier**, Saunders, Philadelphia, PA, 20**11**, <**http://www.mdconsult.com.medlib-proxy.mercer.edu/books/page.do?eid=4-u1.0-B978-1-4377-0755-7..00647-3--sc0020&isbn=978-1-4377-0755-7&sid=1181865590&uniqId=267673234-4#4-u1.0-B978-1-4377-0755-7..00647-3--s0030>, accessed on July 19, 2011.**
2. William W. Hay et al., *Current Pediatric Diagnosis and Treatment,* **20th** ed., McGraw-Hill, **United States of America,** 20**11**, <**http://www.accessmedicine.com.medlib-proxy.mercer.edu/resourceTOC.aspx?resourceID=1**4>, **accessed on March 8, 2011**.
3. American Society of Health-Systems Pharmacists, *American Hospital Formulary Service*, 2009, p. 2898.
4. Constance R. Uphold and Mary V. Graham, *Clinical Guidelines in Family Practice*, 4th ed., Barmarrae Books, Gainesville, FL, 2003, pp. 350-352. **(Current)**
5. Thomas K. McInery, et al., *American Academy of Pediatrics Textbook of Pediatric Care,* Elk Grove Village, IL, 2009, p. 2364.
6. Anne Gershon, et al., *Krugman's Infectious Diseases of Children,* 11th ed., Mosby, 2003, p. 230. **(Current)**

STANDARD NURSE PROTOCOL FOR PEDICULOSIS CAPITIS (Head Lice)

DEFINITION Infestation of the scalp hair by head lice (*Pediculus humanus capitis.)* Most commonly occurs in school-age children.

ETIOLOGY Head lice feed on human blood; they do not live on pets. They are about the size of a sesame seed and do not fly or jump, but crawl very quickly. Females lay eggs (nits) embedded in water-insoluble glue that adheres the eggs to the hair shaft. Nits hatch in approximately **7** to **12 days. Nymphs must feed within hours after hatching to survive**. **After hatching nymphs reach adult stage in 9 to 12 days. Females can begin laying eggs 1.5 days after reaching adulthood.** Head lice **survival time away from a human host is 6-26 hours**. Transmission occurs **primari**ly by direct **head-to-head** contact with an **actively** infested person, **and much less frequently** by contact with infested objects such as hairbrushes, head gear, clothing, carpets, upholstered furniture and beds.

SUBJECTIVE

1. Itching.
2. Rash.
3. Nits or adult lice seen.
4. May give history of exposure to lice.

OBJECTIVE

1. Identification of **live** lice or **viable** nits attached to head hair, eyebrows or eyelashes. Adult lice are hard to find, usually **less** than 1**2/client**. Nits are grayish white to brown in color. Hatched nits (empty egg cases) are translucent. Common sites are the back of the head and behind the ears. Nits are firmly attached to the hairs and cannot be moved up and down the hair shaft like hair casts, scales and dandruff. Recently laid nits are usually, but not always close to the scalp.
2. Small red papules or secondary excoriations.
3. Occipital or cervical lymphadenopathy may be present.

ASSESSMENT Pediculosis capitis (Head lice)

PLAN **THERAPEUTIC**

PHARMACOLOGIC

Instruct pregnant or breastfeeding females **to** consult **with** their physician before using any pediculocides. Instruct person applying pediculocide to wear gloves to avoid direct contact with product.

1. For clients with active infestatons and not suspected to have head lice resistant to permethrin or pyrethrins:

a. Permethrin 1% cream rinse (nonprescription NIX®). Although NIX® is FDA approved for infants at least 2 months old, Non-Pharmacologic methods should be attempted first. Do not use NIX® on clients who are allergic to synthetic pyrethroid or pyrethrin, **or** any of its components or chrysanthemums.

1) Apply NIX® to shampooed **(using nonconditioning shampoo)**, rinsed and towel dried hair. Hair should be damp, not wet. Saturate **the** hair and scalp with Nix crème rinse. **Not using enough pediculocide can result in treatment failure. Keep NIX® out of eyes, nose and mouth. Keep eyes closed and protect with a washcloth.** Leave on for 10 minutes but not longer. Rinse **NIX® out** with warm water and towel dry.
2) Follow Therapeutic measures in Non-Pharmacologic section.
3) Treatment with NIX® may temporarily exacerbate pruritus, erythema, or edema. Clients may experience mild transient burning/stinging, tingling, numbness, or scalp discomfort. If any reaction persists, refer client to a private care provider.

4) **Re-treatment on day 9 is recommended to kill any surviving hatched lice.**

OR

b. Pyrethrins with piperonyl butoxide (**such as** nonprescription A-200®, Pronto® and RID® shampoo. Do not use on **clients** allergic to pyrethrins, chrysanthemums or ragweed. (Only FDA approved for children age 2 and older).

1) Begin with completely dry hair. Saturate hair **and** scalp with solution. **Not using enough pediculocide can result in treatment failure.** Wait 10 minutes, but not longer, add warm water to form lather, and rinse thoroughly. **Keep product out of eyes, nose and mouth. Keep eyes closed and protect with a washcloth.**
2) Follow Therapeutic measures in Non-Pharmacologic section.
3) Re-treatment is recommended on day 9 to kill any hatched lice.

2. **For clients with active infestations of head lice suspected to be resistant** to permethrin and pyrethrins:

a) Malathion (e.g., prescription Ovide). Do not use on **clients** under age 6 years **OR those with asthma**. Direct supervision of an adult is required.
1) Apply **carefully** to dry hair; **completely saturate the scalp and hair. Change child into clean clothing once the malathion has been applied. Keep product out of eyes, nose and mouth. Keep eyes closed and protect with a washcloth.**
2) Allow hair to dry naturally; do not use **a hair dryer or other** electric heat source. Malathion is flammable. Warn to stay away from lighted cigarettes, open flames, and electric heat sources. Do

not cover head with a cap or other occluding material.

3) **Consider applying at bedtime and covering the sleeping pillow with a towel.** Leave on eight (8) hours, then shampoo and rinse thoroughly.

4) Malathion is highly ovicidal, but may not kill all lice eggs. If live lice are seen in 7 to 9 days, repeat Malathion treatment.

3. For infestation of the eyelids or eyebrow, do not use pediculocides. Apply petrolatum ointment to eyelid margins or eyebrow 3 to 5 times daily for 8-10 days, followed by removal of nits.

4. Mild topical antipruritic/anti-inflammatory cream or ointment may be obtained over-the-counter for itching. (May interfere with effectiveness of **topical treatment**).

5. Evidence of secondary infection requires systemic antibiotic treatment. The **client** should be assessed for impetigo treatment or physician referral.

NOTE: Manual removal of nits is advised because pediculocides are not 100% ovicidal, resistance to pediculocides is increasing, **and to avoid diagnostic confusion; which can result in overtreatment with pediculocides. Successful elimination and prevention of head lice infestation is important in effort to limit exposure to pediculocides, which are costly and in some cases ineffective.** Additionally, in a recent study, these products were found in the urine of school children in Georgia, and the long term effects of exposure to pediculocides is unknown.

NON-PHARMACOLOGIC MEASURES

1. Remove nits with a nit comb working through very small sections of hair at a time. Fine toothed metal combs specifically made for removing nits work better for most persons. **Be sure to comb the hair close to the scalp where most unhatched nits will be located. Wet hair combing is recommended over dry hair combing.**

NOTE: Wet hair may slow the lice making them easier to find and remove. Dry combing can cause a build-up of static electricity which has been reported to physically eject an adult louse from the head more than 1 meter.

Check for lice and nits on the comb, and clean the comb often. The hair should be combed thoroughly and meticulously, focusing on small areas of hair at a time. Use good lighting and look carefully for lice and nits by parting off small sections of hair. If possible check outside in daylight. Remov**e any lice and** nits found**. Continue daily nit combing on wet hair, checking for any new lice or nits that were missed; continue for 2-3 weeks until lice and nits are no longer found.**

2. It is important that all other close contacts are checked by a trained person and treated if active infestation is found. If possible, treat all infested persons at the same time. If checking close contacts by a trained person is not practical, advise combing wet hair with a nit comb and then checking the teeth of the comb, to improve detection of live lice and nits.

3. Environmental interventions are directed towards items that the infested person has been in contact with during the 48 hours prior to treatment.

a. Launder clothing, bedding, towels and other items that have been used by the infested person in the past 2 days in hot water and/or dry on high heat **for 20 minutes. Items that are not washable can be dry cleaned or** sealed in a plastic bag **and stored** for 2 weeks**.**
b. Vacuum **furniture**, floorings, car seats **and other fabric covered items.** Fumigation of the home is not recommended, and can be toxic.
c. Soak brushes, combs and hair accessories in hot water (at least 130 degrees F) for 10 minutes.

CLIENT EDUCATION/COUNSELING

1. Instructions vary for pediculocide products. Follow product instructions. If re-treatment is recommended in 7 to 10 days, re-treat on day 9.

2. **Stress importance of checking** all other close contacts **and treating** infested **contacts** at the same time to prevent re-infestation.

3. **Do** not use conditioners, shampoo/conditioner combinations or crème rinses on hair prior to treatment. **Do not re-wash hair for 1-2 days after the lice medication is removed.**

4. Teach **importance of using pediculocides as instructed. It is important to completely saturate the hair and scalp with pediculocide, be sure to include behind the ears and at the back of the neck.**

   NOTE: Inadequate treatment can sometimes be mistaken for drug resistance.

5. **Do** not **get** pediculocides and other chemicals in the eyes, **nose or mouth**. Cover eyes with towel. Instruct child to close eyes tightly. **If pediculocides gets in the eyes,** flush the eyes with large amounts of **cool** water immediately **and seek medical care.**

6. **Using vinegar: water solutions and other products after NIX may interfere with effectiveness and are not recommended.**

7. Using a hair dryer alone, will not eliminate a head lice infestation. Malathion is flammable.

8. **Home remedies to control head lice, (e.g., vinegar, mayonnaise, petroleum jelly, olive oil, isopropyl alcohol, butter and water submersion up to 6 hours have not been proven effective in killing lice or eggs). Lice do not have air sacs or lungs and are not easily suffocated. Lice can survive for prolonged periods without air.**

9. Chemicals such as gasoline and kerosene, or animal products should never be used.

10. Do not use more than one pediculocide product at a time.

11. Itching may persist for 1-2 weeks even after adequate treatment, and should not be considered a reason for reapplication of medication.

