INFECTIOUS DISEASE

INFECTIOUS DISEASES **TABLE OF CONTENTS**

HUMAN IMMUNODEFICIENCY VIRUS (HIV)

Includes Acquired Immunodeficiency Syndrome (AIDS) and HIV Antibody Testing.

INFORMATION REQUIRED *Any history.*

All Applicants:

- Report of Medical Examination to include the following:
  - HIV antibody testing, i.e., enzyme immunoassay (EIA) or oral-fluid-based HIV antibody test.
  - If EIA or oral-fluid-based HIV antibody test is repeatedly reactive; Western Blot or other confirmatory test.

Applicants With Confirmed HIV Infection; Applicants With Acquired Immunodeficiency Syndrome (AIDS):

- Specialist Evaluation (Infectious Disease Specialist) within the past 3 months to include the following:
  - Date of diagnosis
  - History of illness to include history of secondary infections.
  - Symptoms
  - Treatment to include management plan for all anti-retroviral and chemoprophylactic therapies.
  - Current status
  - Limitations or restrictions of ADLs
  - Recommendations for follow-up over the next 3 years.
- Copies of CD-4+ T-cell counts,viral loads, WBC counts, and other laboratory tests used to monitor disease progression for *at least* the past 1 year.

If Applicable:

- Discharge summary for *all* related hospitalizations.

CLEARANCE CRITERIA	REVIEWER	GUIDANCE
HIV-antibody testing complete.		
Meets clearance criteria, AND • Negative HIV Infection: EIA test negative.	**RN**	**CLEAR**
Meets clearance criteria, AND • Negative HIV Infection: EIA test repeatedly reactive, AND; Western Blot, or other confirmatory test, negative.	**RN**	**CLEAR**
Does not meets clearance criteria due to one or more of the following: • Indeterminate HIV Infection Status: Repeatedly reactive EIA with indeterminate Western Blot.	**MED ADVISOR**	**DEFER** Until HIV status determined. *Note: Polymerase chain reaction (PCR), viral load, HIV viral antigen, or other HIV test methods can be used to determine actual HIV infection status.*
Does not meets clearance criteria due to one or more of the following: • Confirmed HIV Infection: Repeatedly reactive EIA with positive Western Blot or other confirmatory test.	**MED ADVISOR**	—— Review resources required for accommodation. See "Notes and Instructions for Reviewers."
Does not meets clearance criteria due to one or more of the following: • Acquired Immunodeficiency Syndrome (AIDS)	**MED ADVISOR**	—— Review resources required for accommodation. See "Notes and Instructions for Reviewers."

DIAGNOSTIC CODES

044.9 Human Immunodeficiency Virus (HIV)
042.9 Acquired Immunodeficiency Syndrome (AIDS)

Cross Reference ICD.9.CM

NOTES AND INSTRUCTIONS FOR REVIEWERS:

Reviewers to Consider:

- Placement in an environment where local endemic diseases would not be expected to significantly exacerbate or accelerate the clinical progression of HIV infection.
- Placement in an environment that would not put the individual at increased risk of infections whose progression is accelerated with HIV infection, i.e., tuberculosis (TB) or other AIDS defining illnesses.
- Placement in an environment where adequate protection from vaccine preventable diseases can be achieved, AND where required vaccines are not contraindicated due to HIV infection.
- Access to locally available medical services capable of prescribing, monitoring, and managing anti-retroviral therapy.
- Access to locally available medical services capable of prescribing, monitoring, and managing *Pneumocystis carinii* pneumonia (PCP) prophylaxis and other chemoprophylactic therapies.
- Access to laboratory facilities capable of performing accurate CD-4+ T-cell counts, viral loads, and other laboratory indicators used to monitor the progression of HIV disease.
- Coordination with the Office of General Counsel to ensure that applicant legal requirements are satisfied.

COMMENTS:

Background: Acquired immunodeficiency syndrome (AIDS) is a severe, often life-threatening, illness caused by the human immunodeficiency virus (HIV). It is characterized by a significantly compromised immune system with progressive loss of CD4+ (T-helper) lymphocytes and the appearance of indicator opportunistic infections. The incubation period for AIDS is long and variable, ranging from a few months to many years. Some individuals with AIDS remain asymptomatic for years, others succumb to illness within months of exposure. Currently, there is no cure for AIDS; however, treatments and prophylaxis for many opportunistic diseases that characterize AIDS are available.

