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# **NURSE PROTOCOLS FOR HIV/AIDS**

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## RECOMMENDATIONS FOR USE OF THE HIV/AIDS-RELATED NURSE PROTOCOLS

The HIV Nurse Protocol Committee recommends the following HIV-related nurse protocols for use by public health nurses. Use of other state model protocols, such as the STD Nurse Protocols, and/or other HIV-related protocols by public health nurses should be based on the nurse's experience, training, and competency.

Nurses working in public health clinics must also follow the HIV Section manual, "Medical Guidelines for the Care of HIV-Infected Adults and Adolescents, June 2005." These guidelines include sections such as Initial Evaluation, Women's Health, Transgender Care, Immunizations, Routine Interim Visits, and Urgent Care. The guidelines are available online at <http://health.state.ga.us/pdfs/epi/hivstd/HIVmedicalguidelinesJune2005.pdf>. Nurses should ensure that HIV-infected clients receive the recommended adult immunizations. For the latest recommendations see <http://www.cdc.gov/nip/recs/adult-schedule.htm>.

The HIV Nurse Protocol Committee supports the use of the AIDS Education and Training Centers (AETC) manual, "The Clinical Manual for Management of the HIV-Infected Adult," **2006 edition, as a reference guide for midlevel provider practice available online at <http://www.aidsetc.org/>**. The Committee further recommends use of the 2006 manual in conjunction with more frequently updated references, such as the current edition of *Medical Management of HIV Infection* by John G. Bartlett and Joel E. Gallant, and the U.S. Public Health Service (USPHS) HIV-related guidelines. NPs should list these documents in the "Reference Guidelines for Practice" section of the nurse practitioner protocol agreement and add HIV/AIDS-related medications to the NP formulary. Please note that the NP agreement must exclude controlled substances.

Due to the rapidly evolving management of HIV disease, the HIV Nurse Protocol Committee recommends that individual protocols be locally updated as USPHS HIV-related guidelines are revised. Compliance with USPHS HIV/AIDS-related guidelines is a requirement of the Health Resources and Service Administration (HRSA) for sites receiving Ryan White Comprehensive AIDS Resources Emergency (CARE) Act funding. These guidelines are considered "living" documents and are available online at the AIDSinfo website <http://aidsinfo.nih.gov/>; therefore, changes in these guidelines supersede information in the following HIV/AIDS-related nurse protocols.

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## NURSE PROTOCOL FOR CONTINUATION OF ANTIRETROVIRAL THERAPY IN HIV-INFECTED ADULT OR ADOLESCENT

### DEFINITION

Antiretroviral therapy refers to a combination of medications used to treat HIV infection. These drug combinations are commonly called highly active antiretroviral therapy (HAART). Currently, there are four classes of these drugs approved by the Food and Drug Administration (FDA): nucleoside and nucleotide reverse transcriptase inhibitors (NRTIs, NtRTIs), non-nucleoside reverse transcriptase inhibitors (NNRTIs), protease inhibitors (PIs), and fusion inhibitors (FIs). Since the mid-1990s, when studies demonstrated the superiority of three-drug regimens over single or dual drug regimens, national guidelines have mandated the use of three or more drugs in combination to treat HIV infection.

Once a HAART regimen is initiated, it is generally continued indefinitely unless the client experiences medication intolerance, severe side effects, adverse reactions, or treatment failure.

### SUBJECTIVE

1. Currently taking an appropriate HAART regimen.
2. Reports medication adherence and a desire to continue current HAART regimen.
3. Absence of adverse reactions or significant side effects to antiretroviral medications.
4. Absence of allergies to antiretroviral medications.
5. CD4 count and **HIV** viral load history.
6. Obtain a complete medication profile to determine whether or not there are any clinically significant drug-drug interactions.

**NOTE:** Medication profiles should include over-the-counter (OTC) medications, herbals, vitamins, and prescription medications.

### OBJECTIVE

1. No evidence of virologic or immunologic failure as defined in the Department of Health and Human Services (DHHS) antiretroviral guidelines.
2. The most recent complete blood count (CBC) with differential and platelet count, chemistry profile including liver and renal functions, and lipid profile are within acceptable values.

**ASSESSMENT** No contraindications for continuation of antiretroviral regimen.

**PLAN** **DIAGNOSTIC STUDIES**

1. Repeat CD4 count and HIV viral load, if indicated.
2. Repeat CBC with differentials, chemistry profile including liver and renal function, and lipid profile, if indicated.

**THERAPEUTIC**

1. Order one-month supply of each antiretroviral medication the client is currently taking. See the latest DHHS antiretroviral guidelines, "Guidelines for the Use of Antiretroviral Agents in HIV-1 Infected Adults and Adolescents," for recommendations including antiretroviral regimens, agent formulations and dosing, adverse events, and drug-drug interactions. The guidelines are available online at <http://www.aidsinfo.nih.gov/>.
2. **Review the client's current medication list for possible drug-drug interactions. Include prescription medications, OTC drugs/products, and nutritional or herbal supplements.**

**NOTE:** Antiretroviral medications frequently have drug-drug interactions that require dose modifications. Check with the physician, a pharmacist, drug and HIV references, and/or the latest DHHS antiretroviral guidelines for appropriate dose modifications. **Other online references include:**

- **HIV Insite, *Database of Antiretroviral Drug Interactions*, <http://www.hivinsite.org/InSite?page=ar-00-02>**
- **AIDSMeds.com, *Check My Meds*, <http://www.aidsmeds.com/cmm/>**
- **Toronto General Hospital, *Drug Interaction Tables*, [http://tthhivclinic.com/interact\\_tables.html](http://tthhivclinic.com/interact_tables.html).**

**CLIENT EDUCATION/COUNSELING**

1. Review current drug regimen including drug storage, dose, route of administration, schedule, food requirements or restrictions, side effects, potential drug-drug interactions, and follow-up monitoring.
2. Provide measures to promote adherence such as written medication schedules and pillboxes.

3. Discourage client from stopping HAART regimen without consulting provider first.

**NOTE:** Simultaneously discontinuing all drugs in a HAART regimen may lead to “functional” monotherapy of one drug due to the drug’s longer half-life compared with the other drugs (e.g., data have shown that efavirenz or nevirapine drug levels may persist for 21 days or longer). Currently there are no guidelines for optimal discontinuation intervals between drugs. Check with the physician concerning discontinuation instructions.

4. Instruct client to return for scheduled appointment. Stress that failure to keep appointments may result in discontinuation of medications.
5. Ask client to immediately report adverse drug reactions, side effects or other changes in health that he/she feels are important to his/her care provider.

**NOTE:** If client experiences hypersensitivity reactions to abacavir, it should be discontinued immediately. If the client stops taking abacavir because of adverse reactions, it should not be re-started. Abacavir hypersensitivity reactions can be fatal.

6. **Instruct client that HIV medications, especially PIs and NNRTIs, have a high potential for significant drug interactions.**
7. **Ask client to check with his/her pharmacist or provider about interactions before taking a new medication, nutritional or herbal supplement, or OTC drug/product.**
8. **Request that the client not “borrow” medications from friends or family or obtain prescription drugs outside the care of his/her physician (e.g., erectile dysfunction agents).**
9. **Instruct client to bring all medications, nutritional or herbal supplements, and OTC drugs/products to his/her medical appointments.**

## FOLLOW-UP

Return appointment with the nurse practitioner or physician in 2-4 weeks.

## CONSULTATION/REFERRAL

1. Refer the following to the physician:
  - a. Non-adherent clients.
  - b. HAART regimens that do not follow the latest USPHS treatment guidelines.
  - c. Suspect treatment failure.
  - d. Adverse reactions to HAART or severe/significant side effects.
2. Consult with the physician concerning any abnormal lab results.
3. Consult with the physician concerning instructions for discontinuing HAART regimens.
4. Consult with the physician concerning antiretroviral therapy in clients with renal or hepatic insufficiency.
5. **Consult with a clinical pharmacist to assist with evaluation of potential drug-drug interactions, if needed. (Grady ADAP Pharmacy phone number: 1-888-317-8003)**

## REFERENCES

1. **AIDS Education and Training Centers, "Drug-Drug Interactions with HIV-Related Medications," *Clinical Manual for Management of the HIV-Infected Adult*, 2006 ed., July 2006 <[http://www.aids-etc.org/aetc/aetc?page=cm-312\\_drug](http://www.aids-etc.org/aetc/aetc?page=cm-312_drug)> (April 3, 2007).**
2. **AIDSMeds.com, Check My Meds, <<http://www.aidsmeds.com/cmm/>> (April 3, 2007).**
3. **Clinical Pharmacology, <<http://www.clinicalpharmacology.com>> (March 16, 2007).**
4. John G. Bartlett and Joel E. Gallant, *2007 Medical Management of HIV Infection*, Johns Hopkins University, 2007.
5. **Department of Health and Human Services, *Guidelines on the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents*, October 10, 2006, <<http://aidsinfo.nih.gov/contentfiles/AdultandAdolescentGL.pdf>> (March 16, 2006).**
6. **HIV Insite, Database of Antiretroviral Drug Interactions, <<http://www.hivinsite.org/InSite?page=ar-00-02>> (April 3, 2007).**