12. **Avoid head-to-head or hair-to-hair contact. This is the most common** mode of transmission**. Other ways to** prevent transmission **include:**

    a. Do not share combs, brushes or head gear/coverings with other persons.
    b. Hang coats where they do not touch those of other persons.
    c. **Do not lie on furniture, pillows, stuffed animals or other items that have recently been used by an infested person.**
    d. Practice good handwashing and cleaning under fingernails to prevent transmission especially after scratching.

13. **General Hair Care Recommendations**

    a. Shaving a child's head or cutting the hair very short is not necessary to eliminate the infestation. This can be distressing, especially to young girls and has the potential to carry a social stigma with it.

    b. Modest shortening of the hair to a length acceptable to both the child and the parent will make combing easier.

14. Assure that head lice infestation is a common problem in the school-age population and affects children of all socio-economic groups.

15. Instruct caregiver that child may return to daycare or school the next day after first treatment for head lice. It is not recommended that child be excluded from school based on the presence of nits.

16. Teach as with all medications, to keep pediculocides safely stored, locked out of reach of children.

17. Contact clinic if any problems obtaining medications or questions about treatment.

18. Return to clinic if active infestation is suspected after completion of treatment.

FOLLOW-UP

1. Assess if infestation is active.

2. **Evaluate compliance with treatment plan and response to therapy. Possible reasons for treatment failure include: inadequate treatment, resistant lice, re-infestation.** Re-treatment may be necessary. **Reinforce teaching**. Consider use of an alternate regimen if not responding to treatment.

CONSULTATION/REFERRAL

1. Consult with physician regarding any question of management.

2. Pregnant or breastfeeding client.

REFERENCES

1. Lexi-**Comp, Inc.**, ***"****Lexi-Comp* ***Online****,"* Lexi-Comp, Inc., Hudson, Ohio, 20**11**, <**http://lexicomponline.com/crlsql/servlet/crlonline**> (April 13, **2011**).
2. American Society of Health-Systems Pharmacists, *American Hospital Formulary Service*, <http://www.ahfsdruginformation.com/support/not_in_print/a382528.aspx> **(February 25, 2011)**.
3. American Society of Health-Systems Pharmacists, *American Hospital Formulary Service*, **2011,** pp. **3525-3529.**
4. Constance R. Uphold and Mary V. Graham, *Clinical Guidelines in Family Practice*, 4th ed., Barmarrae Books, Inc., Gainesville, FL, 2003, pp. 294-295. **(Current)**
5. **Committee on Infectious Diseases,** American Academy of Pediatrics**, Larry K. Pickering, ed.,** *Red Book®**: 2009 Report of the Committee on Infectious Diseases* **- 28th ed., American Academy of Pediatrics, United States of America, 2009, <http://online.statref.com/document.aspx?fxid=76&docid=59>, accessed on February 25, 2011.**
6. Children's Healthcare of Atlanta, et al., *Georgia School Health Resource Manual*, 2009. **(Current)**
7. Facts and Comparisons, ***"****Facts and Comparisons*,***"*** Wolters Kluwer Health, Inc., 20**11,** <http://online.factsandcomparisons.com**/index.aspx**> **(May 10, 2011)**.
8. Christine J. Ko and Dirk M. Elston, "Pediculosis," *Journal of the American Academy of Dermatology*, 50:1-12, 2004. **(Current)**
9. Thomas K. McInery, et al., *American Academy of Pediatrics Textbook of Pediatric Care,* Elk Grove Village, IL, 2009, pp. 2181-2182.
10. The National Pediculosis Association, *Welcome to head lice. org*., 20**11** <http://www.headlice.org/> (**February 25, 2011**).
11. CDC, *Head Lice,* 20**10***,* <http://www.cdc.gov/lice/head/index.html> (**February 25, 2011**).
12. I. F. Burgess, "Current treatments for pediculosis capitis," *Current opinion in infectious diseases,* April 2009, pp. 131-136.
13. Bayer Healthcare, LLC, "RID Lice Killing Shampoo," *Lice Elimination with RID*, 2008, <http://www.ridlice.com/elimination-step1.html> (**February 25, 2011**).
14. L. P. Naeher, et al., "Pesticide Exposure Resulting From Treatment of Lice Infestation in School-Aged Children in Georgia," *Environment International*, February 2009, pp. 358-62.
15. Insight Pharmaceuticals, "Product Instructions," *NIX Lice Treatment,* 20**11**, <http://www.nixlice.com/about-products-instructions.php#complete> <http://www.nixlice.com/facts.php> (**February 25, 2011**).
16. **Mark Lebwohl, Lily Clark and Jacob Levitt, "Therapy for Head Lice Based on Life Cycle, Resistance, and Safety Considerations,"** ***Pediatrics*****, 2007, 119: 965-974. (Current)**
17. **Barbara L. Frankowski and Joseph A. Bocchini, Jr. "Clinical Report -Head Lice,"** ***Pediatrics,*** **2010, 126(2):392-403.**

18. **U.S. National Library of Medicine, U.S. Department of Health and Human Services, National Institutes of Health, "Medline Plus Trusted Health Information for You," *Permethrin Topical*, April 15, 2011, <http://www.nlm.nih.gov/medlineplus/druginfo/meds/a698037.html>, (May 10, 2011).**
19. **U.S. National Library of Medicine, U.S. Department of Health and Human Services, National Institutes of Health, "Medline Plus Trusted Health Information for You," *Pyrethrin and Piperonyl Butoxide Topical*, April 15, 2011, <http://www.nlm.nih.gov/medlineplus/druginfo/meds/a601105.html>, (May 10, 2011).**

STANDARD NURSE PROTOCOL FOR PHARYNGITIS

DEFINITION Inflammation of the pharynx, and surrounding lymph tissue (tonsils).

ETIOLOGY Viral causes:

1. Adenoviruses.
2. Coronaviruses.
3. Enteroviruses.
4. Rhinoviruses.
5. Respiratory syncytial virus (RSV).
6. Herpes simplex virus (HSV).
7. Herpangina caused by Coxsackie virus and echovirus.
8. Hand-foot-and-mouth disease caused by Coxsackie virus.
9. Infectious mononucleosis caused by Epstein-Barr virus.
10. Human immunodeficiency virus (HIV).

Bacterial causes:

1. *Group A beta-hemolytic streptococcus* (most frequent bacterial cause).
2. *Neisseria gonorrhoe*ae.
3. *Corynebacterium diphtheriae.*
4. *Group C Streptococcus*.

Other causes:

1. *Mycoplasma pneumoniae*.
2. *Candida albicans*.
3. Kawasaki Disease.
4. Noninfectious causes:
   a. Allergic rhinitis or post-nasal drip.
   b. Mouth breathing.
   c. Trauma.
   d. Exposure to irritants such as cigarette smoke/marijuana.

SUBJECTIVE Client may complain of:

1. Sore throat, difficulty swallowing, sudden onset of fever, headache, abdominal pain, vomiting and malaise.

2. Small oral vesicles or ulcers on tonsils, pharynx, or posterior buccal mucus.

OBJECTIVE

1. Pharyngitis due to *Group A beta-hemolytic streptococcus* (common in school-

age children; uncommon if less than 3 yrs old):
a. Fever.
b. Erythematous pharynx and tonsillar area, often with white or yellow exudate.
c. Anterior cervical lymph nodes are often tender and enlarged.
d. Improper antimicrobial treatment, can lead to serious suppurative (direct extension from pharynx) and nonsuppurative complications arising from immune responses to acute infections (rheumatic fever).
e. A scarlatiniform rash (selected strains) – a blanching erythematous rash with a sandpaper texture that is diffusely distributed but is most prominent in the intertriginous areas.

2. Viral pharyngitis:
a. When multiple small ulcerations are present on examination, this is diagnostic for a viral stomatitis/pharyngitis (usually Coxsackie). Strep will not cause these ulcerations.
b. Significant respiratory symptoms (cough, rhinorrhea, congestion) strongly suggest, but do not prove, a viral etiology.
c. All of the typical findings described for strep pharyngitis above may be present with viral pharyngitis (exudates, nodes, abdominal pain, vomiting, headache). A rash may also accompany a viral pharyngitis. However, it is not generally a 'scarlatiniform' rash; therefore, unless ulcerations are present, it is critical to understand that a viral pharyngitis cannot be distinguished from a strep pharyngitis without laboratory testing.

3. Pharyngitis caused by *Corynebacterium diphtheriae*:
a. Gray pseudomembranous exudate on the nasal mucosa, tonsils, uvula or pharynx.
b. Bleeding occurs when membrane is removed.

4. Pharyngitis caused by *Neisseria gonorrhoeae:*
Usually asymptomatic. Discovered as part of an evaluation of a child for sexual abuse. Also consider: clients who practice orogenital sex, sexually active adolescents.

5. Pharyngitis caused by *Mycoplasma pneumoniae*:
(Uncommon in children less than 5 years of age; common in school age children, adolescents and young adults.)

Signs and symptoms indistinguishable from streptococcal disease unless there is concurrent pneumonia. (Group A and group B streptococci are rarely the causative agents of pneumonia, except in neonates and severely debilitated clients.)

6. Pharyngitis caused by *Candida albicans*:
   a. Filmy, or patchy, white exudate on mucous membranes, Difficult to remove by scraping, causing bleeding.
   b. May have history of antibiotic use, steroid use or are immunocompromised.

7. Peritonsillar abscess (most common in adolescents following tonsillitis):
   a. Begins with typical symptoms e.g., sore throat, fever, dysphagia, malaise, poor appetite. Characterized by muffled 'hot potato' voice, and trismus (contraction of masseter muscles).
   b. PE findings include an asymmetric tonsillar bulge, with swelling into the soft palate and displacement of uvula.
   c. Lymph node enlargement and tenderness common.

8. Pharyngitis due to infectious mononucleosis (mono):
   a. Symptoms and objective findings similar to those for streptococcal pharyngitis.
   b. Spleen may be enlarged.