Vaccination: "Scientists have reviewed the safety and efficacy of vaccines in persons with HIV infection or AIDS. No increased incidence of adverse reactions to inactivated vaccines has been noted in these persons. However, administration of live organism vaccines may carry increased risks of adverse reactions, e.g., polio and yellow fever. In addition, the likelihood of successful immune response is reduced in some HIV-infected persons (depending on the degree of immunodeficiency). On the other hand, because of their immunodeficiency, many HIV-infected persons are at increased risk for complications of vaccine-preventable disease. Thus, the risk benefit balance usually tips in favor of administration of vaccines to HIV-infected persons, especially for inactivated vaccines. Administration of vaccines should be backed up by behaviors to prevent infection." *[CDC Health Information for International Travel, 1996-97]*

Risk of Exposure to Opportunistic Infections: "Travel, particularly to developing countries, may carry significant risks for exposure to opportunistic pathogens for HIV-infected persons, especially those who are severely immunosuppresssed. *[CDC Health Information for International Travel, 1996-97]*

Risk of Food and Water Borne Disease: "During travel to developing countries, HIV-infected persons are at even higher risk for food and water borne disease than they are in the United States." *[CDC Health Information for International Travel, 1996-97]*

Risk of Infections Disease: "Geographically focal infections that pose high risk to HIV-infected persons include: visceral leishmaniasis, a protozoan infection transmitted by the sand fly, and several fungal infections, e.g., *Penicillium marneffei*, coccidioidomycosis, histoplasmosis. Many tropical and developing areas of the world have high rates of tuberculosis." *[CDC Health Information for International Travel, 1996-97]*

Country Entry: "International travelers should be aware that some countries serologically screen incoming travelers (primarily those with extended visits, such as for work or study) and deny entry to persons with AIDS and those whose test results indicate infection with HIV. Persons who are intending to visit a country for a substantial period or to work or study abroad should be informed of the policies and requirements of the particular country." *[CDC Health Information for International Travel, 1996-97]*

Peace Corps Experience: The high incidence of diarrheal, parasitic, and other infectious disease among volunteers with functional immune systems suggests that Peace Corps service is likely to be detrimental to the health of an individual with a compromised immune system, e.g., HIV-infected individuals.

Oral Fluid Test: Screening test marketed under the name "OraSure HIV-1 Oral Specimen Collection Device". It is an Oral Fluid Vironostika HIV-1 Microelisa System. The new HIV test system is approved by the FDA. It is not as accurate as the approved HIV-antibody screening tests used on blood. Studies show that for every 100 people infected with HIV, the oral-fluid-based test will miss one or two (1-2% false negative). For every 100 people who are *not* infected, test results will be incorrectly positive for approximately two people (2% false positive). The oral-fluid-based screening test requires a confirmatory test to diagnose HIV infection.

HIV Confirmatory Tests:

- Western Blot
- Polymerase chain reaction (PCR)
- Viral load
- HIV viral antigen

Definitions:

HIV: Human Immunodeficiency Virus: A broad spectrum of HIV disease ranging from the primary infection, with or without the acute HIV retroviral syndrome, to the asymptomatic HIV infected state.

AIDS: Acquired Immunodeficiency Syndrome: The CDC surveillance case definition for AIDS requires the diagnosis of one or more "indicator diseases" and/or a CD4+ T cell count less than 200 per microliter or a CD4+ T cell percentage of total lymphocytes < 14%.

EIA: Enzyme Immunoassay: HIV-antibody screening test. May be referred to as enzyme linked immunosorbent assay (ELISA) test. Repeatedly reactive EIA requires a confirmatory test to diagnose HIV infection.

Literature review available.