7. Carl A. Kirton, "Guidelines for the Initiation of Antiretroviral Therapy," in Carl A. Kirton et al. (eds.), *Handbook of HIV/AIDS Nursing*, Mosby, St Louis, 2001, pp. 65-82. **(Current)**
8. **Toronto General Hospital Drug Interaction Tables,**  
<[http://tthivclinic.com/interact\\_tables.html](http://tthivclinic.com/interact_tables.html)> **(April 3, 2007).**

## NURSE PROTOCOL FOR NEW ONSET (ACUTE) DIARRHEA IN HIV-INFECTED ADULT OR ADOLESCENT

- DEFINITION** Acute diarrhea is a change in normal bowel movements characterized by abrupt or gradual onset of frequent (more than 3-4 per day), liquid or soft stools for >3 days and <14 days. Large volume of stools with periumbilical pain usually indicates small bowel disease. Small volume, frequent stools, which may be associated with urgency, tenesmus, lower abdominal cramps or perianal pain, are usually associated with colonic and/or anorectal disease.
- ETIOLOGY** There are many possible causes of acute diarrhea ranging from medication side effects to infections.
- SUBJECTIVE**
1. Assess pattern of diarrhea: onset, duration, amount, frequency, and appearance (e.g., foul-smelling, frothy, black, watery, visible blood, pus, mucus).
  2. Assess whether or not diarrhea is interfering with activities of daily living.
  3. May or may not be accompanied by one or more of the following:
    - a. Fever.
    - b. Abdominal pain/cramping.
    - c. Nausea and/or vomiting.
    - d. Bloating.
    - e. Urgency.
    - f. Tenesmus (i.e., anal pain and spasms that may include the urge to defecate without being able to pass stool).
    - g. Perianal pain and/or sores.
    - h. Recent involuntary weight loss.
    - i. Difficulty urinating.
  2. May or may not have symptoms of dehydration (e.g., thirst, decrease in urine output, dark-colored urine, dry skin and mucous membranes, fatigue, light-headedness, and rapid heart beat).
  3. May or may not report a history of the following:
    - a. Taking medications which cause diarrhea (e.g., protease inhibitors).
    - b. Antibiotics taken within the last 6-8 weeks.
    - c. Recent hospitalization.
    - d. Recent travel to a foreign and/or developing country or camping trip.
    - e. Exposure to potentially contaminated food or water (e.g.,

ingestion of raw meat or eggs, shellfish, or lake or stream water).

- f. Recent herbal or alternative therapies.
- g. Exposure to a pet or another animal with diarrhea.
- h. Exposure to a coworker or family member with similar illness.
- i. Recent receptive anal sex and/or oral-anal sexual contact and/or sexually transmitted disease.
- j. Working in daycare, healthcare, or food industry.
- k. Food intolerance (e.g., lactose intolerance).
- l. Irritable bowel syndrome or inflammatory bowel disease.
- m. Anxiety disorders, panic attacks, or new emotional stress.
- n. Laxative abuse or eating disorder.
- o. Alcohol or other recreational drug use.

**OBJECTIVE**

- 1. May or may not have fever and/or recent weight loss.
- 2. May or may not have signs of dehydration (e.g., postural hypotension, orthostatic pulse, tachycardia, dry mucous membranes, poor skin turgor, lethargy).
- 3. May or may not have hyperactive or hypoactive bowel sounds, abdominal tenderness or distention, organomegaly, perianal lesions or tissue breakdown, or heme-positive stools.
- 4. Current CD4 count.

**ASSESSMENT**

New onset (acute) diarrhea

**PLAN**

**THERAPEUTIC**

**PHARMACOLOGIC**

If client is afebrile and without bloody stools and/or abdominal pain, and diarrhea is concomitant with starting of antiretroviral agents (e.g., nelfinavir), may order:

- 1. Calcium 500 mg tablets by mouth two times/day for 7 days,  
**AND/OR**
- 2. Loperamide HCL 4 mg by mouth initially and then 2 mg after each stool to a maximum of 16 mg/day for 7 days.

**NOTE:** Antidiarrheal agents should not be used in cases of bloody diarrhea or if suspect *C. difficile*-related diarrhea. In clients taking atazanavir or tipranavir, avoid simultaneous administration of antacids (e.g., Tums with calcium); give atazanavir or tipranavir 2 hours before or 1 hour after these medications.

### **NON-PHARMACOLOGIC**

1. Adjust diet and fluid intake to decrease diarrhea and maintain adequate hydration and electrolyte levels (see below in client education/counseling).
2. If history of lactose intolerance, avoid dairy products or take lactaid pills before ingesting dairy products.
3. Discontinue any newly started herbal or alternative therapy.
4. If diarrhea is associated with recent antibiotic therapy the normal bacterial flora of the intestinal tract may need to be replaced, increase intake of probiotics either through over-the-counter *Lactobacillus* products or through food products (e.g., buttermilk or yogurt).

**NOTE:** If allergic to milk or dairy products or sensitive to lactose, avoid using *Lactobacillus* products.

### **CLIENT EDUCATION/COUNSELING**

1. Instruct client to maintain hydration and electrolyte levels by ingesting ½-strength Gatorade, broth, soups, ½-strength fruit juices.

**NOTE:** Formula for inexpensive oral rehydration solution - dissolve the following in 1L (approx. 33 ounces) of water: ¾ teaspoon table salt, 1 teaspoon baking soda, and 4 tablespoons sugar, then add 1 cup of orange juice or 2 bananas.

2. Instruct client to avoid foods that tend to aggravate diarrhea, including milk/dairy products, and foods that are greasy, high-fiber or very sweet. Also, avoid products that contain alcohol or caffeine.

3. Encourage client to eat small meals every 2-3 hours. Gradually add soft, bland foods to diet, including bananas, plain rice, boiled potatoes, toast, crackers, cooked carrots, and skinless baked chicken.
4. Instruct client to keep perianal area clean and dry. May use sitz baths and perineal hygiene cleaners and skin-protection ointments to maintain skin integrity.
5. Inform client given calcium or loperamide HCL that he/she should experience improvement of symptoms within a few days. If symptoms do not improve within 2-3 days or if symptoms worsen, contact provider. If constipation occurs, reduce doses.

**NOTE:** Instruct clients taking atazanavir or tipranavir to avoid simultaneous administration of antacids (e.g., Tums with calcium); take atazanavir or tipranavir 2 hours before or 1 hour after antacids.

6. Stress the importance of not stopping antiretroviral therapy or other medications unless he/she has consulted with his/her provider first.
7. If suspect infectious diarrhea, instruct client to not work as a food handler until diarrhea is controlled. Stress importance of hand washing.
8. Instruct client on ways to prevent diarrhea in the future, including: drinking bottled or purified water, using proper food handling and cooking techniques, and performing proper hand-washing techniques.

### **FOLLOW-UP**

Return appointment in one week, if symptoms have not improved/resolved.

### **CONSULTATION/REFERRAL**

1. Refer clients immediately to the physician for any of the following (client may require hospitalization):
  - a. Fever over 101 degrees Fahrenheit.
  - b. Blood in the stool.
  - c. Signs and symptoms of dehydration.
  - d. Profuse diarrhea.
  - e. CD4 counts < 100 cells/mm<sup>3</sup>.
  - f. Abdominal pain and/or distention.

- g. Perianal pain and/or lesions.
  - h. Recent involuntary weight loss of 3-5 lbs. or more.
  - i. Difficulty urinating.
  - j. Suspect infectious agent causing diarrhea.
  - k. Suspect laxative abuse.
2. Consult with physician to discontinue and/or change medications that may be causing diarrhea.
  3. Refer to mental health provider if client has new emotional stress, history of eating disorder/laxative abuse, anxiety disorder or panic attacks.
  4. May refer to dietitian/nutritionist for further dietary recommendations.
  5. Consult physician concerning clients who have persistent diarrhea for >7 days in spite of taking antidiarrheal agents.

## REFERENCES

1. **AIDS Education and Training Centers, "Diarrhea", *Clinical Manual for the Management of the HIV-Infected Adult*, 2006 ed., July 2006, <[http://www.aids-etc.org/aetc/aetc?page=cm-402\\_diarrhea](http://www.aids-etc.org/aetc/aetc?page=cm-402_diarrhea)> (April 3, 2007).**
2. John G. Bartlett and Joel E. Gallant, *2007 Medical Management of HIV Infection*, Johns Hopkins University, 2007, pp. 411-414.
3. **Department of Health and Human Services, *Guidelines on the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents*, October 6, 2006, <<http://aidsinfo.nih.gov/contentfiles/AdultandAdolescentGL.pdf>> (March 29, 2007).**
4. Erik L. Goldman, "Diarrhea: Do a Thorough History Before Prescribing," *Family Practice News*, February 15, 2000, <<http://www.findarticles.com>> (April 3, 2007). **(Current)**
5. Infectious Diseases Society of America, "Practice Guidelines for the Management of Infectious Diarrhea," *Clinical Infectious Diseases*, Vol. 32, 2001, pp. 331-351. <<http://www.journals.uchicago.edu/CID/journal/issues/v32n3001387/001387.text.html>> (April 2, 2007). **(Current)**
6. Scott D. Lee and Christina M. Surawicz, "The Management of Infectious Diarrhea," *Medscape Gastroenterology eJournal*, Vol. 3., No. 5, 2001, <<http://www.medscape.com/viewarticle/407978>> (April 2, 2007). **(Current)**
7. **Angela D.M. Kashuba, "Treatment of Nelfinavir-Associated Diarrhea?," *Medscape*, December 27, 2001, <<http://www.medscape.com/viewarticle/413215>> (April 3, 2007). (Current)**

8. S.K. Glenda Winson, "Diarrhea," in Carl Kirton (ed.), ANAC's Core Curriculum for HIV/AIDS Nursing, 2nd ed., Sage Publications, Thousand Oaks, California, 2003, pp. 142-143. **(Current)**
9. USProbiotics.org, *Probiotocs Basics*, 2006 <<http://www.usprobiotics.org/>> **(March 27, 2006)**.