ASSESSMENT

Pharyngitis: Group A Streptococcal or Viral if none of the following apply:

- Immunocompromised.
- Unimmunized against diphtheria.
- Suspected sexual abuse.
- Signs/symptoms suggesting pneumonia.
- H/O pharyngeal trauma.
- Trismus, neck stiffness, asymmetry of tonsils.

NOTE: If any of the above applies, then referral is indicated.

PLAN

DIAGNOSTIC STUDIES

1. If multiple small ulcers are present on examination, then viral pharyngitis may be assumed. No testing is necessary.

2. Collect specimens for a rapid strep test and throat culture at the same time. If the rapid strep test is negative (may be falsely negative in approximately 10% of cases) and suspicion is high, send throat culture to laboratory. If the rapid strep test is positive, then the swab for culture may be discarded. To maximize yield, both tonsils and the posterior pharynx should be swabbed.

3. Consider Monospot test if client has been ill for at least 5-7 days.

4. Consider CBC with differential. Atypical lymphocytes are seen with mononucleosis.

THERAPEUTIC

PHARMACOLOGIC

1. For presumed viral pharyngitis (presumed based on multiple small ulcers OR a negative rapid strep test), treatment is symptomatic. NOTE: The diagnosis of viral pharyngitis is 'presumed' pending a reliable and prompt culture result. If reliable and prompt (within 3 days of culture) is in doubt, then antibiotic treatment should be considered as described below. Update client allergy information before ordering medications.

2. Additional factors that would weigh in favor of such 'expectant' treatment would be:
   a. close contact with a proven case of strep pharyngitis,
   b. a very typical scarlatiniform rash
   c. unreliable follow-up.

3. Antibiotic treatment for strep throat, if positive throat culture or positive antigen-detection test.

Antibiotic Treatment for Possible and Probable Strep Throat
NOTE: If positive throat culture or positive antigen-detection test.

Antibiotic	Dosage	Duration/Comments
Penicillin V 125 mg/5 mL suspension 250 mg/5 mL suspension 250 mg tablets **OR**	Child ≤ 27 kg**:** 250mg PO bid Child > 27 kg/adult: 500mg PO bid	10 days
Amoxicillin 125mg/5mL suspension 250mg/5mL suspension 250 mg chewable tabs **OR**	Child > 3 months: 50mg/kg/day PO once daily, maximum of 1000mg	10 days
Benzathine penicillin G (When compliance with oral med a concern) **OR**	Child ≤ 27kg: 600,000 units IM x 1 Child >27kg/adult: 1,200,000 units IM x 1	- Observe for 30 minutes after injection, for possible anaphylaxis - To reduce discomfort, bring medication to room temperature before injecting
For penicillin**-**allergic clients:		
Azithromycin (Zithromax) 100mg/ 5mL suspension 200mg/5mL suspension 250mg capsule **OR**	Child ≥ 2 years**:** 12 mg/kg/day PO as a single dose to a max of 500mg	5 days
Cephalexin **125mg/5mL suspension** **250mg/5mL suspension** **250mg capsules or tablets** **500mg capsules or tablets**	**Child 1>year: 25-50 mg/kg/day in equally divided does every 12 hours to a max of 500mg twice per day**	**10 days** **-To be avoided in those with immediate (type I) hypersensitivity to a penicillin**
Clarithromycin 125mg/5ml 250mg/5mL 250mg tablets	Child ≥ 6months: 7.5 mg/kg every 12 hours [maximum, 250 mg twice per day]	10 days

OR		
Clindamycin 75mg/5mL 75mg capsule 150mg capsule	Infant/Child/Adult: 20 mg/kg/day divided in 3 doses [maximum, 1.8 g/day]	10 days

CLIENT EDUCATION/COUNSELING

1. Seek health care immediately if the pain becomes more severe or if dyspnea develops, or if drooling, stiff neck, possible dehydration, difficulty swallowing, or inability to fully open the mouth occurs.

2. Increase fluid intake.

3. Warm saline gargles, lozenges, or hard candy may help soothe sore throat.

4. May use acetaminophen or ibuprofen for pain relief – see acetaminophen & ibuprofen dosage charts. Counsel to not use acetaminophen and ibuprofen in alternating fashion.

5. Teach parents to read labels and find other sources of acetaminophen that are often in over the counter medications and can cause toxicity.

6. Clients with streptococcal pharyngitis may return to school or work after they have been on antibiotic therapy for a full 24 hours. Clients with presumed viral pharyngitis may return to school when afebrile and able to participate in activities without undue fatigue or discomfort.

7. Teach importance of completing entire course of antibiotics even if client is feeling better (important to prevent rheumatic fever).

8. Teach common side effects of the antibiotic, storage, interactions, when the drug will expire and any other pertinent information.

9. Discard or sanitize old toothbrush. Sanitize toothbrush by rinsing with hydrogen peroxide or Listerine® after each use until the antibiotic course is completed. Get a new toothbrush after antibiotic course is completed.

10. Observe for and return if there is discolored urine, arthritis or failure to improve after 48 hours if treated, 72 hrs if untreated.

11. Especially with suspected bacterial infections, advise that symptomatic family members should seek medical evaluation.

12. Contact clinic if any problems obtaining medications.

FOLLOW-UP

1. If no significant improvement in 3-4 days (2-3 days if treatment for strep was initiated), client should return to health care provider. The considerations and responses at that time would be as follows:

Case History	Possibilities	Response
Rapid Strep or Strep Culture positive and Antibiotic treatment started	Non-compliance	IM bicillin as in treatment guidelines above
	Antibiotic treatment failure (concomitant Staph in pharynx interfering with effectiveness of Penicillin)	Clarithromycin as in treatment guidelines above
	Carrier state	Refer if past hx suggests carrier state, otherwise as above and arrange for culture when asymptomatic
	Peritonsillar abscess	Refer
Rapid Strep negative, Antibiotic treatment started, Strep culture negative	Viral Pharyngitis	Symptomatic treatment, Stop antibiotic; assess hydration; consider mononucleosis
Rapid Strep negative, Antibiotic treatment not started, Strep culture positive	Strep pharyngitis	Begin antibiotic treatment
Rapid Strep and Culture Negative; No antibiotic treatment	Viral Pharyngitis	Symptomatic treatment, assess hydration; consider mononucleosis

2. Post-treatment throat cultures for clients with streptococcal pharyngitis if there is a suspicion of a strep carrier state (recurrent positive strep tests). If post-treatment strep culture is positive, then the client should be referred to determine need to eliminate the carrier state.

CONSULTATION/REFERRAL

1. Complications of streptococcal pharyngitis.
2. Recurrence of streptococcal pharyngitis.
3. Proven or suspected mononucleosis.
4. No improvement 2 days after first follow-up as described above under 'Follow-up'.
5. Pregnant or **breastfeeding** client.

REFERENCES

1. Constance R. Uphold and Mary V. Graham, *Clinical Guidelines in Family Practice*, 4th ed., Barmarrae Books, Inc., Gainesville, FL, 2003, pp. 235, 376-381. **(Current)**
2. Lexi-**Comp, Inc.**, ***"****Lexi-Comp* ***Online****,"* Lexi-Comp, Inc., Hudson, Ohio, 20**11**, <**http://lexicomponline.com/crlsql/servlet/crlonline**> (**February 28, 2011**).
3. Robert **M.** Kliegman, et al., *Nelson Textbook of Pediatrics,* 1**9**th ed., **Elsevier**, Saunders, Philadelphia, PA, 20**11**, <**http://www.mdconsult.com.medlib-proxy.mercer.edu/books/page.do?eid=4-u1.0-B978-1-4377-0755-7..00647-3--sc0020&isbn=978-1-4377-0755-7&sid=1181865590&uniqId=267673234-4#4-u1.0-B978-1-4377-0755-7..00647-3--s0030>, accessed on July 19, 2011.**
4. American Society of Health-Systems Pharmacists, *American Hospital Formulary Service*, **2011, pp. 82, 97-98, 232-263, 284-294, 477-486**.
5. Facts and Comparisons, ***"****Facts and Comparisons*," Wolters Kluwer Health, Inc., 20**11**, <http://online.factsandcomparisons.com**/index.aspx**> **(Feburary 28, 2011)**.
6. Thomas K. McInery, et al., *American Academy of Pediatrics Textbook of Pediatric Care,* Elk Grove Village, IL, 2009, pp. 256, 2175-2176 and 2425-2429.
7. Carol Berkowitz, *Berkowitz's Pediatrics: A Primary Care Approach,* 3rd ed.*,* W. B. Saunders, USA, 2008, pp. 347-354. **(Current)**
8. **Committee on Infectious Diseases,** American Academy of Pediatrics, **Larry K. Pickering, ed.,** *Red Book®****: 2009*** *Report of the Committee on Infectious Diseases* **- 28th ed., American Academy of Pediatrics, United States of America, 2009, <http://online.statref.com/document.aspx?fxid=76&docid=59>, accessed on February 25, 2011.**
9. Children's Healthcare of Atlanta, et al., *Georgia School Health Resource Manual*, Chapter 4, 2009.
10. Sarah Long, *Principles and Practice of Pediatric Infectious Disease*, 3rd ed., **Elsevier, China,** 2008, **<http://www.mdconsult.com.medlib-proxy.mercer.edu/books/page.do?eid=4-u1.0-B978-0-7020-3468-8..50002-**

X&isbn=978-0-7020-3468-8&type=bookPage&sectionEid=4-u1.0-B978-0-7020-3468-8..50002-X&uniqId=236652941-2#4-u1.0-B978-0-7020-3468-8..50002-X>, accessed on March 4, 2011.