F AL INFECTION: HISTOPLASMOSIS (115.00), COC IDOMYCOSIS, PRIMARY (114.0), PROGRESSIVE)

CRITERIA	→ 1) Coccidioidomycosis sub-clinical case diagnosed with blood test. → 2) Coccidioidomycosis, primary, resolved for 6 mos. → 3) Histoplasmosis past history primary acute form > 6 weeks. ago.	→ 1) Histoplasmosis past history > 1 yr., resolved, chronic cavitary form, no infections in last yr; FEV > 70%. → 2) Histoplasmosis as above, with COPD, asymptomatic, FEV > 70%.	→ 1) Histoplasmosis current primary acute form. → 2) Histoplasmosis chronic cavitary form, under treatment → 3) Histoplasmosis, chronic cavitary form with freq. secondary lung infection. → 4) Primary Coccidioidomycosis.	→ 1) Lung function abnormal; FEV < 70%. → 2) Histoplasmosis progressive disseminated form. → 3) Progressive Coccidioidomycosis. → 4) Histoplasmosis is cavitary form, with Hemoptysis.
ACTION	**CLEAR**	**CLEAR WITH RESTRICTIONS**	**DEFER**	**MNQ**
RESTRICT-IONS/DEFER		Altitude restrictions (< 8,000 ft).	UNTIL: 1) Resolved 6 wks. 2) Resolved 1 yr. 3) Free of secondary lung infections 1 yrs. 4) Resolved, 6 mos.	
RATIONALE	Conditions resolved. PCV at no medical risk. Coccidioidomycosis (San Joaquin Valley Fever) is common in California and the SW. Some individuals have a sub-clinical case while some get very ill. Progressive fulminating type is frequently fatal.	Chronic cavitary form of Histoplasmosis freq. has recurrent lung infection that are sometimes difficult to treat.		Condition usually progresses. Will interfere with PCV's ability to function. Treatment not available in PCMU's.

MEDICAL INFORMATION NEEDED:

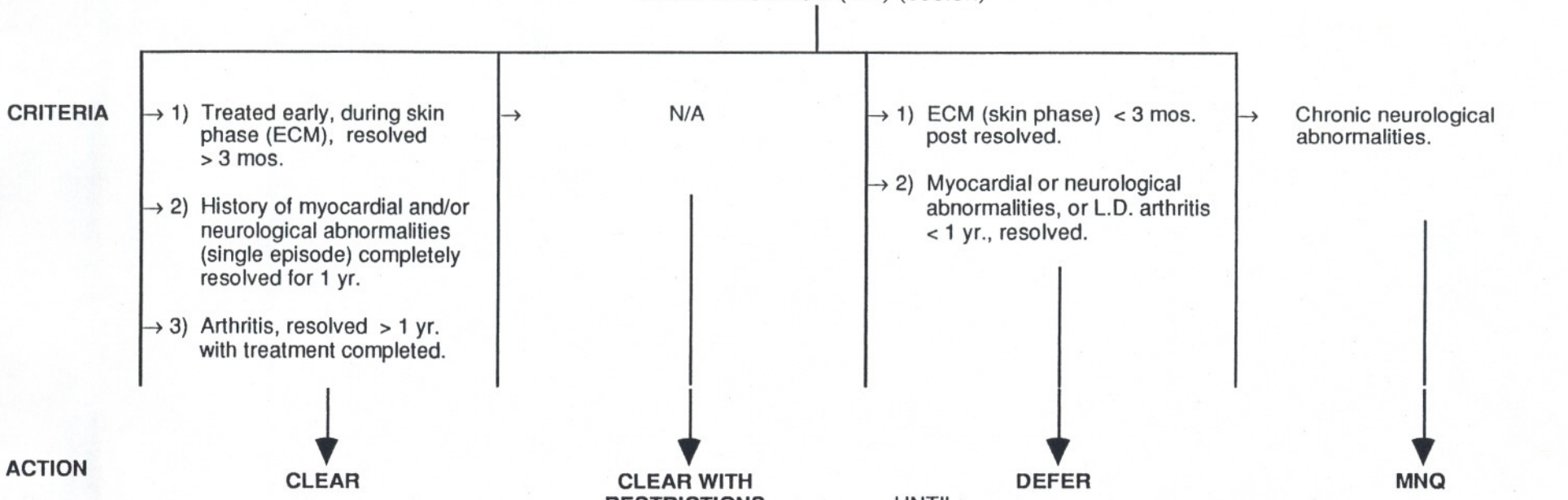
Generic information;

Treatment needed next 3 yrs., F/U needed/meds;

Activity limitation; and Pulmonary function tests.