## NURSE PROTOCOL FOR PERSISTENT (CHRONIC) DIARRHEA IN HIV-INFECTED ADULT OR ADOLESCENT

- DEFINITION** Chronic diarrhea is a change in normal bowel movements characterized by frequent (more than 3-4 per day) liquid or soft stools for >2 weeks. Large volume of stools with periumbilical pain usually indicates small bowel disease. Small volume, frequent stools, which may be associated with urgency, tenesmus, lower abdominal cramps or perianal pain, are usually associated with colonic and/or anorectal disease.
- ETIOLOGY** Chronic diarrhea in HIV-infected adults is often related to an enteric pathogen or medications. However, in some clients no cause is identified.
- SUBJECTIVE**
1. Assess pattern of diarrhea: onset, duration, amount, frequency, appearance (e.g., foul-smelling, frothy, black, watery, visible blood, pus, mucus).
  2. Assess whether or not diarrhea is interfering with activities of daily living.
  3. May or may not be accompanied by one or more of the following:
    - a. Fever.
    - b. Abdominal pain/cramping.
    - c. Nausea and/or vomiting.
    - d. Bloating.
    - e. Urgency.
    - f. Tenesmus (i.e., anal pain and spasms that may include the urge to defecate without being able to pass stool).
    - g. Perianal pain and/or sores.
    - h. Involuntary weight loss.
    - i. Difficulty urinating.
  4. May or may not have symptoms of dehydration (e.g., thirst, decrease in urine output, dark-colored urine, dry skin and mucous membranes, fatigue, light-headedness, and rapid heart beat).
  5. May or may not report a history of the following:
    - a. Taking medications which cause diarrhea (e.g., protease inhibitors).
    - b. Antibiotics taken within the last 6-8 weeks.

- c. Recent hospitalization.
- d. Recent travel to a foreign and/or developing country or camping trip.
- e. Exposure to potentially-contaminated food or water (e.g., ingestion of raw meat or eggs, shellfish, or lake or stream water).
- f. Recent herbal or alternative therapies.
- g. Exposure to a pet or another animal with diarrhea.
- h. Exposure to a coworker or family member with similar illness.
- i. Recent receptive anal sex and/or oral-anal sexual contact and/or sexually transmitted disease.
- j. Working in daycare, healthcare, or food industry.
- k. Food intolerance (e.g., lactose intolerance).
- l. Irritable bowel syndrome or inflammatory bowel disease.
- m. Anxiety disorders, panic attacks, or new emotional stress.
- n. Laxative abuse or eating disorder.
- o. Alcohol or other recreational drug use.

#### OBJECTIVE

1. May or may not have fever and/or weight loss.
2. May or may not have signs of dehydration (e.g., postural hypotension, orthostatic pulse, tachycardia, dry mucous membranes, poor skin turgor, lethargy).
3. May or may not have hyperactive or hypoactive bowel sounds, abdominal tenderness or distention, organomegaly, perianal lesions or tissue breakdown, heme-positive stools.
4. Current CD4 count.

#### ASSESSMENT

Persistent (chronic) diarrhea

#### PLAN

#### DIAGNOSTIC STUDIES

1. CBC and serum chemistry (i.e., electrolytes, BUN, and creatinine).
2. Stool for *C. difficile* toxin assay. **Repeat up to two additional assays for C. diff toxin if the first is negative.**

**NOTE: Recent studies indicate that community-associated *Clostridium difficile* is increasing and may not be linked to recent antibiotic use. Some studies identified a possible link with proton pump inhibitor therapy.**

3. Stool for:

- a. Bacterial culture (if negative repeat x 1-2).
- b. Mycobacterial culture if CD4 count  $<100/\text{mm}^3$ .
- c. AFB smear (if negative repeat x 1-2)  $<100/\text{mm}^3$ .
- d. Intestinal parasites:
  - 1) Giardia and Cryptosporidia by Immunofluorescence Assay (IFA).
  - 2) Microsporidia by Hot Chromotrope Stain.
  - 3) Ova and Parasites (O & P) for all intestinal parasites (repeat specimen collection for 3 consecutive days).

## THERAPEUTIC

### PHARMACOLOGIC

If client is afebrile and without bloody stools and/or abdominal pain; and/or client is taking antiretroviral agents, which may cause diarrhea (e.g., nelfinavir), may order:

1. Calcium 500 mg tablets by mouth two times/day,  
**AND/OR**
2. Loperamide HCL 4 mg by mouth initially and then 2 mg by mouth after each stool to a maximum of 16 mg/day,  
**AND/OR**
3. Stool Bulking Agents
  - a. Psyllium powder (e.g., Metamucil®) mixed in 2/3 of fluid required on package instructions by mouth daily or two times/day,  
**OR**
  - b. Psyllium fiber wafers, 2 wafers by mouth daily or two times/day,  
**OR**
  - c. Oat bran tablets 1500 mg by mouth two times/day.

**NOTE:** Antidiarrheal agents should not be used in cases of bloody diarrhea or if suspect *C. difficile*-related diarrhea. Psyllium should be taken at least 2-3 hours before or after other drugs because it can decrease effects of certain drugs. In clients taking atazanavir or tipranavir, avoid simultaneous administration of antacids (e.g., Tums with calcium); give atazanavir or tipranavir 2 hours before or 1 hour after these medications.

### NON-PHARMACOLOGIC

1. Adjust diet and fluid intake to decrease diarrhea and maintain adequate hydration and electrolyte levels (see below in client education/counseling).
2. If history of lactose intolerance, avoid dairy products or take lactaid pills before ingesting dairy products.
3. Discontinue any newly started herbal or alternative therapy.
4. If diarrhea is associated with recent antibiotic therapy, the normal bacterial flora of the intestinal tract may need to be replaced, increase intake of probiotics either through over-the-counter *Lactobacillus* products or through food products (e.g., buttermilk or yogurt).

**NOTE:** If allergic to milk or dairy products or sensitive to lactose, avoid using *Lactobacillus* products.

### CLIENT EDUCATION/COUNSELING

1. Instruct client to maintain hydration and electrolyte levels by ingesting ½-strength Gatorade, broth, soups, ½-strength fruit juices.

**NOTE:** Formula for inexpensive oral rehydration solution - dissolve the following in 1L (approx. 33 ounces) of water: ¾ teaspoon table salt, 1 teaspoon baking soda, and 4 tablespoons sugar, then add 1 cup of orange juice or 2 bananas.

2. Instruct client to avoid foods that tend to aggravate diarrhea, including milk/dairy products, and foods that are greasy, high-fiber or very sweet. Also avoid products that contain alcohol or caffeine.
3. Encourage client to eat small meals every two-three hours. Gradually add soft, bland foods to diet, including bananas, plain rice, boiled potatoes, toast, crackers, cooked carrots, and skinless baked chicken.
4. Instruct client to keep perianal area clean and dry. May use sitz baths and perineal hygiene cleaners and skin-protection ointments to maintain skin integrity.
5. Inform client given calcium or loperamide HCL that he/she should experience improvement of symptoms within a few days. If

symptoms do not improve within 2-3 days or if symptoms worsen, contact provider. If constipation occurs, reduce doses.

**NOTE:** Instruct clients taking atazanavir or tipranavir to avoid simultaneous administration of antacids (e.g., Tums with calcium); take atazanavir or tipranavir 2 hours before or 1 hour after antacids.

6. Instruct client to notify provider if symptoms worsen or do not improve.
7. Stress the importance of not stopping antiretroviral or other medications unless he/she has consulted with his/her provider first.
8. If suspect infectious diarrhea, instruct client to not work as a food handler until diarrhea is controlled. Stress importance of hand washing.
9. Instruct client on ways to prevent diarrhea in the future, including: drinking bottled or purified water, using proper food handling and cooking techniques, and performing proper hand-washing techniques.
10. Inform clients who have well water or private water sources to consider testing water source by obtaining test kit and instructions from local Environmental Health office.

### **FOLLOW-UP**

Return appointment as needed, if symptoms have not improved or do not resolve.

### **CONSULTATION/REFERRAL**

1. Refer client immediately to the physician for the following (client may require hospitalization):
  - a. Fever over 101 degrees Fahrenheit.
  - b. Blood in the stool.
  - c. Signs and symptoms of dehydration.
  - d. CD4 counts < 100 cells/mm<sup>3</sup>.
  - e. Abdominal pain and/or distention.
  - f. Perianal pain and/or lesions.
  - g. Involuntary weight loss of > 5 lbs.
  - h. Difficulty urinating.
  - i. Suspect infectious agent causing diarrhea.
  - j. Suspect laxative abuse.