11. Rose W. Boynton et al., *Manual of Ambulatory Pediatrics,* 6th ed., Wolters Kluwer Health, Philadelphia, 2009, pp. 258-259.
12. B. M. Melnyk, "Alternating Acetaminophen and Ibuprofen in The Febrile Child: Examination of the Evidence Regarding Efficacy and Safety," *Pediatric Nursing*, 2003, pp. 379-382. **(Current)**
13. M. A. Gerber, et al., *Prevention of rheumatic fever and diagnosis and treatment of Acute Streptococcal Pharyngitis: A Scientific Statement From the American Heart Association Rheumatic Fever, Endocarditis, and Kawasaki Disease Committee of the Council on Cardiovascular Disease in the Young*, The Interdisciplinary Council on Functional Genomics and Translational Biology, and the Interdisciplinary Council on Quality of Care and Outcomes Research. *Circulation*, Mar. 24, 2009, 119: 1541.
14. **MR Wessels, *Harrison's Principles of Internal Medicine, 17th edition,* chapter 130, Streptococcal and Enterococcal Infections**
15. **MA Rubin, R Gonzales, and MA Sande, *Harrison's Principles of Internal Medicine, 17th edition,* chapter 31, Pharyngitis, Sinusitis, Otitis, and Other Upper Respiratory Tract Infections http://lexicomponline.com/crlsql/servlet/crlonline. accessed April 20, 2011.**

STANDARD NURSE PROTOCOL FOR PINWORMS

DEFINITION A parasitic nematode causing infestation of the intestines and rectum. Pinworms are the most common human worm infection in the United States. Pinworms are indigenous to the climate of the southern United States, usually affecting young children and their families. Adult worms are 2-13 mm long and live in the intestines. Females deposit eggs on the perianal area, primarily at night, causing intense pruritis. Scratching contaminates the fingers and allows transmission back to the host or to contacts.

ETIOLOGY The nematode, *Enterobius vermicularis.*

SUBJECTIVE

1. May be asymptomatic.
2. Nocturnal perianal pruritus is the primary symptom.
3. Restlessness and disturbed sleep are common.
4. Young females may experience genital irritation with vulvovaginitis and dysuria.
5. History of caretaker's observation of worms in anal area at night while child is sleeping.
6. Other symptoms may include anorexia, enuresis, insomnia, and grinding teeth during sleep.

OBJECTIVE

1. Diagnostic Criteria
   a. Laboratory identification of eggs from perianal area: Apply transparent adhesive tape to the perianal area to pick up any eggs; apply tape to a glass slide and examine under a low-power microscope. A single test will usually detect 50% of infestations, 3 tests should detect 70%, and 5 tests should detect 100%. (Obtain specimens in the early morning before client bathes or defecates.)

   OR

   b. Observation of pinworm(s) during exam.
2. May have local irritation or secondary infection of scratched skin.

ASSESSMENT Pinworms

PLAN **THERAPEUTIC**

PHARMACOLOGIC

1. If not taking piperizine, theophylline, and does not have liver disease, then the following is an option but has more side-effects (anorexia, nausea, vomiting, diarrhea):

Pyrantel pamoate (Pin-X, Pyrantel Pamoate Suspension), available as suspension of 250 mg/5 mL and a caplet form containing 62.5 mg per caplet.

a. 11mg/kg/dose (maximum 1 gram) as a single dose PO

OR

b. 1 mL (50 mg) per 5 kg (11 lbs) of body weight as a single dose PO per the following chart:

	Dosage		
Weight	Suspension	Chewable tablets	Caplet
25-37 lbs (11-16 kg)	2.5 mL= ½ tsp.	½	2 caplets
38-62 lbs (17-28 kg)	5 mL= 1 tsp.	1	4 caplets
63-87 lbs (29-39 kg)	7.5 mL= 1 ½ tsp.	1 ½	6 caplets
88-112 lbs (40-50 kg)	10mL= 2 tsp.	2	8 caplets
113-137 lbs (51-62 kg)	12.5 mL= 2 ½ tsp.	2½	10 caplets
138-162 lbs (63-73 kg)	15mL= 3 tsp.	3	12 caplets
163-187lbs (74-84 kg)	17.5 mL= 3 ½ tsp.	3½	14 caplets
188 lbs and over **(85 kg and over)**	20mL = 4 tsp.	4	16 caplets
NOTE: Do not use with history of liver disease.			

NOTE: If client weighs less than 25 lbs or is less than 2 years old, refer to physician.

c. Repeat treatment once in 14 days.

2. Treat all household members simultaneously, with one of the above regimens.

CLIENT EDUCATION/COUNSELING

1. Consult a physician if medication side effects such as anorexia, abdominal cramps, nausea, vomiting, diarrhea,

headache, or dizziness persist.

2. Stress personal hygiene, particularly hand washing before eating and after using the toilet.

3. Pajamas and bed linens of symptomatic family members should be washed in regular laundry detergent at time of treatment.

4. Upholstered furniture and carpet should be vacuumed. Other flooring should be wet mopped.

5. Bathe immediately upon arising for several mornings after treatment.

6. Keep fingernails trimmed short.

7. Wear snug fitting underwear to deter direct contact by scratching.

8. Petroleum jelly applied at the perianal area may decrease egg dispersal.

9. Contact clinic if any problems obtaining medications.

FOLLOW-UP:

If no improvement in one month.

REFERRAL

1. Child under 2 years of age or weighing less than 25 pounds.

2. Pregnant or lactating.

3. Clients with any of the other conditions listed above that are contraindications for treatment or who are on drugs that adversely interact with pyrantel pamoate.

4. Clients who develop side effects from treatment.

REFERENCES

1. **Committee on Infectious Diseases,** American Academy of Pediatrics**, Larry K. Pickering, ed.,** *Red Book®**: 2009** Report of the Committee on Infectious Diseases* **- 28th ed., American Academy of Pediatrics, United States of America, 2009, <http://online.statref.com/document.aspx?fxid=76&docid=59>, accessed on February 25, 2011.**
2. Lexi-**Comp, Inc., "***Lexi-Comp **Online***,**"** Lexi-Comp, Inc., Hudson, Ohio, 20**11**, <**http://lexicomponline.com/crlsql/servlet/crlonline**> (**February 25, 2011**).
3. Facts and Comparisons, ***"****Facts and Comparisons*,***"*** Wolters Kluwer Health, Inc., 20**11**, <http://online.factsandcomparisons.com**/index.aspx**> **(February 25, 2011)**.
4. CDC, "Parasitic Disease Information," *Pinworm Infection*, **November 2**, 20**10**, <http://www.cdc.gov/ncidod/dpd/parasites/pinworm/factsht_pinworm.htm> (March **8**, 20**11**).
5. CDC, "Parasitic Disease Information," *Parasites and Health Enterobiasis,* **July 20**, 200**9**, <http://www.dpd.cdc.gov/dpdx/HTML/Enterobiasis.htm> (March **8**, 20**11**).
6. Thomas K. McInery, et al., *American Academy of Pediatrics Textbook of Pediatric Care,* Elk Grove Village, IL, 2009, pp. 2432-2433.
7. Constance R. Uphold and Mary V. Graham, *Clinical Guidelines in Family Practice*, 4th ed., Barmarrae Books, Gainesville, FL, 2003, pp. 602-603. **(Current)**
8. **Carol K. Taketomo, et al., "Pediatric Dosage Handbook, 17th ed., Lexi-Comp, Hudson, Ohio, 2010, pp. 867,1187-1188.**

STANDARD NURSE PROTOCOL FOR RINGWORM: NON-HAIRY SKIN (TINEA CORPORIS)

DEFINITION Superficial fungal infection involving the face, trunk or limbs.

ETIOLOGY Several different fungi. Transmitted by direct contact with an infected person, animal, or contaminated articles.

SUBJECTIVE Pruritic (common) or asymptomatic.

OBJECTIVE

1. Erythematous scaling patches (usually 1-2) that are round or oval. The lesions start small, then expand outward with clearing of the eruption in the center of the patch and activity restricted to the border of the lesion, as a ring. The border of the lesion is usually raised and scaly but may include small pustules or vesicles. Appearance of lesions is sometimes altered by prior application of topical corticosteroids and can mislead the examiner.

2. Lesions are most common on the trunk, face, and arms.

3. Granuloma Annulare can mimic Tinea Corporis. The distinguishing feature of Tinea is the scale which may be subtle and delicate but will always be present with untreated Tinea. If it is not present and there is only one isolated lesion, then consideration should be given to referral to rule out Lyme Disease (not the most common cause of Granuloma Annulare, but the most serious cause).

ASSESSMENT Tinea corporis (Ringworm of the skin)

PLAN **THERAPEUTIC**

PHARMACOLOGIC

If thickening of the skin has occurred, apply a non-prescription topical anti-fungal preparation. May choose one of the following:

1. Clotrimazole 1% (e.g., Lotrimin, available as Lotrimin AF, cream or solution). Apply to affected areas twice daily for 4 weeks.

OR

2. Miconazole nitrate 2% (e.g., Micatin), cream. Apply to

affected areas twice daily for 4 weeks.

OR, if can't use the above

3. Tolnaftate 1% (e.g., Tinactin), cream or solution. Apply to affected areas twice daily for 4 weeks.

CLIENT EDUCATION/COUNSELING

1. Contacts of infected persons should perform periodic inspections for signs of infection and seek medical evaluation as needed.

2. Avoid direct contact with known sources of infection. Infected animals need veterinary examination.

3. Do not share clothing. Launder and dry clothing on hottest acceptable temperatures.

4. Advise against OTC corticosteroid topical medications, they will exacerbate lesions.

5. Keep lesions dry. Fungi thrive in moist areas.

6. Avoid tight fitting clothing and clothing that restricts air movement. Cotton clothing is preferable.

7. Children with lesions should not be excluded from the classroom as long as clothing or a light bandage covers the lesions.

8. It is important to apply the topical antifungal for 4 weeks, even if the rash clears in less than 4 weeks, to prevent recurrence.

9. Return to clinic if no significant improvement in 7 to 9 days.

10. Return to clinic sooner if lesions worsening.

11. Contact clinic if any problems obtaining medication.

FOLLOW-UP

One to two weeks if no improvement

CONSULTATION/REFERRAL

1. Children less than 2 years of age.

2. Severe or widespread infection.

3. Secondary bacterial infection.

4. Failure to respond to treatment. May require oral therapy. Also several skin conditions can closely mimic ringworm, these include: granuloma annulare, nummular eczema, pityriasis rosea, psoriasis, seborrheic dermatitis, tinea versicolor, erythema chronicum migrans, and early Lyme disease.