5/4/93

LYME DISEASE (LD) (088.81)



RESTRICT-IONS/DEFER

UNTIL:
1) Treatment complete and asymptomatic 3 mos.
2) Treatment complete, asymptomatic,1 yr

RATIONALE

Early phase: skin eruptions after tick bite (ECM: erythema Chronicum migrains) Latter phases:

1) Frank neurological abnormalities develop in 15% of patients, lasts for months, and usually resolves completely.
2) Myocardial abnormalities occurring in approx. 8%.
3) Arthritis develops, esp. chronic knee involvement, in 50% of patients.

Arthritis occurs in 50% of patients, 50% of which respond to antibiotics.

Treatment includes tetrecycline, penicillin, or erythromycin.

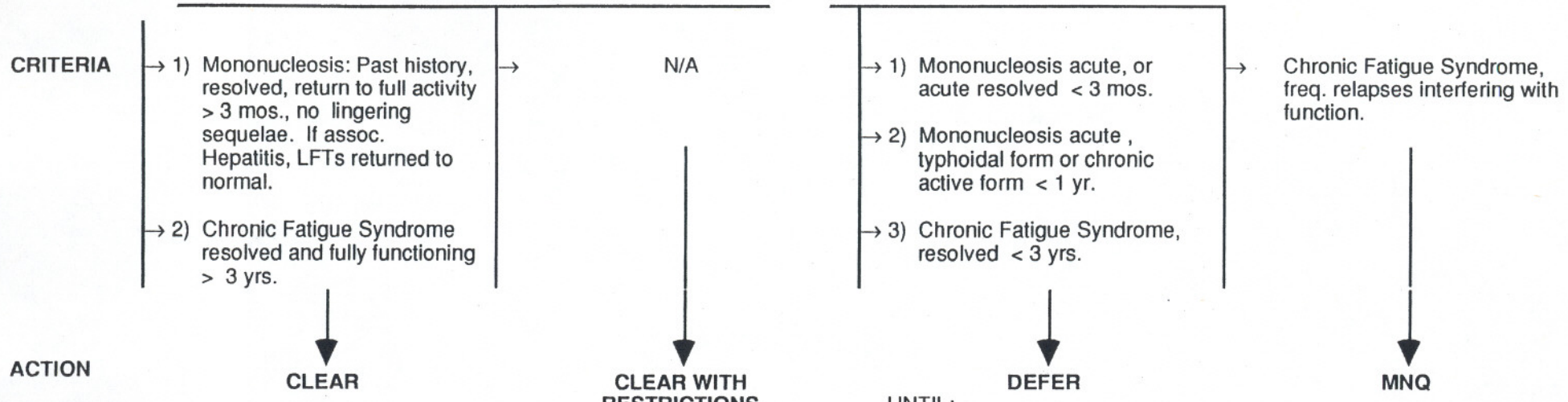
Chronic knee involvement can resolve spontaneously.

PCV cannot function, treatment not available in PCMU's.

MEDICAL INFORMATION NEEDED: Generic information; MD evaluation; Document method of diagnosis and document therapy because many people are being misdiagnosed.; Lyme Titer (IFA) > or equal to 1:128 if previously done. Treatment needed next 3 yrs.; Lab work/tests/F/U needed/ meds. Activity limitations, if needed.

5/4/93

CHRONIC FATIGUE SYNDRO' 30.7), MONONUCLEOSIS (075)



RESTRICT-IONS/DEFER

UNTIL:

1) Resolved for 3 mos., no sequelae, present WBC and LFT's WNL.

2) Resolved for 1 yr. and fully functioning.

3) Chronic Fatigue Syndrome resolved and fully functioning for 3 yrs.

RATIONALE

Mononucleosis is caused by Epstein-Barr Virus, usually resolves in 1 - 6 wks. EBV-specific antibody stays elevated after disease resolves.

Mononucleosis:
Typhoidal form occurs in < 10% of cases. It usually resolves in 4 weeks, but approx. 10% complain of persistent symptoms for months or years (fatigue, body aches, and pains).