2. Consult with physician to discontinue and/or change medications that may be causing diarrhea.
3. Notify physician and/or nurse practitioner of stool studies and lab results. If specific etiology revealed, refer to physician and/or nurse practitioner for treatment.
4. If stool studies are negative and symptoms continue, consult with physician for further testing (e.g., endoscopy, sigmoidoscopy, or colonoscopy).
5. Refer to mental health provider if client has new emotional stress, history of eating disorder/laxative abuse, anxiety disorder or panic attacks.
6. May refer to dietitian/nutritionist for further dietary recommendations.
7. If antidiarrhea treatment was ordered and did not improve or resolve diarrhea, consult physician.

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## NURSE PROTOCOL FOR DMAC PROPHYLAXIS IN HIV-INFECTED ADULT OR ADOLESCENT

### DEFINITION/ INDICATION

HIV-infected persons with CD4 counts  $< 50/\text{mm}^3$  should receive primary prophylaxis to prevent a first episode of disseminated *Mycobacterium avium* complex (DMAC) disease.

Persons with DMAC should receive lifelong therapy (i.e., secondary prophylaxis or maintenance therapy), unless immune reconstitution occurs due to highly active antiretroviral therapy (HAART).

Primary prophylaxis should be discontinued in clients who have responded to HAART and have sustained CD4 counts  $> 100/\text{mm}^3$  for 3 months or more (immune reconstitution). Primary prophylaxis should be reintroduced if the CD4 count decreases to  $< 50\text{-}100/\text{mm}^3$ .

Secondary prophylaxis should be discontinued in clients who have completed at least 12 months treatment for DMAC, are asymptomatic for DMAC, have responded to HAART, and have sustained CD4 counts  $> 100/\text{mm}^3$  for 6 months or more. Secondary prophylaxis should be reintroduced if the CD4 count decreases to  $< 100/\text{mm}^3$ .

### ETIOLOGY

DMAC is a bacterial infection composed of *Mycobacterium avium* and *Mycobacterium intracellulare* organisms. These organisms are found in the environment, such as food, water, soil and animals. MAC organisms may enter the body via the gastrointestinal or respiratory tracts. Data suggests that DMAC results from new infection instead of reactivation of latent infection.

### SUBJECTIVE

1. May or may not have a history of DMAC and/or treatment for DMAC.
2. No history of active tuberculosis (TB).
3. No symptoms suggestive of DMAC (e.g., fevers, chills, night sweats, weight loss, abdominal pain or diarrhea).
4. Absence of allergies to macrolide antibiotics (e.g., clarithromycin, erythromycin) or ethambutol.
5. Obtain a medication profile to determine whether or not there are any clinically significant drug-drug interactions with treatment.

**NOTE:** Medication profiles should include over-the-counter medications, herbals, vitamins, and prescription medications.

- OBJECTIVE**
1. CD4 count  $<50/\text{mm}^3$ , unless history of DMAC disease with treatment.
  2. Absence of signs of current DMAC infection (e.g., weight loss, fever, enlarged spleen or liver, abdominal tenderness).
  3. If blood culture for MAC performed, is negative for MAC.
  4. Complete blood count (CBC) with differential and platelet count, liver and renal functions within acceptable values.
  5. No signs of active TB.

**ASSESSMENT** Candidate for DMAC prophylaxis (primary or secondary), at risk of DMAC disease

**PLAN** **THERAPEUTIC**

**PHARMACOLOGIC**

1. Primary Prophylaxis (Prevention of First Episode of DMAC Disease)  
If no history of DMAC, and CD4 count  $<50/\text{mm}^3$ , order:
  - a. Azithromycin 1,200 mg by mouth once per week  
**OR**
  - b. Clarithromycin 500 mg by mouth two times/day
2. Secondary Prophylaxis (Chronic Maintenance Therapy)  
If history of DMAC disease with treatment, order:
  - a. First Choice:  
Clarithromycin 500 mg by mouth two times/day  
**PLUS**  
Ethambutol 15 mg/kg by mouth daily  
**OR**
  - b. Alternative:  
Azithromycin 500–600 mg by mouth daily  
**PLUS**  
Ethambutol 15 mg/kg by mouth daily

**NOTE:** Aluminum and magnesium-containing antacids decrease serum levels of azithromycin. **Avoid concurrent administration of aluminum or magnesium containing antacids with azithromycin.** Aluminum-containing antacids decrease absorption of ethambutol. **Avoid concurrent administration of aluminum-containing antacids for at least 4 hours following ethambutol.** Clarithromycin has many drug-drug interactions and doses may need to be adjusted. If break-through DMAC occurs, there is a chance it may be macrolide resistant. Rifabutin is an alternative prophylactic agent for DMAC disease but, because of associated drug interactions, physicians should make the decision about ordering this medication.

### **CLIENT EDUCATION/COUNSELING**

1. Explain reason for regimen. Review current drug regimen, including: drug storage, dose, route of administration, schedule, side effects and follow-up monitoring.
2. Instruct client to stop the medications and immediately report adverse drug reactions, side effects (e.g., rash, vomiting, severe diarrhea, fever, chills, numbness or tingling in arms or legs, persistent loss of appetite, vision changes) or other changes in health that he/she feels are important to his/her care provider.
3. If client is taking ethambutol, instruct to report vision changes immediately.
4. Instruct that taking medications as ordered and keeping appointments is very important to prevent this life-threatening illness.
5. Explain that prophylaxis may be discontinued due to sustained rise in CD4 count while on HAART, but may need to be re-started in the event of stopping HAART, CD4 counts dropping or if health condition worsens.
6. Instruct client to report any signs and symptoms of DMAC to the provider.
7. Ask female client to inform the provider if she is, or is planning to become, pregnant.

## FOLLOW-UP

1. Monitor for medication adherence, adverse drug events and medication side effects.
2. Obtain & monitor CBC with differential and platelet count, and renal and liver function tests, within 4-6 weeks of initiation of regimen and then as indicated.
3. Monitor for signs/symptoms of DMAC.
4. Obtain & monitor CD4 counts and percentage at least every 3-6 months.
5. Monitor vision in clients taking ethambutol by providing vision checks monthly, which include visual acuity and red/green color discrimination.

## CONSULTATION/REFERRAL

1. Notify the physician of the following:
  - a. Abnormal lab values.
  - b. Medication side effects and/or adverse events.
  - c. Signs/symptoms of DMAC.
  - d. Changes in visual acuity or red/green color discrimination.
2. Defer the decision to discontinue primary or secondary prophylaxis to physician.
3. Defer the decision to initiate rifabutin as an alternative prophylactic agent for DMAC disease to the physician.
4. Refer pregnant clients to the physician.

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## NURSE PROTOCOL FOR HERPES ZOSTER (SHINGLES) IN HIV-INFECTED ADULT OR ADOLESCENT

### DEFINITION

Herpes zoster is a viral illness that usually presents as a vesicular rash, with pain and itching, in a unilateral dermatomal distribution. The duration of vesicles and crusts, as well as significant pain, is usually 2-3 weeks. Thoracic and lumbar dermatomes are most frequently involved. Involvement of the trigeminal nerve can cause infection of the eye, which may lead to blindness. Rarely, the eyes are affected when other dermatomes are infected.

Herpes zoster is frequently seen during the course of HIV infection and is particularly common in healthy-appearing individuals before the onset of other HIV-related symptoms. It may be particularly painful, necrotic and hemorrhagic in HIV-infected persons. Necrotic lesions may last for up to six weeks and cause severe scarring.

Disseminated varicella zoster virus (VZV) infection is uncommon, but when it occurs it usually involves the skin and/or visceral organs. Dissemination to the skin may appear identical to primary VZV infection (i.e., chickenpox). If dissemination occurs to the viscera, it may involve the lungs, liver or central nervous system and may be fatal. Chronic lesions of VZV may be verrucous (i.e., resembling warts or psoriasis). Secondary bacterial infections of the skin may occur, which may be severe (e.g., necrotizing fasciitis) and require hospitalization.

**NOTE:** VZV is contagious and contact or airborne-spread from vesicle fluid may cause chickenpox in non-immune persons (i.e., no history of chickenpox or shingles and/or varicella seronegative). Non-immune healthcare workers should not take care of clients with VZV infection until all of the client's lesions are dry and crusted. **Localized herpes zoster has been reported to occur with increased frequency within the first 4 months after initiating HAART, especially in those who experienced increases in their CD8 cells.**

### ETIOLOGY

Herpes zoster is caused by reactivation of VZV (i.e., reactivation of chickenpox).

### SUBJECTIVE

1. May report numbness, itching or pain in a dermatomal distribution that precedes the appearance of lesions by many days (prodrome).
2. Complains of painful and/or itching skin blisters or ulcerations along

one side of the face or body.

3. May complain of:
  - a. Severe pain in area after rash has healed.
  - b. Disseminated skin lesions.
  - c. Loss of or change in vision.
  - d. Respiratory symptoms.
  - e. Symptoms of encephalitis (e.g., headaches, vomiting, lethargy, ataxia, tremor and dizziness).
4. Conduct pain assessment using pain tool/scale (e.g., faces of pain or 0-10 numerical scale).
5. May report a history of:
  - a. Shingles.
  - b. Chickenpox.
6. Obtain a medication profile to determine whether or not there are any clinically significant drug-drug interactions with treatment.

**NOTE:** Medication profiles should include over-the-counter medications, herbals, vitamins and prescription medications.