5. If there has been tick exposure, refer immediately. Early Lyme disease is an urgent diagnosis.

6. If present on scalp (tinea capitis).

7. **Pregnant or breastfeeding client.**

REFERENCES

1. Robert **M.** Kliegman, et al., *Nelson Textbook of Pediatrics,* 1**9**th ed., **Elsevier**, Saunders, Philadelphia, PA, 20**11**, <**http://www.mdconsult.com.medlib-proxy.mercer.edu/books/page.do?eid=4-u1.0-B978-1-4377-0755-7..00647-3--sc0020&isbn=978-1-4377-0755-7&sid=1181865590&uniqId=267673234-4#4-u1.0-B978-1-4377-0755-7..00647-3--s0030>, accessed on July 19, 2011.**
2. **Committee on Infectious Diseases,** American Academy of Pediatrics, **Larry K. Pickering, ed., 2009,** *Red Book®**: 2009** Report of the Committee on Infectious Diseases* **- 28th ed., American Academy of Pediatrics, United States of America, 2009, <http://online.statref.com/document.aspx?fxid=76&docid=59>, accessed on February 25, 2011.**
3. American Society of Health-Systems Pharmacists, *American Hospital Formulary Service,* **20011,** pp. **3488-3491, 3495-3498,3517-3518.**
4. Lexi-**Comp, Inc.**, **"***Lexi-Comp* ***Online*****,"** Lexi-Comp, Inc., Hudson, Ohio, 20**11**, <**http://lexicomponline.com/crlsql/servlet/crlonline**> (**February 25, 2011**).
5. Facts and Comparisons, ***"****Facts and Comparisons*," Wolters Kluwer Health, Inc., 20**11**, <http://online.factsandcomparisons.com**/index.aspx**> **(February 25, 2011)**.
6. Rose Boynton, et al., *Manual of Ambulatory Pediatrics,* 6th ed., Wolters Kluwer Health, Philadelphia, 2009, pp. 395-396.

STANDARD NURSE PROTOCOL FOR RUBRAL/HEAT RASH

DEFINITION

Heat rash ("prickly heat") is characterized by an erythematous papular rash, distributed in areas where sweat glands are concentrated. Obstruction of the eccrine sweat ducts occurs often in neonates and often produces one or two clinical pictures depending on the level of obstruction:

1. Miliaria crystallina is characterized by tiny (1-2 mm), superficial grouped vesicles, without erythema, over intertriginous areas and adjacent skin (neck, upper chest). Obstruction occurs in the statum corneum portion of the eccrine duct.
2. Miliaria rubra is more common. Obstruction of the eccrine duct deeper in the epidermis results in erythematous, grouped papules in the same area. Rarely, these may progress to pustules.

ETIOLOGY

This rash results from obstruction of the ducts of the sweat glands. The ducts become distended and break, leaking sweat into the skin, which causes the irritation. Heat and high humidity in the external environment cause sweating that leads to swelling and plugging of the sweat gland orifice.

SUBJECTIVE

1. Parent notices fine, red raised rash on child; may see pustules under neck and armpits.
2. Itching.
3. History of over-dressing.
4. History of predisposing environmental factors (e.g., hot spells in summer or house kept too warm).

OBJECTIVE

1. Rash is erythematous and vesiculopapular. Lesions are pinhead size and may coalesce on an erythematous patch or remain isolated. The sudden appearance of red patches of small papules and/or vesicles are discrete and accompanied by red areolae.
2. Rash is distributed in areas of sweat gland concentration and friction: over the trunk, neck, back of head, shoulders, chest, axillae, face, antecubital and popliteal fossae, and intertriginal areas.

ASSESSMENT

Rubral/heat rash, according to lesion appearance and history (hot, humid environment).

Differentiate from: contact dermatitis (history of contact, distribution in area of contact, edematous, erythematous and vesicular lesions) or candidiasis (shiny, intensely inflamed, sharply-defined border, and satellite lesions).

PLAN

THERAPEUTIC

NON-PHARMACOLOGIC MEASURES

1. Avoid overdressing the child. The parent should dress the child as she/he would dress self for weather conditions.

2. Avoid hot, humid conditions. Keep client in cool and dry environment as much as possible. Use air conditioner, fan and/or dehumidifier, if possible.

3. Keep client's skin clean and dry.

4. Bathe client in tepid water for cooling.

PHARMACOLOGIC

1. In severe cases, may apply nonprescription 1% hydrocortisone cream three times a day for 1-2 days.

CLIENT EDUCATION/COUNSELING

1. If hydrocortisone cream used, apply sparingly.

2. Use mild or hypoallergenic soap for bathing.

3. Use mild detergents to launder clothes and avoid bleach and fabric softeners.

4. Keep client's fingernails short.

5. Avoid dressing client or placing client in contact with irritating clothing (e.g., synthetic fabrics, wool, nylon, plastic liners). Light cotton clothing is preferred.

6. Avoid extended sun exposures.

7. Return for reevaluation if condition does not improve with proper management.

FOLLOW-UP

1. No follow-up needed if symptoms resolve within two weeks.

2. Re-evaluate if symptoms persist or worsen beyond 2 weeks.

CONSULTATION/REFERRAL

1. If there is no improvement with treatment.

2. Exacerbation of the rash.

3. Pregnant or breastfeeding client.

REFERENCES

1. Rose W. Boynton, et al., *Manual of Ambulatory Pediatrics,* 6th ed., Wolters Kluwer Health, Philadelphia, 2009, pp. 342-343.
2. William W. Hay, et al., *Current Pediatric Diagnosis and Treatment*, **20th** ed., McGraw-Hill, **United States of America**, 20**11**, <**http://www.accessmedicine.com.medlib-proxy.mercer.edu/resourceTOC.aspx?resourceID=14>, accessed on March 8, 2011.**
3. Robert **M.** Kliegman, et al., *Nelson Textbook of Pediatrics,* 1**9**th ed., **Elsevier**, Saunders, Philadelphia, PA, 20**11**, <**http://www.mdconsult.com.medlib-proxy.mercer.edu/books/page.do?eid=4-u1.0-B978-1-4377-0755-7..00647-3--sc0020&isbn=978-1-4377-0755-7&sid=1181865590&uniqId=267673234-4#4-u1.0-B978-1-4377-0755-7..00647-3--s0030>, accessed on July 19, 2011.**
4. Thomas K. McInery, et al., *American Academy of Pediatrics Textbook of Pediatric Care,* Elk Grove Village, IL, 2009, pp. 458, 784.
5. Thomas **P.** Habif**,** *Clinical Dermatology,* **5th** ed., Mosby, **St. Louis, Mo., 2009, <http://www.mdconsult.com/books/page.do?eid=4-u1.0-B978-0-7234-3541-9..00017-1--s0855&isbn=978-0-7234-3541-9&type=bookPage&sectionEid=4-u1.0-B978-0-7234-3541-9..00017-1--p312&uniqId=236194843-9#4-u1.0-B978-0-7234-3541-9..00017-1--p312>, accessed on February 25, 2011.**

STANDARD NURSE PROTOCOL FOR SCABIES

DEFINITION

Infestation with the *Sarcoptes scabiei* mite. The initial skin lesion is a burrow made by an impregnated female to lay her eggs. It appears as a fine, wavy, dark line boring from a few mm to 1 cm in length, with a minute papule at the open end. (Papules or vesicles contain the mite.) After several days, sensitivity to the mite results in pruritis followed by punctate excoriations from scratching and impetiginous and eczematous changes at the site of the lesion. A generalized urticarial rash may also develop.

The condition is highly contagious and is spread predominately by skin-to-skin contact and to a lesser degree by contact with contaminated clothing or linens. Transmission to household members and sexual contacts is frequent. Outbreaks in schools, day care centers and nursing homes have occurred.

ETIOLOGY

The *Sarcoptes scabiei* mite. The female is about 0.44 mm long and has 4 sets of legs. The male is about half her size. Fertilization occurs on the skin surface. The male dies 1-2 days after copulating. The impregnated female burrows into the stratus corneum and lays 1-3 eggs daily throughout her 30-day life cycle. (Mites do not survive more than 3 days away from the skin.) The eggs hatch in 3-5 days and the larvae return to the skin to grow, molt and mature. In persons without previous exposure the incubation period is approximately 4 to 6 weeks. Thus itching and lesions may be inapparent during the initial infestation and these persons are asymptomatic carriers. Repeat infestations generally lead to more rapid development of symptoms within 1 to 4 days. (Explanation: pruritis is actually secondary to a delayed hypersensitivity reaction to mite feces and eggs, not to the physical presence of the mite itself. Once sensitized, the host reacts much more quickly with an immune response.)

SUBJECTIVE

1. Intense itching, most severe at night.

2. Rash.

3. May have history of known exposure to scabies, or of several family/group members having a similar itchy rash.

OBJECTIVE

1. Observation of burrows and red papular vesicles or pustules, distributed according to age:

    a. Infants. The palms, soles, neck, face, scalp, legs and

buttocks are commonly affected. Burrows are absent and vesicles, pustules, bullae and eczematous lesions are common.

b. Older children, adolescents and adults. The lesions begin in the interdigital spaces and spread to the wrist, elbows, ankles, buttocks, umibilicus, belt line, groin, genitalia, areola, female breast and axillae. The upper back, neck, face, scalp, palms and soles are usually spared.

2. Red, itchy rash, pustules and excoriation.

3. Secondary infection from scratching.

NOTE: Atypical forms of scabies do occur and can be related to such things as personal hygiene, by the presence of another skin disease or in altered immunologic response in clients suffering from malnutrition, or other neurologic or physical disorders/diseases (Norwegian scabies).

ASSESSMENT

Scabies, based on history and suspicious lesions.
(With appearance varying, differential diagnosis depends on the type of lesion present. Papulovesicular lesions can appear similar to papular uritcaria, chicken pox, drug eruptions, canine scabies, viral exanthems, dermatitis herpetiform, and folliculitis. If the lesions are eczematous, atopic dermatitis and seborrheic dermatitis must be ruled out. Nodular scabies may be misdiagnosed as urticaria pigmentosa, histeocytosis and insect bite granuloma.)

Confirmatory diagnosis can be made microscopically.

PLAN

DIAGNOSTIC STUDIES

Microscopic visualization of the mite. The suspected lesion is immobilized between the forefinger and the thumb and the top is removed with a Number 15 scalpel blade laid parallel to the skin surface, after a drop of mineral oil is placed on the skin. No anesthesia is required. The specimen is then placed on a glass slide, with a cover-slip, and examined under low power for the mite, eggs or larvae.