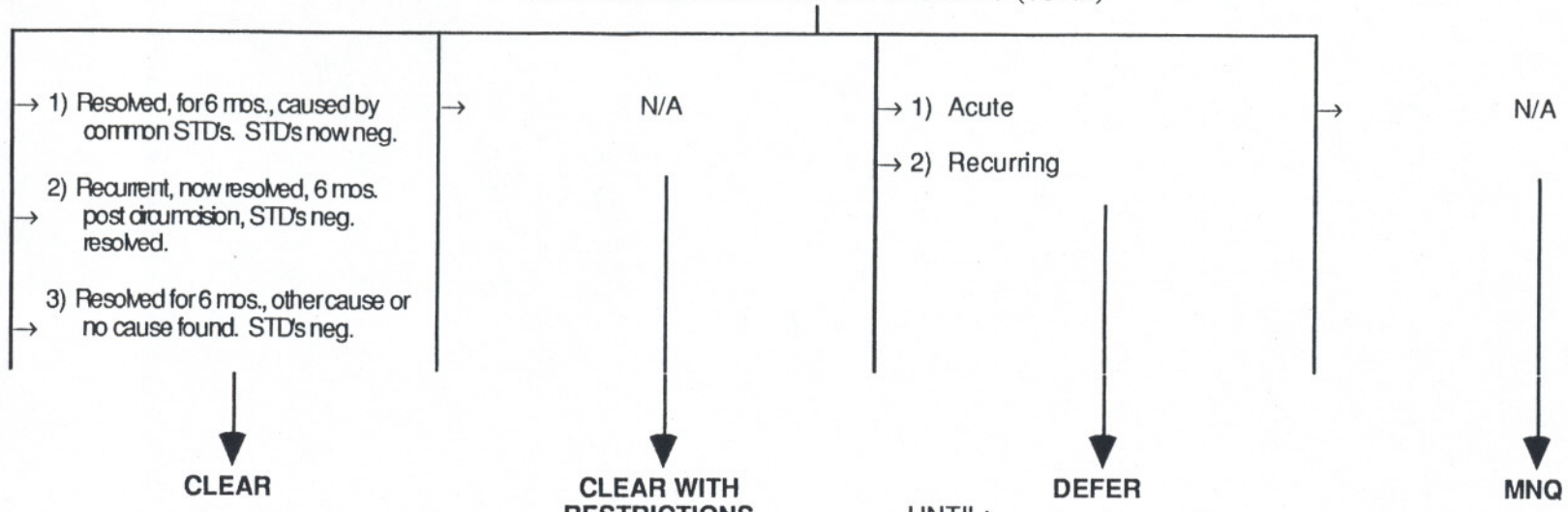
Chronic Fatigue Syndrome: Is difficult to document other than by clinical symptoms, fatigue levels.

MEDICAL INFORMATION NEEDED:

Generic information;

M.D. evaluation;
Chronic Fatigue Syndrome: functioning ability.

BALANOPOSTHITIS: BALANITIS (607.1)



RESTRICT-IONS/DEFER

UNTIL:

1) Treated and resolved
2) Resolved 6 mos., circumcision if needed.

Circumcision sometimes is necessary to resolve recurrent infections.