7. Absence of drug allergies to acyclovir, valacyclovir or famciclovir.

## OBJECTIVE

1. Vesicular lesions with erythematous bases following dermatomes; may be bullous, hemorrhagic and/or necrotic.

**NOTE:** Lesions in the eye area or tip of nose, along the trigeminal nerve represent a therapeutic emergency.

2. May have allodynia (i.e., pain provoked by normally innocuous stimuli) and/or sensory deficits.
3. May have dermatomal scarring and/or hypopigmentation.
4. May or may not have signs of disseminated skin or visceral disease (e.g., respiratory signs, altered mental status).
5. Review previous lab results for evidence of renal impairment.

## ASSESSMENT

Herpes Zoster

## PLAN

### DIAGNOSTIC STUDIES

May order Tzanck prep, Herpes viral culture or immunofluorescent assay (IFA).

### THERAPEUTIC

#### PHARMACOLOGIC

1. If client does not have clinical features of disseminated or visceral infection, and if lesions are not near the eye, begin treatment:
  - a. Acyclovir (Zovirax) by mouth 800 mg 5 times/day for 10 days,  
**OR**
  - b. Famciclovir 500 mg by mouth three times/day for 7-10 days,  
**OR**
  - c. Valacyclovir 1 gm by mouth three times/day for 7-10 days.

**NOTE:** Treatment should begin within 72 hours of outbreak. Famciclovir or valacyclovir is the recommended treatment for localized dermatomal herpes zoster. Dose reductions are required for patients with renal impairment. Acyclovir resistance may occur in clients previously treated with acyclovir, and foscarnet may be required for effective treatment.

2. For pain management: May instruct client to try over-the-counter analgesics but to avoid aspirin because of the risk of Reye syndrome. Client may require prescription analgesics.

#### NON-PHARMACOLOGIC

1. Bathe skin lesions in mild soap and water. Avoid deodorant astringent soaps. Use a separate cloth for bathing affected area to avoid dissemination. Pat skin dry without rubbing it.
2. A saline wet-to-dry dressing can be applied 2-3 times/day to debride necrotic tissue. Apply antibiotic ointments to aid in the prevention of secondary infection.

3. For clients with post-herpetic neuralgia, vigorous stimulation (e.g., brisk rubbing of the area with a towel) of the affected area may reduce pain.

### **CLIENT EDUCATION/COUNSELING**

1. Inform client that VZV is contagious, and contact or airborne spread from vesicle fluid may cause chickenpox in non-immune persons (i.e., no history of chickenpox or shingles). Client should avoid exposing non-immune persons to VZV. If a non-immune HIV-infected person has been exposed, he/she should seek medical care as soon as possible (within 96 hours after exposure) to receive prophylactic treatment.
2. Review current drug regimen, including: drug storage, dose, route of administration, schedule, side effects and follow-up monitoring.
3. Instruct client to report adverse drug reactions or side effects to his/her care provider.
4. Instruct client to report: signs/symptoms of disseminated disease, secondary infections (e.g., fever, worsening skin lesions), facial lesions, especially near eye or on tip of nose or recurrence of lesions to provider.
5. Explain that pain may continue even after skin lesions heal and client should inform provider of continued pain.
6. Explain that recurrences may occur, and to notify provider.
7. Ask female client to inform the provider if she is, or is planning to become pregnant.

### **FOLLOW-UP**

As needed, until lesions heal.

## CONSULTATION/REFERRAL

1. Notify physician immediately if the client has lesions on the face or near the eye. Client may need STAT referral to an ophthalmologist.
2. Refer all clients with severe, disseminated or visceral infection, or renal impairment/failure to physician.
3. Consult with physician regarding appropriate pain management.
4. Consult physician if signs/symptoms of secondary infection are present.
5. Refer pregnant clients to physician.

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**NURSE PROTOCOL FOR  
ORAL CANDIDIASIS  
IN HIV-INFECTED ADULT OR ADOLESCENT**

**DEFINITION** Oral candidiasis is the most common superficial fungal infection in HIV-infected persons. There are four clinical presentations in people with HIV: pseudomembranous, erythematous (atrophic), hyperplastic and angular cheilitis.

**ETIOLOGY** Primarily caused by an overgrowth of *Candida albicans*, and less often by other *Candida* species, *C. tropicalis*, *C. krusei*, *C. glabrata* and/or *C. parapsilosis*.

- SUBJECTIVE**
1. May or may not be symptomatic.
  2. May or may not complain of: white patches on tongue and oral mucosa, smooth red areas on dorsal tongue, burning or painful mouth areas, changes in taste sensation, sensitivity to spicy foods and/or decreased appetite.
  3. May or may not have a history of oral or esophageal candidiasis.
  4. Absence of signs/symptoms of esophageal candidiasis (e.g., client does not report painful swallowing, retrosternal pain, and nausea).
  5. Absence of allergies to antifungal agents.
  6. Obtain a medication profile to determine whether or not there are any clinically significant drug-drug interactions with treatment.

**NOTE:** Medication profiles should include over-the-counter medications, herbals, vitamins and/or prescription medications.

**OBJECTIVE** May have patches/lesions anywhere on the hard and soft palates, under the tongue, on the buccal mucosa or gums or extending back into the posterior pharynx. These lesions or forms of oral candidiasis can be further classified as follows:

1. Pseudomembranous candidiasis (thrush) appears as white plaques, which can be scraped off with a tongue depressor, revealing a bleeding, macerated surface below them. Lesions may be as small as 1-2 mm. in size, or extensive plaques covering the entire hard palate.

2. Erythematous candidiasis (atrophic candidiasis) is a red, flat lesion or lesions on the palate and/or dorsal tongue surface. The tongue may have depapillated red mucosal areas on its dorsal surface.
3. Angular cheilitis (not exclusively due to *Candida*) presents with fissuring and redness at either one or both corners of the mouth, and may appear alone or in conjunction with another form of oral *Candida* infection.
4. Hyperplastic candidiasis (*Candida* leukoplakia) presents as firm, adherent white lesions often found bilaterally on the tongue. May be more resistant to therapy than other forms of candidiasis.

**ASSESSMENT** Oral Candidiasis

**PLAN** **THERAPEUTIC**

1. Mild to Moderate Cases

**NOTE:** The client should not take anything else orally for 30 minutes after using the following topical agents. Adherence to these regimens is often poor because of time requirements.

- a. Clotrimazole one troche (10 mg) dissolved in mouth 5 times/day for 14 days,

**OR**

- b. Nystatin premixed suspension (100,000 units/ml) swish 4-6 ml for 5 minutes and swallow, 4-5 times per day for 14 days.

**NOTE:** Nystatin premixed suspension has a high sugar content (suspension is 33-50% sucrose) and may increase the incidence of dental caries. If Nystatin suspension is used for long periods, refer client to dentist for fluoride rinses to decrease the incidence of dental caries.

**OR**

- c. Paddock Nystatin Powder (this is sugar-free) - mix 1/8 teaspoon (500,000 units) in 4-6 ounces of water and swish and swallow 4 times/day for 14 days.

2. Severe Cases  
Fluconazole two 100 mg tablets PO x 1, then 100 mg tablet PO daily for 14 days.

**NOTE:** Treatment with fluconazole can result in selective growth of non-*Candida* species, and should only be implemented when necessitated by more severe disease. Oral candidiasis can develop resistance to fluconazole. **Fluconazole may interact with other medications. Review the client's current medication list, including OTC drugs/products and nutritional or herbal supplements, and check for drug-drug interactions.**

3. Maintenance Therapy (Frequent or Severe Recurrences)
  - a. Clotrimazole one 10 mg troche dissolved in mouth 3 times/day,  
**OR**
  - b. Fluconazole 100-200 mg tablet by mouth daily,  
**OR**  
Fluconazole 100-200 mg by mouth three times/week.
4. Angular cheilitis
  - a. 2% ketoconazole cream applied to affected area two times/day for 14 days,  
**OR**
  - b. 1% clotrimazole cream applied to affected area two times/day for 14 days.

#### **CLIENT EDUCATION/COUNSELING**

1. Instruct client to maintain good oral hygiene and to avoid mouth trauma (e.g., use a soft toothbrush, don't eat food or drink liquids that are too hot in temperature or too spicy).
2. Rinse mouth of all food before using topical agents and take nothing by mouth for 30 minutes after using agents.
3. Explain reason for regimen. Review current drug regimen, including: drug storage, dose, route of administration, schedule, side effects and follow-up monitoring.
4. Explain that he/she may need maintenance therapy because frequent relapse is common, and to notify provider if condition worsens, does not improve or if relapse occurs.
5. For clients who have candidiasis under dentures or partial denture

plates, instruct to:

- a. Remove prosthesis before use of topical agents, such as clotrimazole or Nystatin.
  - b. At bedtime, place the prosthesis in a chlorhexidine solution, then apply a thin coating of Nizoral cream on the acrylic portion of the appliance until reinserting it into the mouth.
6. Ask female clients to inform the provider if she is or is planning to become pregnant. If taking fluconazole, instruct to stop taking this medication and notify provider.
  7. Instruct clients who are on long-term oral Nystatin suspension to maintain good oral hygiene and to rinse with topical fluoride daily.
  8. **If the client is taking fluconazole, ask client to check with his/her pharmacist or provider about interactions before taking a new medication, nutritional or herbal supplement or OTC drug/product.**

#### **FOLLOW-UP**

1. Routine appointments, as indicated, at least every 3-6 months.
2. For clients taking fluconazole, monitor liver and renal function and serum potassium every 6-12 weeks.