NOTE: A scraping is not necessary when there is an intensely pruritic rash in the typical locations that meets any of the following additional criteria:

1. History of close contact with a known case of scabies.

2. Burrows.

THERAPEUTIC

PHARMACOLOGIC

1. Permethrin 5% Cream (Elimite) single application for children 2 months or older. Do not bathe or shower before applying the cream. Thoroughly massage into all skin from the neck down to the soles of the feet, avoiding contact with mucous membranes, eyes and mouth. Also include the head, scalp and neck in infants and toddlers. Remove by washing after 8-14 hours. (Thirty grams or half of a 60-gram tube should be sufficient for a child.)

   May repeat permethrin treatment once in 7 days.

   Clients often experience pruritus after treatment. This is rarely a sign of treatment failure and is not an indication for retreatment. Demonstrable living mites after 7 days indicate that retreatment is necessary.

   Worsening of asthma has been reported.

2. Cool baths with mild soap, nonprescription hydrocortisone cream topically or diphenhydramine (e.g., Benadryl) orally for itching, which may persist for several weeks.

   Hydrocortisone cream – Tropical: Children greater than 2 years: Apply to affected area 1-4 times/day.

   Diphenhydramine-
   Children 2 years of age to younger than 6 years of age: Diphenhydramine hydrochloride elixir 12.5 mg/5 mL.
   May give 6.25 mg every 4 to 6 hours; do not exceed 37.5 mg/day.

   Children 6 to 12 years: 12.5mg every 4 hours maximum: 75mg/day.

   NOTE: Dosing should be based on severity of symptoms. Do not use topical diphenhydramine.

NON-PHARMACOLOGIC MEASURES

1. Keep fingernails clean and well-trimmed.

2. Simultaneously with treatment, launder all bedding, towels, wash cloths and clothing that have been in contact with the client for the 4 days prior to treatment. Laundering should be done in hot water and drying in the hot cycle of the clothes dryer. If washing/drying is not possible, store the items in a plastic bag for a week to avoid re-infestation.

CLIENT EDUCATION/COUNSELING

1. Name of condition and clear directions for treatment.

2. Encourage to wash hands often, clean under fingernails, wear clean clothes daily and not to exchange clothes with others.

3. Elimite may temporarily increase itching, edema and redness. Mild and transient stinging and/or burning of the skin may also occur. These reactions are associated with the severity of the infestation.

4. Children should be allowed to return to school or child-care 24 hours after treatment has been completed. Itching may continue for several days after effective treatment. This is a hypersensitivity response and does not mean that the child can spread the infection to others.

5. Disinfecting the environment is unnecessary and unwarranted.

6. **All** close **personal and household** contacts **within the preceding month** need **examination and** prophylactic treatment **at the same time as the index case.** Manifestations of scabies infestation may not appear for as long as 2 months after exposure, during which time they can be transmitted.

7. Contact clinic if any problems obtaining medications.

FOLLOW-UP

1. Re-examine in one week. May re-treat once if no improvement, though single application of permethrin 5% cream is usually curative.

2. A client symptomatic longer than 4 weeks after treatment should be re-evaluated for possible re-exposure.

CONSULTATION/REFERRAL

1. Severe/widespread infection, or secondary bacterial infection.

2. Infection of the scalp (usually infants).

3. Any of the following:
   a. Less than 2 months of age.
   b. Pregnant or lactating.
   c. Failure to respond to 2 rounds of permethrin treatment.

4. Immunocompromised client.

5. Refer close personal contacts of index case for examination and prophylactic treatment at the same time as the index case.

REFERENCES

1. Constance R. Uphold and Mary V. Graham, *Clinical Guidelines in Family Practice*, 4th ed., Barmarrae Books Inc., Gainesville, FL, 2003, pp. 291-293. **(Current)**
2. Lexi-**Comp, Inc.,**"*Lexi-Comp **Online***," Lexi-Comp, Inc., Hudson, Ohio, 20**11**, <**http://lexicomponline.com/crlsql/servlet/crlonline**> (**February 25**, 2011).
3. Facts and Comparisons, **"***Facts and Comparisons*,**"** Wolters Kluwer Health, Inc., 20**11**, <http://online.factsandcomparisons.com**/index.aspx**> **(February 25, 2011).**
4. Thomas K. McInery, et al., *American Academy of Pediatrics Textbook of Pediatric Care,* Elk Grove Village, IL, 2009, pp. 2182-2183.
5. Robert **M.** Kliegman, et al., *Nelson Textbook of Pediatrics,* 1**9**th ed., **Elsevier**, Saunders, Philadelphia, PA, 20**11**, <**http://www.mdconsult.com.medlib-proxy.mercer.edu/books/page.do?eid=4-u1.0-B978-1-4377-0755-7..00647-3--sc0020&isbn=978-1-4377-0755-7&sid=1181865590&uniqId=267673234-4#4-u1.0-B978-1-4377-0755-7..00647-3--s0030>, accessed on July 19, 2011.**
6. **Committee on Infectious Diseases,** American Academy of Pediatrics, **Larry K.**

Pickering, ed., *Red Book®: **2009** Report of the Committee on Infectious Diseases* **- 28th** ed., **American Academy of Pediatrics, United States of America, 2009, <http://online.statref.com/document.aspx?fxid=76&docid=59>, accessed on February 25, 2011.**

7. Children's Healthcare of Atlanta, et al., *Georgia School Health Resource Manual*, Chapter 4, 2009.
8. American Academy of Pediatrics, *Red Book Atlas of Pediatric Infectious Diseases,* Elk Grove, IL, 2007, pp. 233-235**. (Current)**
9. **Centers for Disease Control and Prevention, *Sexually Transmitted Diseases Treatment Guidelines 2010,* Vol. 59, No. RR-12, December 17, 2010, pp. 89-90.**

STANDARD NURSE PROTOCOL FOR TEETHING

DEFINITION Inflammation of the gum tissue caused by eruption of primary teeth.

ETIOLOGY In general, an infant's first tooth erupts at 6 months and one each month thereafter until all 20 have erupted. However, this is highly variable from child to child. One child might begin teething as early as 3 months, while another would not begin until age 12 months. The central lower incisors are usually the first to erupt.

SUBJECTIVE

1. The infant may be irritable and fretful.
2. The infant may have decreased appetite.
3. The infant may suck his fist, fingers or other objects, more than usual.
4. Some parents report increased drooling.

OBJECTIVE

1. Erupting teeth are sometimes preceded by a bluish discoloration of the proximal gum, a benign process.
2. Gums proximal to erupting tooth may be swollen.
3. Erupting tooth felt with finger, or seen.
4. Teething associated with diarrhea, fever, and other illness is likely coincidental and further examination is warranted.

ASSESSMENT Teething

PLAN **THERAPEUTIC**

PHARMACOLOGIC

1. Systemic analgesia (acetaminophen or ibuprofen) in appropriate doses. (Ibuprofen preferred for teething if infant is older than 6 months, due to anti-inflammatory effect.) See tables below for acetaminophen and ibuprofen dosages. Do not give acetaminophen and ibuprofen in an alternating fashion.

IBUPROFEN CHILDREN'S SUSPENSION
(for children ages 6 months and older)
(100 mg/5 mL in 4 and 16 oz bottles, fruit flavored)

(5**-10** mg/kg/dose q 6-8 hours as needed)

NOTE: **Treatment for greater than 10 days is not recommended. No more than 4 doses in 24 hours.**

Age	Weight	Dose
6-11 months	1**2**-17 lbs (**5.5** – **7.9** kg)	1/**2** teaspoon (**50** mg)
12-23 months	18-23 lbs (8 – 10**.9** kg)	**3/4** teaspoon (**7**5mg)
2-3 years	24-35 lbs (11–**15.9** kg)	**1** teaspoon (**100** mg)

ACETAMINOPHEN

NOTE: Healthcare Professionals should be aware that acetaminophen infant drop products with both the new and old concentrations may be available on pharmacy shelves and in the clinic medication room. Either product may be continued to be used, but the concentration must be verified and used according to labeled dosing directions. Healthcare professionals should verify product concentration prior to providing dosing information. Dose may be repeated every 4 hours, as needed, but do not give more than 5 doses in 24 hours.

Age	Weight	Acetaminophen (80 mg/0.8mL): Infant's Anacin - 3 Drops; Panadol Drops; Tempra Drops; Tylenol Drops.	Acetaminophen (160 mg/5 mL): Children's Anacin - 3 liquid; Panadol Liquid; Childrens Tempra Syrup; Children's Tylenol Suspension.
0-3 Months	6-11 lbs (2.5-5.4 kg)	1/2 dropperful 0.4 mL(40 mg)	1.25 mL (40mg)
4-11 months	12-17 lbs (5.5-7.9 kg)	1 dropperful 0.8 mL (80 mg)	2.5 mL (80 mg)
12-23 months	18-23 lbs (8.0-10.9 kg)	1 1/2 droppersful 1.2 mL (120 mg)	3.75 mL (120 mg)
2-3 years	24-35 lbs (11-15.9 kg)	2 droppersful 1.6 mL (160 mg)	5 mL (160mg)

2. Avoid topical anesthetics (teething gels). They can cause profound numbness of the entire oral cavity and pharynx and suppress the gag reflex. They can also induce allergies to 'caine' anesthetics.

NON-PHARMACOLOGIC MEASURES

1. Be **client** and soothe the infant.

2. Offer infant chilled teething rings of hard rubber or plastic, or a clean, cold, wet washcloth for chewing on.

FOLLOW-UP

As needed.

CLIENT EDUCATION/COUNSELING

1. Counsel **parent** about the above therapeutic measures.

2. Be sure that the infant/child does not chew on things that would break or splinter in the mouth.

3. Teach parent to read labels and find other sources of acetaminophen that are often in over the counter medications and can cause toxicity.

4. Teach parent not to give acetaminophen and ibuprofen in alternating fashion to control pain/discomfort.

CONSULTATION/REFERRAL

Eruption cysts or hematomas.