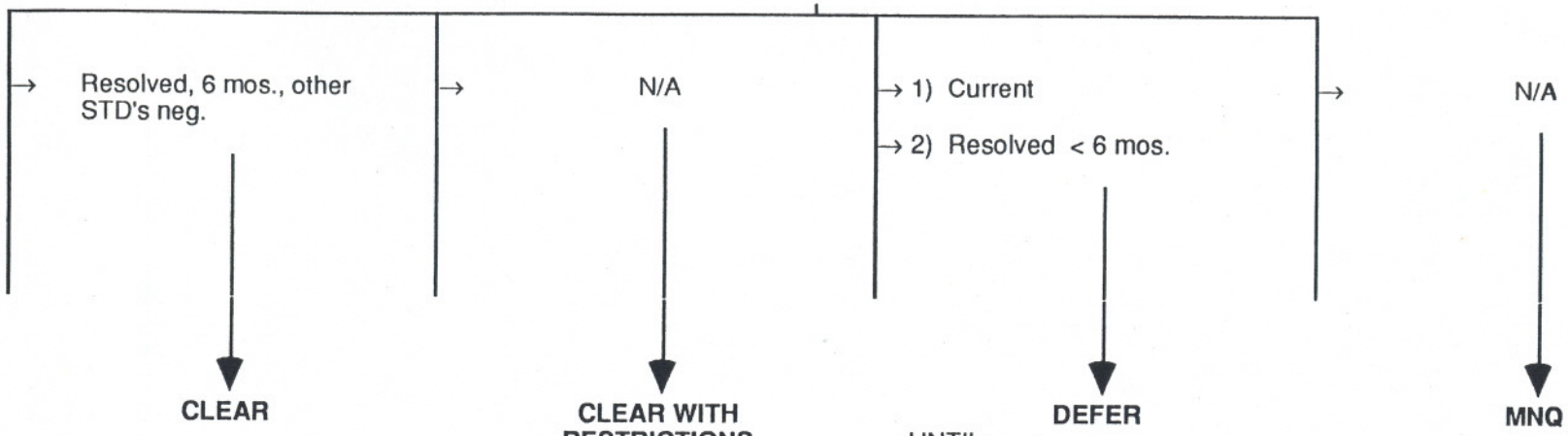
RATIONALE Condition is complication of gonorrhea, trichomoniasis, Reiter's Syndrome, Primary/ Secondary Syphilis, candidiasis, dermatitis, diabetes, or no cause can be found.

Inflammation of the glans penis and the prepuce, Balanoposthitis (uncircumcised) Balanitis: circumcised.

MEDICAL INFORMATION NEEDED: Generic information

5/4/93

CHANC) (099.0)



RESTRICT-IONS/DEFER

UNTIL:

1) Treated and resolved, 6 mos.

2) 6 mos., no recurrence.

RATIONALE With an open genital sore, applicant has additional risk for contracting HIV.

MEDICAL INFORMATION NEEDED: Generic information

5/4/93

CHLAMYDIA (079.8)

(See P.I.D. and Epididymitis)

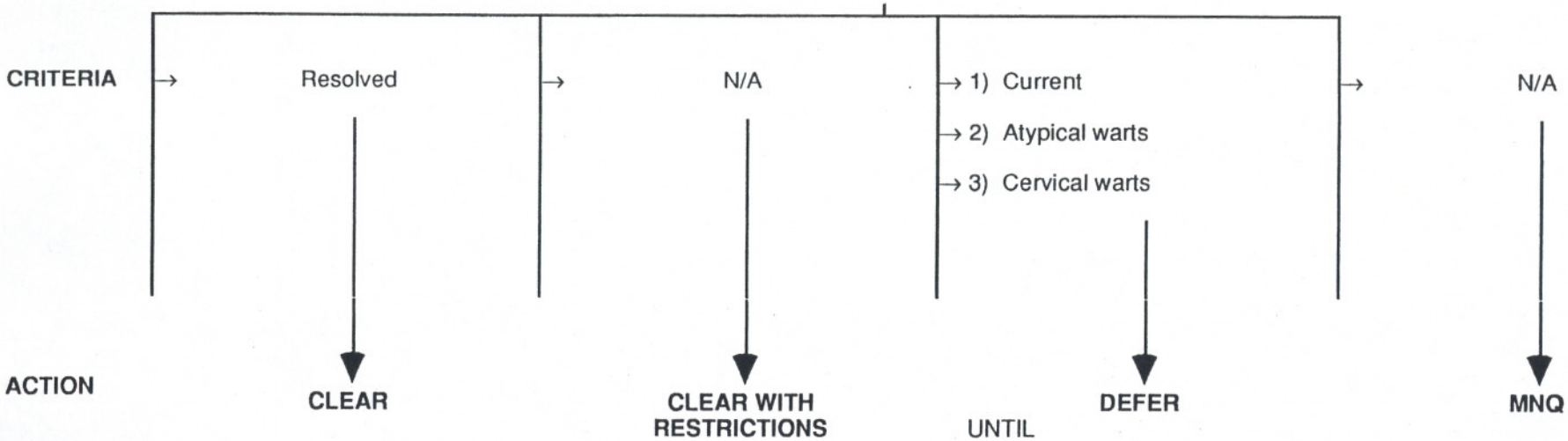
CRITERIA	→ Resolved, no residual complications.	→ N/A	→ 1) Current → 2) With complications, i.e. PID, bartholinitis epididymitis, Reiter's Syndrome.	→ N/A
ACTION	**CLEAR**	**CLEAR WITH RESTRICTIONS**	**DEFER**	**MNQ**
RESTRICT-IONS/DEFER			UNTIL: 1) Treated and resolved 2) Treated and resolved. (See PID, Chronic Epididymitis, Urethritis).	