#### **CONSULTATION/REFERRAL**

1. Notify physician of the following:
  - a. Severe or unresponsive candidiasis.
  - b. Abnormal lab results, as indicated.
  - c. Suspect esophageal candidiasis (e.g., client reports painful swallowing, retrosternal pain, and nausea).
2. Refer pregnant clients to a physician.

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**NURSE PROTOCOL FOR  
OROLABIAL HERPES SIMPLEX  
IN HIV-INFECTED ADULT OR ADOLESCENT**

**DEFINITION**

Herpes simplex (HSV) is a viral infection that primarily infects the orolabia (i.e., mouth and lips), genitals and anorectal area. In addition, HSV can infect the esophagus, brain and retina.

Initial infection with herpes simplex virus, type-1 (HSV-1) usually occurs in childhood. Studies show that up to 77% of HIV-infected persons have been previously infected with herpes simplex virus (HSV). Severity and frequency of HSV recurrence may increase with advancing immunosuppression.

Primary infection of the orolabial area with HSV in the immunocompetent client is usually asymptomatic. HIV-infected clients with immunosuppression may present with painful vesicular eruptions of the lip, tongue, pharynx and buccal mucosa. These vesicles quickly rupture and become ulcers. Associated signs and symptoms include fever, malaise, cervical lymphadenopathy and pharyngitis.

Recurrent HSV infection usually presents as small vesicles that ulcerate and may coalesce to form large ulcers. In immunocompetent HIV-infected clients, ulcers usually resolve within 7-10 days. In immunosuppressed HIV-infected clients, HSV infection may be persistent, painful and/or expand to form large, crusted erosions. It also may not respond to routine therapy in HIV-infected clients.

**ETIOLOGY**

Primary infection, or recurrent disease from latent infection, with herpes simplex virus, type-1 (HSV-1) or type-2 (HSV-2).

**SUBJECTIVE**

1. Painful blisters followed by ulcers on lips and/or in mouth.
2. May or may not have:
  - a. Prodrome of tingling and numbness at the site 12-24 hours before blisters occurred.
  - b. Fever.
  - c. Uneasiness.
  - d. Swollen lymph nodes in neck.
  - e. Sore throat.
  - f. Persistent ulcers or large crusted erosion.
  - g. Severe pain.

- h. Symptoms of encephalitis (e.g., headaches, vomiting, lethargy, ataxia, tremor, and dizziness).
- 3. May have a history of:
  - a. Cold sores/fever blisters or genital herpes/ulcers.
  - b. Partner with cold sores/fever blisters or genital herpes/ulcers.
- 4. Obtain a medication profile to determine whether or not there are any clinically significant drug-drug interactions with treatment.

**NOTE:** Medication profiles should include over-the-counter medications, herbals, vitamins and prescription medications.

- 5. Absence of allergies to acyclovir, valacyclovir or famciclovir.
- 6. Review previous lab results for evidence of renal impairment.

## OBJECTIVE

- 1. Grouped vesicles and/or large ulcer(s) with scalloped border covered by whitish-yellow film over the oral mucosa and/or perioral area **OR** may have atypical presentation in late stage HIV disease.
- 2. May have:
  - a. Cervical lymphadenopathy.
  - b. Swelling and/or erythema of oral mucosa and/or pharynx.
  - c. Large, crusted erosion.
  - d. Altered mental status.
- 3. Recent CD4 counts.

## ASSESSMENT

Orolabial herpes simplex

## PLAN

### DIAGNOSTIC STUDIES

May order Tzanck prep or Herpes simplex culture.

### THERAPEUTIC

- 1. Most cases resolve within 7-10 days and do not require therapy.
- 2. In severely immunosuppressed and/or severe prolonged recurrent episodes consider the following therapy:
  - a. Acyclovir 400 mg by mouth three times/day for 7-10 days,  
**OR**
  - b. Valacyclovir 1 gm by mouth two times/day for 7 days,

**OR**

- c. Famciclovir 500 mg by mouth two times/day for 7 days.

**NOTE:** Dose reductions of these medications are required for patients with renal impairment. Acyclovir resistance may occur.

- 3. For suppressive therapy of frequent or severe recurrences:
  - a. Acyclovir 400 mg by mouth two times/day or 200 mg by mouth three times/day indefinitely,

**OR**

  - b. Famciclovir 250-500 mg by mouth two times/day indefinitely,

**OR**

  - c. Valacyclovir 500 mg by mouth two times/day indefinitely.

**NOTE:** Dose reductions of these medications are required for patients with renal impairment. Acyclovir resistance may occur.

- 4. May use topical anesthetics (e.g., xylocaine or lidocaine) or mucosal coating agents (e.g., milk of magnesia).

**CLIENT EDUCATION/COUNSELING**

- 1. Inform client that HSV can be transmitted to other persons. Therefore, other persons should avoid direct contact with open lesions (e.g., no kissing, no sharing eating utensils, no sharing personal hygiene items and no oral-genital sex).
- 2. Review current drug regimen including: drug storage, dose, route of administration, schedule, side effects and follow-up monitoring.
- 3. Instruct client to report adverse drug reactions or side effects to his/her care provider.
- 4. Instruct client to report persistent ulcers, secondary infections and/or continued pain to provider. Instruct client to return in 2 weeks if ulcers do not resolve.
- 5. Explain to client that recurrences may occur and to notify provider.
- 6. Ask female client to inform the provider if she is or is planning to become pregnant.

**FOLLOW-UP**

As needed, if lesions do not heal.

## CONSULTATION/REFERRAL

1. Refer severe or persistent cases to physician.
2. Consult physician concerning need for suppressive therapy.
3. Refer pregnant clients to physician.

## REFERENCES

1. **AIDS Education and Training Centers, "Herpes Simplex, Mucocutaneous," *Clinical Manual for the Management of the HIV-Infected Adult*, 2006 ed., July 2006, <[http://www.aids-etc.org/aetc/aetc?page=cm-513 herpes simplex](http://www.aids-etc.org/aetc/aetc?page=cm-513_herpes_simplex)> (April 4, 2007).**
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8. Kenneth Zwolski, "Viral Infections," in Carl A. Kirton et al. (eds.), *Handbook of HIV/AIDS Nursing*, Mosby, St Louis, 2001, pp. 305-311. **(Current)**

## NURSE PROTOCOL FOR PCP PROPHYLAXIS IN HIV-INFECTED ADULT OR ADOLESCENT

### DEFINITION/ INDICATIONS

*Pneumocystis jiroveci* pneumonia (PCP) prophylaxis is treatment given to HIV-infected individuals to prevent either a primary episode or recurrence of PCP. According to the CDC, *P. carinii* is now exclusive to the pneumocystis that infects rodents and *P. jiroveci* refers to the species that infects humans. However, the abbreviation remains PCP.

Primary prophylaxis (prevention of first episode) should be administered to all HIV-infected persons with a CD4 count of  $<200/\text{mm}^3$  and/or a history of oropharyngeal candidiasis. PCP prophylaxis should be considered in HIV-infected persons with a CD4 percentage of  $<14\%$  or a history of an acquired immunodeficiency syndrome (AIDS)-defining illness, who does not otherwise qualify.

Secondary prophylaxis (prevention of recurrence) should be administered to HIV-infected clients who have a history of a previous PCP episode for life unless immune reconstitution occurs as a consequence of highly active antiretroviral therapy (HAART).

Both primary and secondary prophylaxis may be discontinued in clients who have responded to HAART and have sustained CD4 counts  $>200/\text{mm}^3$  for 3 months or more (immune reconstitution). Primary prophylaxis and secondary prophylaxis should be reintroduced if the CD4 count decreases to  $<200/\text{mm}^3$  and secondary prophylaxis should be reintroduced if PCP recurs at a CD4 count of  $>200/\text{mm}^3$ .

### ETIOLOGY

*Pneumocystis jiroveci* is a fungal organism acquired through inhalation. PCP in HIV-infected persons is usually caused by reactivation of latent *P. jiroveci* organisms.

### SUBJECTIVE

1. May or may not have a history of:
  - a. Previous PCP episode.
  - b. Oropharyngeal candidiasis.
  - c. An AIDS-defining illness.
2. No history of active tuberculosis (TB).
3. No complaints of symptoms suggestive of PCP (e.g., non-productive cough, fever, shortness of breath).

4. Absence of allergies to sulfa drugs, dapsone, pyrimethamine and/or atovaquone.
5. Obtain a medication profile to determine whether or not there are any clinically significant drug-drug interactions with treatment.

**NOTE:** Medication profiles should include: over-the-counter and prescription medications, herbals and vitamins.

**OBJECTIVE**

1. CD4+ cell count <200/mm<sup>3</sup> and/or CD4+ percent <14%.
2. May or may not have oropharyngeal candidiasis.
3. Absence of pulmonary signs and symptoms (e.g., tachypnea).
4. Complete blood count (CBC), renal and liver function and serum potassium within acceptable values.
5. Absence of Glucose-6-Phosphate Dehydrogenase (G6PD) deficiency. (If client has G6PD deficiency, refer to physician for prophylaxis medication.)

**ASSESSMENT**

Candidate for PCP Prophylaxis (primary or secondary); at risk for PCP.