REFERENCES

1. William W. Hay et al, *Current Pediatric Diagnosis and Treatment,* **20th** ed., McGraw-Hill, **United States of America,** 20**11**, <http://www.accessmedicine.com.**medlib-proxy.mercer.edu/resourceTOC.aspx?resourceID=14>, accessed on March 7, 2011.**
2. Carol D. Berkowitz, *Pediatrics: A Primary Care Approach,* 3rd ed., W.B. Saunders, U**nited** S**tates of** A**merica**, 2008, p. 82. **(Current)**
3. Robert Kliegman, et al., *Nelson Textbook of Pediatrics,* 18th ed., Saunders, Philadelphia, PA, 2007, p. 1536. **(Current)**
4. Thomas K. McInery, et al., *American Academy of Pediatrics Textbook of Pediatric Care,* Elk Grove Village, IL, 2009, p. 121.
5. Rose W. Boynton, et al., *Manual of Ambulatory Pediatrics,* 6th ed., Wolter Kluwer, Philadelphia, 2009, pp. 59, 62, 65 and 71.
6. Grace Booke Huffman, "Which Symptoms Are Actually Associated With Teething?," *American Family Physician,* October 2000, pp. 1653-1656. **(Current)**
7. Michael Macknin, et al., "Symptoms Associated With Infant Teething: A Prospective Study," *Pediatrics,* April 2000, pp. 747-752. **(Current)**
8. American Society of Health System Pharmacists, *American Hospital Formulary Service*, 2009, pp. 2240-2248, 2122-2129.
9. Facts and Comparisons, ***"****Facts and Comparisons*,***"*** Wolters Kluwer Health, Inc., 20**11**, <http://online.factsandcomparisons.com**/index.aspx**> **(February 25, 2011)**.
10. B.M. Melnyk, "Alternating Acetaminophen and Ibuprofen in The Febrile Child: Examination of the Evidence Regarding Efficacy and Safety," *Pediatric Nursing*, 2003, pp. 379-382. **(Current)**
11. **Lexi**-Comp**, Inc.,** "*Lexi-Comp* ***Online***," Lexi-Comp, Inc., **Hudson, Ohio,** 20**11,** <**http://lexicomponline.com/crlsql/servlet/crlonline**> **(April 14, 2011).**
12. **Carol K. Taketomo, et al., "Pediatric Dosage Handbook, 17th ed., Lexi-Comp, Hudson, Ohio, 2010, pp. 36-39, 702-707.**

STANDARD NURSE PROTOCOL FOR THRUSH (ORAL CANDIDIASIS)

DEFINITION

Superficial fungal infection of the mouth, frequently occurring in healthy newborns and young infants. Uncommon in children 12 months and older, except those receiving antibiotic therapy, or with other underlying conditions and/or immune suppression.

ETIOLOGY

The causative organism is usually *Candida albicans*, which is acquired from the following sources:

1. In newborns and infants, from infected mother's vagina during birth and/or from infected mother's breast via breastfeeding.
2. By contamination of caretaker's hands or objects shared by infected infants.
3. Adult with vulvovaginal candidiasis, through contamination of her hands. (See protocol for vulvovaginal candidiasis).
4. Infants/children with candidal diaper dermatitis, through contamination of hands.

SUBJECTIVE

1. Often no symptoms.
2. Creamy white patches in the mouth, may be curd-like in nature.
3. With extensive involvement, pain during feeding and swallowing.
4. May have history of recent steroid, antibiotic or chemotherapy treatment.
5. Mother may have history of or concurrent candida infection of vaginal area and/or breasts.

OBJECTIVE

1. White filmy coating or patches covering all or part of the tongue, gingiva, buccal mucosa and, occasionally, the lips, that does not remove easily with scraping. (Don't confuse with milk curds left on the tongue after feeding, which are easily removed).
2. If patches are removed, they leave a painful, red bleeding lesion.

3. The **client** may have candidal diaper dermatitis that needs treatment. (See Diaper Dermatitis protocol).

4. May have an inadequate oral intake because of mouth pain. Check for dehydration (uncommon).

ASSESSMENT Oral Candidiasis (Thrush)

PLAN **DIAGNOSTIC STUDIES**

Potassium hydroxide preparation of scrapings of lesions to detect budding yeast, with or without hyphae. (This study is usually not needed when typical lesions are present.)

THERAPEUTIC

PHARMACOLOGIC

1. Nystatin (Mycostatin) oral suspension,100,000 units/mL,

   For post-term infants dosage is 200,000 units (2 mL) divided as 1mL in each side of the mouth four (4) times a day for two weeks.

   For **neonates and** premature infants who have not yet reached their expected due date use 100,000 units (1mL) divided as ½ mL in each side of the mouth four (4) times a day for two weeks.

   The suspension should be retained in the mouth for as long as possible. One way to accomplish this is to apply a portion of the dose to two Q-tips and gently massage these Q-tips against the plaques. Avoid feeding for 5-10 minutes after the dose.

2. Treatment of nursing mother:
   Nystatin (similar to Mycostatin) ointment applied to nipple and areola areas after each feeding
   OR
   Nystatin oral suspension 100,000 units/mL; swab 1 mL on each breast nipple four times daily after feeding, for 2 weeks.

Avoid feeding for 5-10 minutes after application, if possible.

3. If diaper rash is present, treat according to Nurse Protocol for Diaper Dermatitis due to candidiasis.

FOLLOW-UP

In two weeks if no improvement, or sooner if worsens.

CLIENT EDUCATION/COUNSELING

1. Continue treatment for two weeks, even if the mouth appears to have cleared before the fourteenth day.

2. Properly treated, thrush should not be a cause for weaning from the breast.

3. Breast-fed infants and their mothers are to be treated simultaneously.

4. Household members and caretakers should practice good handwashing, especially when caring for infant.

5. Rubber/plastic nipples and pacifiers should be boiled for 10 minutes, or replaced after beginning treatment. Do not allow infants to share pacifiers or nipples.

6. Seek prompt medical evaluation if infant refuses liquids.

7. Contact clinic if any problems obtaining medications.

CONSULTATION/REFERRAL

1. Failure to respond after two weeks of therapy.

2. Weight loss or suspected dehydration.

3. Recurrent or resistant breast infections.

4. Persons with recurrent infections are to be evaluated for HIV infection.

5. Children 12 months old or greater with symptoms of thrush.

REFERENCES

1. Robert **M.** Kliegman, et al., *Nelson Textbook of Pediatrics,* 1**9**th ed., **Elsevier**, Saunders, Philadelphia, PA, 20**11**, <**http://www.mdconsult.com.medlib-proxy.mercer.edu/books/page.do?eid=4-u1.0-B978-1-4377-0755-7..00647-3--sc0020&isbn=978-1-4377-0755-7&sid=1181865590&uniqId=267673234-4#4-u1.0-B978-1-4377-0755-7..00647-3--s0030>, accessed on July 19, 2011.**
2. Carol D. Berkowitz, *Pediatrics: A Primary Care Approach*, 3rd ed., W.B. Saunders,USA, 2008, pp. 331 and 664. **(Current)**
3. American Society of Health-Systems Pharmacists, *American Hospital Formulary Services*, Bethesda, MD, **2011, pp. 570-572.**
4. Facts and Comparisons, ***"****Facts and Comparisons*,**"** Wolters Kluwer Health, Inc., 20**11**, <http://online.factsandcomparisons.com**/index.aspx**> **(February 25, 2011)**.
5. Constance R. Uphold and Mary V. Graham, *Clinical Guidelines in Family Practice*, 4th ed., Barmarrae Books, Inc., Gainesville, FL, 2003, pp. 284-286. **(Current)**
6. Thomas K. McInery, et al., *American Academy of Pediatrics Textbook of Pediatric Care,* Elk Grove Village, IL, 2009, pp. 123-124, 818-819 and 1696.
7. Rose W. Boynton, et al., *Manual of Ambulatory Pediatrics,* 6th ed., Wolter Kluwer, Philadelphia, 2009. pp. 34, 253, 391-393.
8. American Academy of Pediatrics, *Red Book Atlas of Pediatric Infectious Diseases,* Elk Grove Village, IL, 2007, pp. 37-38. **(Current)**
9. Lexi-Comp, Inc., *"Lexi-Comp Online,"* Lexi-Comp, Inc., Hudson, Ohio, 2011, <http://lexicomponline.com/crlsql/servlet/crlonline> (February 25, 2011).

STANDARD NURSE PROTOCOL FOR TINEA PEDIS

DEFINITION Dermatophyte infections of the skin of the feet and toes.

ETIOLOGY *Trichophyton rubrum* is the most common pathogen. *Trichophyton mentagrophytes* causes more inflammatory lesions.

The fungus is transmitted by direct contact with contaminated surfaces in moist areas such as swimming pools, community showers or baths and locker rooms. Tinea pedis occurs most frequently in adolescents and adults. Risk factors include sweaty feet and occlusive footwear.

SUBJECTIVE

1. May be asymptomatic.
2. Mild itching.
3. May have burning, stinging and other sensations.

OBJECTIVE

1. On the sole and heel: usually non-inflammatory scaling, occasionally with thickening and cracking of the skin. May have groups of vesicles or exfoliation of the skin. Foul odor is common.
2. Between the toes: scaling or fissuring, fine vesicles or pustules, maceration.
3. Potassium hydroxide (KOH) skin-scraping: hyphae demonstrated

ASSESSMENT Tinea pedis

PLAN **THERAPEUTIC**

PHARMACOLOGIC

1. One of the following products. Continue treatment for 1-2 weeks after clinically cleared. Apply to normal skin 2 cm beyond affected area.

    a. Over-the-counter products, applied twice daily for 2-4 weeks to the affected areas.
        1) Miconazole (e.g., Micatin) 2% cream
        OR
        2) Clotrimazole (e.g., Lotrimin)) 1%

solution, cream or lotion

OR

3) Tolnaftate 1% (e.g., Tinactin),

OR

4) Terbinafine (Lamisil) 1% Cream, **must be 12 years of age or older**

OR

b. Prescription products
   1) Ketoconazole 2% cream (e.g., Nizoral) - Apply once daily for 6 weeks.
   2) Econazole 1% cream - Apply once daily for 4-6 weeks.

2. Burrow's solution may be used as a foot soak, 20-30 minutes twice daily, for lesions between the toes.

CLIENT EDUCATION/COUNSELING

1. Wear rubber or wooden sandals in community showers and locker rooms.

2. Wash the feet with a benzoyl peroxide bar after showering.

3. Carefully dry between the toes after bathing/showering. A hair dryer on low setting may be used after toweling dry.

4. Change socks frequently. Avoid occlusive footwear. Remove shoes and socks, when possible, to allow air circulation for feet and toes.

5. Apply dusting or drying powders as necessary. Using antifungal powders may prevent recurrence of infection.

6. Completion of therapy is important.

7. Avoid spreading the infection to others. Good hand-washing, thorough cleaning of bathrooms and avoidance of sharing bath towels and wash clothes may inhibit transmission.

8. Contact clinic if any problems obtaining medications.

FOLLOW-UP

Recheck in two weeks if not improved.

CONSULTATION/REFERRAL

1. No improvement after two weeks of treatment.
2. Severe infection or secondary bacterial infection.
3. Extension of the disease to the nails.
4. **Pregnant or breastfeeding client.**

REFERENCES

1. Constance R. Uphold and Mary V. Graham, *Clinical Guidelines in Family Practice,* 4th ed., Barmarrae Books, Gainesville, FL, 2003, p. 287. **(Current)**
2. Klaus Wolff and Richard Allen Johnson, *Fitzpatrick's Color Atlas and Synopsis of Clinical Dermatology,* 6th ed., McGraw-Hill, U**nited States of America**, 2009, <**http://www.accessmedicine.com.medlib-proxy.mercer.edu/resourceTOC.aspx?resourceID=45> accessed on March 9, 2011.**
3. **Committee on Infectious Diseases,** American Academy of Pediatrics, **Larry K. Pickering, ed.,** *Red Book®: **2009** Report of the Committee on Infectious Diseases,* 2**8**th ed., **American Academy of Pediatrics, United States of America**, 200**9**, <**http://online.statref.com/document.aspx?fxid=76&docid=59>, accessed on February 24, 2011.**
4. **Lexi**-Comp**, Inc.,** "*Lexi-Comp **Online***," Lexi-Comp, Inc., **Hudson, Ohio,** 20**11,** <**http://lexicomponline.com/crlsql/servlet/crlonline**> **(February 25, 2011).**
5. American Society of Health-Systems Pharmacists, *American Hospital Formulary Service*, Bethesda, MD, **2011**, pp. **3484-3485, 3488-3498**, **3517-3518**.
6. Facts and Comparisons, ***"****Facts and Comparisons*,***"*** Wolters Kluwer Health, Inc., 20**11**, <http://online.factsandcomparisons.com**./index.aspx**> **(February 25, 2011).**
7. American Academy of Pediatrics, *Red Book Atlas of Pediatric Infectious Diseases,* Elk Grove Village, IL, 2007, pp. 308-309. **(Current)**
8. Rose W. Boynton, et al., *Manual of Ambulatory Pediatrics,* 6th ed., Wolter Kluwer, Philadelphia, 2009, pp. 399-401.
9. Robert **M.** Kliegman, et al., *Nelson Textbook of Pediatrics,* 1**9**th ed., **Elsevier**, Saunders, Philadelphia, PA, 20**11**, <**http://www.mdconsult.com.medlib-proxy.mercer.edu/books/page.do?eid=4-u1.0-B978-1-4377-0755-7..00647-3--sc0020&isbn=978-1-4377-0755-7&sid=1181865590&uniqId=267673234-4#4-u1.0-B978-1-4377-0755-7..00647-3--s0030>, accessed on July 19, 2011.**
10. Sarah Long, *Principles and Practice of Pediatric Infectious Disease*, 3rd ed.,

Elsevier, China, 2008, **<http://www.mdconsult.com.medlib-proxy.mercer.edu/books/page.do?eid=4-u1.0-B978-0-7020-3468-8..50002-X&isbn=978-0-7020-3468-8&type=bookPage&sectionEid=4-u1.0-B978-0-7020-3468-8..50002-X&uniqId=236652941-2#4-u1.0-B978-0-7020-3468-8..50002-X>, accessed on March 4, 2011.**

STANDARD NURSE PROTOCOL FOR UPPER RESPIRATORY INFECTION (URI) (COMMON COLD)

DEFINITION An acute infection of the upper respiratory tract involving the nose, pharynx, sometimes the paranasal sinuses and, perhaps, the middle ears. It lasts several days. Since the activity of the viruses in the upper respiratory tract can impair local defense mechanisms, invasion by bacteria may occur and cause infections of the ears and sinuses.

ETIOLOGY Numerous viruses. In the U.S., peak incidences in children occur in early fall (when schools open), midwinter and early spring. Colds occur most commonly during the second and third years of life, and the average child has from three to eight infections per year. Malnutrition seems to increase susceptibility to colds.

SUBJECTIVE

1. General malaise.
2. Nasal stuffiness, nasal discharge, sneezing, cough.
3. Mild sore throat.
4. Watery eyes.
5. Decreased appetite, particularly in infants.

OBJECTIVE

1. Low-grade fever (less than 101°F or less than 38.5° Celsius) occurs more commonly in children under 3 years old and lasts from a few hours to a few days. Older children usually have no fever; if they have a fever, evaluate for other causes, such as strep throat, otitis media, or pneumonia.
2. Erythematous, edematous nasal mucosa, with clear, thick nasal discharge initially. The discharge may become mucoid or purulent as the illness resolves.
3. Mildly erythematous pharynx.
4. Mild conjunctivitis.
5. Erythematous tympanic membranes in infants. (Rule out otitis media.)

ASSESSMENT Common cold/upper respiratory infection (URI)

PLAN THERAPEUTIC

PHARMACOLOGIC

1. Acetaminophen or Ibuprofen orally - Pediatric (See dosage chart with Nurse Protocol for Fever) if fever is associated with discomfort or decreased fluid intake. Do not use aspirin.

2. Treatment of cough is discouraged because cough is a protective mechanism that helps clear the lung of infectious particles. **NOTE: In October 2008, the FDA issued a statement in support of Consumer Healthcare Products Association voluntary modification of product labels of OTC cough and cold medicines to state "do not use" in children under 4 years of age.** They are of no proven benefit and are associated with significant untoward effects. Prescription cold preparations have also not been shown to be beneficial. Generally, prescription cold medications contain higher concentrations of medication or medication combinations not available OTC. These would also be expected to be associated with significant untoward effects.

NON-PHARMACOLOGIC MEASURES

1. Increase oral fluid intake.

2. Infants: Use saline nose drops - one to two drops in each nostril, followed by gentle (caution: may aggravate nasal congestion if nasal mucosa is injured) aspiration of nasal secretions with rubber suction bulb, particularly before feeding.

3. Avoid environmental respiratory irritants (e.g., cigarette smoke in the home).

4. Elevate head of bed slightly.

5. Nasal dilator strips are adhesive bands placed on the nose that dilate nasal air passages thus relieving nasal congestion. Over the counter strips (e.g. Breathe-Right® Strips) are FDA-approved for use in children 5 years and older.

CLIENT EDUCATION/COUNSELING

1. Rest and increased fluid intake.

2. Seek prompt medical evaluation if chest pain, dyspnea, signs of dehydration, wheezing, moist frequent cough, persistent abdominal pain or vomiting, persistent lethargy, agitation, behavioral changes, or confusion occur.

3. Seek prompt medical evaluation for child less than 3 months of age with temperature elevation.

4. Stress importance of good hand washing technique and proper disposal of tissues.

5. Caution parent not to use **OTC cough and cold medications, including Zicam and** Vicks VapoRub® without consulting physician.

6. **Do not give cough drops to young children. They are a choking a hazard.**

FOLLOW-UP

1. No follow-up needed if symptoms resolve within one week.

2. Reevaluate if symptoms persist beyond 7-10 days
   OR
   if there is deterioration with return of fever after apparent improvement after 4-6 days of illness (suspect pneumonia).

CONSULTATION/REFERRAL

1. Any infant or child with suspected secondary infection (e.g., pneumonia, sinusitis) or URI symptoms persisting longer than 2 weeks.

2. Persistent lethargy or irritability for >2 hours despite adequate treatment of fever.

3. Any infant/child
   a) under 3 months of age with a temperature elevation.
   b) under 6 months of age with temperature over 102.2°F.
   c) 6 to 24 months of age with temperature over 102°F and less than 2 pneumococcal immunizations.

4. Pregnant or breastfeeding client.

REFERENCES

1. Robert **M.** Kliegman, et al., *Nelson Textbook of Pediatrics,* 1**9**th ed., **Elsevier**, Saunders, Philadelphia, PA, 20**11**, <**http://www.mdconsult.com.medlib-proxy.mercer.edu/books/page.do?eid=4-u1.0-B978-1-4377-0755-7..00647-3--sc0020&isbn=978-1-4377-0755-7&sid=1181865590&uniqId=267673234-4#4-u1.0-B978-1-4377-0755-7..00647-3--s0030>, accessed on July 19, 2011.**
2. Thomas K. McInery, et al., *American Academy of Pediatrics Textbook of Pediatric Care,* Elk Grove Village, IL, 2009, pp. 219-220, and 1934-1936.
3. Children's Healthcare of Atlanta, Inc., "The Common Cold," **December** 2009, <http://www.choa.org/default.aspx?id=358> (**February 28, 2011**).
4. American College of Chest Physicians, "Misuse of Vicks VapoRub May Harm Infants and Toddlers Toddler in Respiratory Distress after Popular Salve Used," January 2009, <**http://www.chestnet.org/accp/article/misuse-vicks%C2%AE-vaporub%C2%AE-may-harm-infants-and-toddlers**> (**February 28, 2011**).
5. FDA, "FDA Statement Following CPHA's Announcement on Nonprescription Over-the-Counter Cough and Cold Medicines in Children," *FDA Statement,* October 2008, <http://www.fda.gov/bbs/topics/NEWS/2008/NEW01899.html> (**February 28, 2011**).
6. **U.S. Pharmacist, "Recommendations for the Use of OTC Cough and Cold Medications in Children," March, 2009, <http://www.uspharmacist.com/content/d/feature/i/692/c/12698/> (February 28, 2011).**

THIS PAGE INTENTIONALLY LEFT BLANK