**PLAN**

**THERAPEUTIC/PHARMACOLOGIC**

1. First Choice
  - a. Trimethoprim-sulfamethoxazole\* (TMP-SMZ) one double-strength (DS) tablet by mouth daily<sup>†</sup>,
  - OR**
  - b. TMP-SMZ\* one single-strength (SS) tab by mouth daily<sup>†</sup>.
2. Alternative
  - a. TMP-SMZ\* one DS tablet by mouth 3 times per week<sup>†</sup> (e.g., Monday, Wednesday, Friday),
  - OR**
  - b. Dapsone Regimens
    - 1) Dapsone 50 mg by mouth two times/day or 100 mg by mouth daily<sup>‡</sup>,
    - OR**

- 2) Dapsone 200 mg by mouth once per week,  
**PLUS**  
Pyrimethamine 75 mg by mouth once per week,  
**PLUS**  
Leucovorin 25 mg by mouth once per week<sup>†</sup>,  
**OR**
- 3) Dapsone 50 mg by mouth daily,  
**PLUS**  
Pyrimethamine 50 mg by mouth once per week,  
**PLUS**  
Leucovorin 25 mg by mouth once per week<sup>†</sup>,  
**OR**
- c. Aerosolized pentamidine (AP) 300 mg once per month via  
Respirgard II nebulizer<sup>‡§</sup>,  
**OR**
- d. Atovaquone suspension 1500 mg by mouth daily<sup>¶</sup>.

### LEGEND

\* Many clients become intolerant of sulfa medications. Severe reactions may include: persistent neutropenia, fever, renal failure, severe erythroderma and Stevens-Johnson syndrome (bullae & desquamation of the skin). Some clients with milder reactions can be desensitized.

<sup>†</sup>Regimen is also effective against toxoplasmosis.

<sup>‡</sup>This regimen is not recommended for prevention of toxoplasmosis.

<sup>§</sup>AP may increase the risk of extrapulmonary pneumocystosis, pneumothorax and bronchospasm. It increases risk of TB transmission to others if client has active pulmonary tubercular disease, unless ventilation (negative pressurized facility with outside venting) is adequate. Do not use in clients in whom TB is suspected.

<sup>¶</sup>Very expensive and should not be used if other alternatives are available.

### CLIENT EDUCATION/COUNSELING

1. Explain reason for regimen. Review current drug regimen including: drug storage, dose, route of administration, schedule, side effects and follow-up monitoring.
2. Instruct client to stop medications immediately and report adverse drug reactions or side effects (e.g., unusual bleeding or bruising, changes in skin color, sore throat, rash, high fever) to his/her care provider. Also report other changes in health that he/she feels are important.

3. Instruct that taking medications as ordered, or keeping appointments for pentamidine treatments, is very important to prevent this life-threatening form of pneumonia.
4. Explain that prophylaxis may be discontinued due to sustained rise in CD4 count while on HAART, but may need to be re-started in the event of stopping HAART, CD4 counts dropping or if health condition worsens.
5. Inform the client that PCP can occur or recur in spite of prophylaxis and to call his/her care provider if develop a cough, fever and shortness of breath on exertion.
6. Ask female client to inform the provider if she is, or is planning to become pregnant.
7. Inform client that regular blood tests are necessary during therapy.
8. Explain that TMP-SMZ may cause increased sensitivity to sunlight and instruct to wear sunblock, protective clothing and dark glasses or avoid direct exposure to sunlight.

#### **FOLLOW-UP**

1. Monitor for medication adherence, adverse drug events and medication side effects.
2. Obtain and monitor complete blood count (CBC), renal and liver function, and serum potassium within 4-6 weeks of initiation of regimen, and then as indicated.
3. Monitor for signs/symptoms of PCP.
4. Obtain and monitor CD4 counts and percentage at least every 3-6 months.

#### **CONSULTATION/REFERRAL**

1. Notify the physician of the following:
  - a. Abnormal lab values.
  - b. Medication side effects and/or adverse events.
  - c. Signs/symptoms of PCP.

2. Defer prophylaxis medication decision for G6PD deficient clients to physician.
3. Defer decision to discontinue primary or secondary prophylaxis to physician.
4. Refer pregnant clients to the physician.

## REFERENCES

1. **AIDS Education and Training Centers, "Opportunistic Infection Prophylaxis," *Clinical Manual for the Management of the HIV-Infected Adult*, 2006 ed., July 2006, <[http://www.aids-etc.org/aetc/aetc?page=cm-207\\_oipx](http://www.aids-etc.org/aetc/aetc?page=cm-207_oipx)> (April 4, 2007).**
2. John G. Bartlett and Joel E. Gallant, **2007 *Medical Management of HIV Infection***, Johns Hopkins University, **2007**, pp. **51-53**.
3. CDC, "Guidelines for Preventing Opportunistic Infections Among HIV-Infected Persons," *MMWR*, Vol. 51, No. RR-8, June 14, 2002. **(Current)**
4. CDC, NIH, and the HIV Medicine Association/Infectious Disease Society of America, "Treating Opportunistic Infections Among HIV-Infected Adults and Adolescents," *MMWR*, Vol. 53, No. RR-15, December 17, 2004. **(Current)**
5. Carl A. Kirton et al., *Handbook of HIV/AIDS Nursing*, Mosby, St Louis, 2001. **(Current)**
6. Beatrice B. Turkoski et al., **2006-2007 *Drug Information Handbook for Advanced Practice Nursing*, 7<sup>th</sup> ed.**, Lexi-Comp, Inc., Hudson, Ohio, **2006**.

## NURSE PROTOCOL FOR SEBORRHEIC DERMATITIS IN HIV-INFECTED ADULT OR ADOLESCENT

<b>DEFINITION</b>	Seborrheic dermatitis is a skin condition commonly seen in HIV-infected persons. It is chronic and usually undergoes periods of exacerbation and remission. The condition occurs in areas where sebaceous glands are concentrated, including the scalp, eyebrows, nasolabial folds, forehead, cheekbones, ears, hairline, chest, axilla and groin.
<b>ETIOLOGY</b>	The probable cause of seborrhea is a yeast, <i>Pityrosporum ovale</i> ( <i>Malassezia</i> ). Pathogenesis appears to be inflammatory and may be triggered by allergic response to colonizing microorganisms on the skin.
<b>SUBJECTIVE</b>	<ol style="list-style-type: none"><li>1. May or may not report rash, sometimes itchy, or "dry skin" that will not go away in spite of the application of topical moisturizers.</li><li>2. May or may not have a history of dandruff and/or seborrheic dermatitis.</li></ol>
<b>OBJECTIVE</b>	<ol style="list-style-type: none"><li>1. Fine white scaling, without erythema, affecting the scalp (dandruff), <b>AND/OR</b></li><li>2. Scaly/crusty patches and plaques of erythema with indistinct margins and yellowish, greasy scale affecting one or more of the following areas: scalp, eyebrows, nose, nasolabial folds, forehead, cheekbones, ears, hairline, chest, breast folds, axilla, back and/or groin.</li></ol>
<b>ASSESSMENT</b>	Probable Seborrheic Dermatitis
<b>PLAN</b>	<b>DIAGNOSTIC STUDIES</b>  May perform a potassium hydroxide (KOH) preparation to rule out <i>Candida albicans</i> and other superficial yeast infections.  <b>THERAPEUTIC</b>  <ol style="list-style-type: none"><li>1. For scalp conditions:<ol style="list-style-type: none"><li>a. Regular use of an over-the-counter dandruff shampoo that contains sulfur and salicylic acid (e.g., Van Seb, Sebulex), selenium sulfide (e.g., Selsun Blue), ketoconazole (e.g., Nizoral), coal tar, <b>OR</b> zinc pyrithione (e.g., Head and Shoulders, Danex, Zincon). Instruct client to shampoo daily until condition resolves (usually several weeks), then once or twice a week.</li></ol></li></ol>

**OR**

- b. Nizoral 2% shampoo (prescription strength) twice per week for 4 weeks. Instruct client to wet hair, massage well into scalp, leave it for 3-5 minutes, and then rinse thoroughly. After the first 4 weeks, use once every 1-2 weeks to prevent recurrence of dandruff.

**OR**

- c. If shampoo alone is not adequate, a medium-potency topical corticosteroid solution (e.g., triamcinolone 0.1% applied two times/day to the scalp) may be used.

**NOTE:** Avoid application of medium-potency topical steroids to the face.

2. For other lesions:

Topical 2% ketoconazole cream applied to affected area two times/day until condition resolves, then as needed, two times/day

**PLUS**

Topical 1% to 2.5% hydrocortisone cream, lotion or ointment to affected area two times/day until condition resolves, then 1% hydrocortisone two times/day as needed.

**NOTE:** For mild disease, maintenance therapy may consist of 1% hydrocortisone cream

**PLUS**

2% ketoconazole cream applied only twice weekly or, rarely, once daily.

## **CLIENT EDUCATION/COUNSELING**

1. Explain reason for regimen. Review current drug regimen including: drug storage, dose, route of administration, schedule, side effects and follow-up monitoring. Include the following:
  - a. Treatment is for external use only; use exactly as ordered, and do not overuse.
  - b. If using special shampoo, follow directions and leave it on the recommended amount of time. Allow shampoo suds onto affected facial areas when possible.
  - c. Do not apply topical therapy to open wounds or weeping areas.
  - d. Wash and dry area before applying topical creams, ointments, or lotions.
  - e. Avoid contact with eyes.

- f. If using topical corticosteroid (e.g., hydrocortisone), avoid exposing treated area to direct sunlight, as it may become sunburned.
2. Explain that seborrheic dermatitis is a chronic condition, which often recurs. Clients should keep their skin as clean and dry as possible, and watch for recurrences, particularly in winter due to dry heat.
3. At the earliest sign of recurrence, instruct client to restart shampoo and/or topical therapy to prevent progression and secondary infection.
4. Instruct client to inform provider if condition worsens or does not improve, or if he/she has signs of secondary infection.
5. Ask female client to inform the provider if she is, or is planning to become, pregnant.

#### **FOLLOW-UP**

Routine appointments as indicated, at least every 3-6 months.

#### **CONSULTATION/REFERRAL**

1. Notify physician of the following:
  - a. Severe or recalcitrant episodes.
  - b. Secondary infection is suspected.
2. Refer pregnant clients to physician.

#### **REFERENCES**

1. **AIDS Education and Training Centers, "Seborrheic Dermatitis," *Clinical Manual for the Management of the HIV-Infected Adult*, 2006 ed., July 2006, <[http://www.aids-etc.org/aetc/aetc?page=cm-529\\_sebdem](http://www.aids-etc.org/aetc/aetc?page=cm-529_sebdem)> (April 4, 2007).**
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## NURSE PROTOCOL FOR TOXOPLASMOSIS PROPHYLAXIS IN HIV-INFECTED ADULT OR ADOLESCENT

### DEFINITION/ INDICATION

All HIV-infected persons should be tested for IgG antibody to *Toxoplasma* soon after HIV diagnosis. Persons found to be *Toxoplasma*-seropositive and have CD4 counts  $<100/\text{mm}^3$  should be administered primary prophylaxis to prevent toxoplasmic encephalitis (TE).

HIV-infected persons who have completed initial treatment for TE should be administered secondary prophylaxis (chronic maintenance therapy) for life, unless immune reconstitution occurs due to highly active antiretroviral therapy (HAART).

Primary prophylaxis should be discontinued in clients who have responded to HAART and have sustained CD4 counts  $>200/\text{mm}^3$  for 3 months or more (immune reconstitution). Primary prophylaxis should be restarted if the CD4 count decreases to  $< 100\text{-}200 \text{ mm}^3$ .

Secondary prophylaxis should be discontinued in clients who completed initial therapy for TE, have responded to HAART and have sustained CD4 counts  $>200/\text{mm}^3$  for 6 months or more (immune reconstitution), and are asymptomatic for TE. Secondary prophylaxis should be restarted if the CD4 count decreases to  $< 200 \text{ mm}^3$ .

### ETIOLOGY

*Toxoplasma gondii* is a protozoan organism commonly found in cats, mammals and birds. People become infected by ingesting contaminated, undercooked meat or vegetables, by handling contaminated cat litter, or by gardening or other contact with soil. *T. gondii* can infect any tissue, but the most common sites are the brain, lungs and eyes. In immunocompetent persons the infection is usually controlled, but a small number of organisms survive. Immunodeficiency is the most common cause of reactivation of latent infection.

### SUBJECTIVE

1. May or may not have a history of TE and treatment for TE.
2. No history/complaints of neurological symptoms suggestive of TE (e.g., seizures, altered mental status, motor weakness, headaches, and/or cognitive impairment).
3. Absence of allergies to sulfa drugs, dapsone, pyrimethamine, atovaquone and/or clindamycin.

4. Obtain a medication profile to determine whether or not there are any clinically significant drug-drug interactions with treatment.

**NOTE:** Medication profiles should include over-the-counter medications, herbals, vitamins and prescription medications.

## OBJECTIVE

1. *Toxoplasma* seropositive.
2. CD4 count less than 100/mm<sup>3</sup>.
3. Absence of neurological signs of TE (e.g., altered mental status, aphasia, ataxia, hemiparesis and cranial nerve palsies).
4. Complete blood count (CBC), renal and liver function and serum potassium within acceptable values.
5. Absence of Glucose-6-Phosphate Dehydrogenase (G6PD) deficiency. (If G6PD-deficient, refer to physician for prophylaxis medication.)

## ASSESSMENT

Candidate for toxoplasmosis prophylaxis (primary or secondary); at risk for activation of latent toxoplasmosis infection.

## PLAN

### THERAPEUTIC

1. Primary Prophylaxis (Prevention of TE)
  - a. First Choice  
Trimethoprim-sulfamethoxazole\* (TMP-SMZ) one double strength (DS) tablet by mouth daily<sup>†</sup>,  
**OR**
  - b. Alternative
    - 1) TMP-SMZ\* one single strength (SS) tab by mouth daily<sup>†</sup>,  
**OR**
    - 2) Dapsone Regimens<sup>†</sup>
      - a) Dapsone 200 mg by mouth once per week,  
**PLUS**  
Pyrimethamine 75 mg by mouth once per week,  
**PLUS**  
Leucovorin 25 mg by mouth once per week,  
**OR**
      - b) Dapsone 50 mg by mouth daily,  
**PLUS**

- Pyrimethamine 50 mg by mouth once per week,  
**PLUS**  
Leucovorin 25 mg by mouth once per week.  
**OR**
- 3) Atovaquone Regimens<sup>†‡</sup>
- a) Atovaquone 1500mg by mouth daily,  
**OR**
- b) Atovaquone 1500 mg by mouth daily,  
**PLUS**  
Pyrimethamine 25 mg by mouth daily,  
**PLUS**  
Leucovorin 10 mg by mouth daily.
2. Secondary Prophylaxis (Chronic Maintenance Therapy)
- a. First Choice  
Sulfadiazine\* 500-1000 mg by mouth 4 times/day,  
**PLUS**  
Pyrimethamine 25-50 mg by mouth daily,  
**PLUS**  
Leucovorin 10-25 mg by mouth daily<sup>¶</sup>,  
**OR**
- b. Alternative
- 1) Clindamycin<sup>§</sup> 300-450 mg by mouth every 6-8 hours,  
**PLUS**  
Pyrimethamine 25-50 mg by mouth daily,  
**PLUS**  
Leucovorin 10-25 mg by mouth daily<sup>¶</sup>,  
**OR**
- 2) Atovaquone Regimens<sup>†‡</sup>
- a) Atovaquone 750mg by mouth every 6-12 hours,  
**OR**
- b) Atovaquone 750mg by mouth every 6-12 hours,  
**PLUS**  
Pyrimethamine 25 mg by mouth daily,  
**PLUS**  
Leucovorin 10 mg by mouth daily.

## LEGEND

\*Many patients become intolerant of sulfa medications. Severe reactions may include persistent neutropenia, fever, renal failure, severe erythroderma and Stevens-Johnson syndrome (bullae & desquamation of the skin). Some patients with milder reactions can be desensitized.

<sup>†</sup>Regimen is also effective against PCP.

<sup>‡</sup>Very expensive and should not be used if other alternatives are available.

<sup>§</sup>Clindamycin may cause colitis.

<sup>¶</sup>This regimen is not recommended for the prevention of PCP.

## CLIENT EDUCATION/COUNSELING

1. Explain reason for regimen. Review current drug regimen including: dose, drug storage, route of administration, schedule, side effects, and follow-up monitoring.
2. Instruct client to stop medications immediately and report adverse drug reactions or side effects (e.g., unusual bleeding or bruising, changes in skin color, sore throat, rash, high fever) to his/her care provider. Also report other changes in health that he/she feels are important.
3. Instruct that taking medications as ordered is very important to prevent this life-threatening illness.
4. Explain that prophylaxis may be discontinued due to sustained rise in CD4 count while on HAART, but may need to be re-started in the event of stopping HAART or if CD4 counts drop.
5. Instruct client to report any neurological signs/symptoms to provider.
6. Ask female client to inform the provider if she is, or is planning on becoming, pregnant.
7. Inform client that regular blood tests are necessary during therapy.
8. If taking TMP-SMZ or sulfadiazine, explain that these medications may cause increased sensitivity to sunlight and instruct to wear sunblock, protective clothing and dark glasses, or avoid direct exposure to sunlight.

## FOLLOW-UP

1. Monitor for medication adherence, adverse drug events and medication side effects.

2. Monitor complete blood count (CBC), renal and liver function, and serum potassium within 4-6 weeks of initiation of regimen, and then as indicated.
3. Monitor CD4 counts and percentage at least every 3-6 months.
4. Monitor for signs/symptoms of TE.

### CONSULTATION/REFERRAL

1. Notify the physician of the following:
  - a. Abnormal lab values.
  - b. Medication side effects and/or adverse events.
  - c. Signs/symptoms of TE.
2. Defer decision to discontinue primary or secondary prophylaxis to physician.
3. Refer pregnant clients to the physician.

### REFERENCES

1. **AIDS Education and Training Centers, "Opportunistic Infection Prophylaxis," *Clinical Manual for the Management of the HIV-Infected Adult*, 2006 ed., July 2006, <[http://www.aids-etc.org/aetc/aetc?page=cm-207\\_oipx](http://www.aids-etc.org/aetc/aetc?page=cm-207_oipx)> (April 4, 2007).**
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