RATIONALE Approx. 20% of patients have one or more relapses on follow-up and require longer treatment regimens.

MEDICAL INFORMATION NEEDED: Generic information

5/4/93

CONDYLOMA ACCUMIN GENITAL WARTS) (078.1)



RESTRICT-IONS/DEFER

UNTIL

1) Resolved
2) Biopsy done and resolved
3) PAP Smear WNL and warts resolved.

RATIONALE

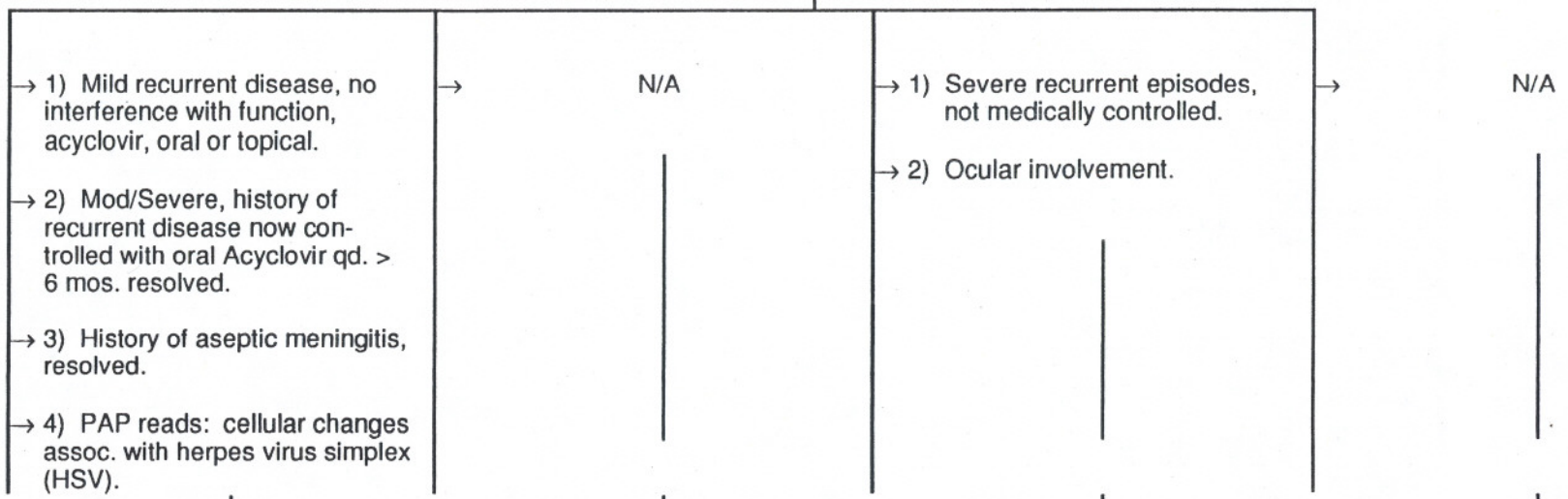
Relapse is frequent. No treatment is satisfactory. Extensive lesions may require surgical excision. Incubation period is 1 - 6 mos.

External warts have been associated with dysplastic changes of the cervix and invasive carcinoma.

MEDICAL INFORMATION NEEDED: Generic information

5/4/93

GENITAL HERPES (054.10)



RESTRICT-IONS/DEFER

UNTIL:

1) Episodes controlled > 6 mos.

2) See Herpes Keratitis in Ophthalmology section.

RATIONALE

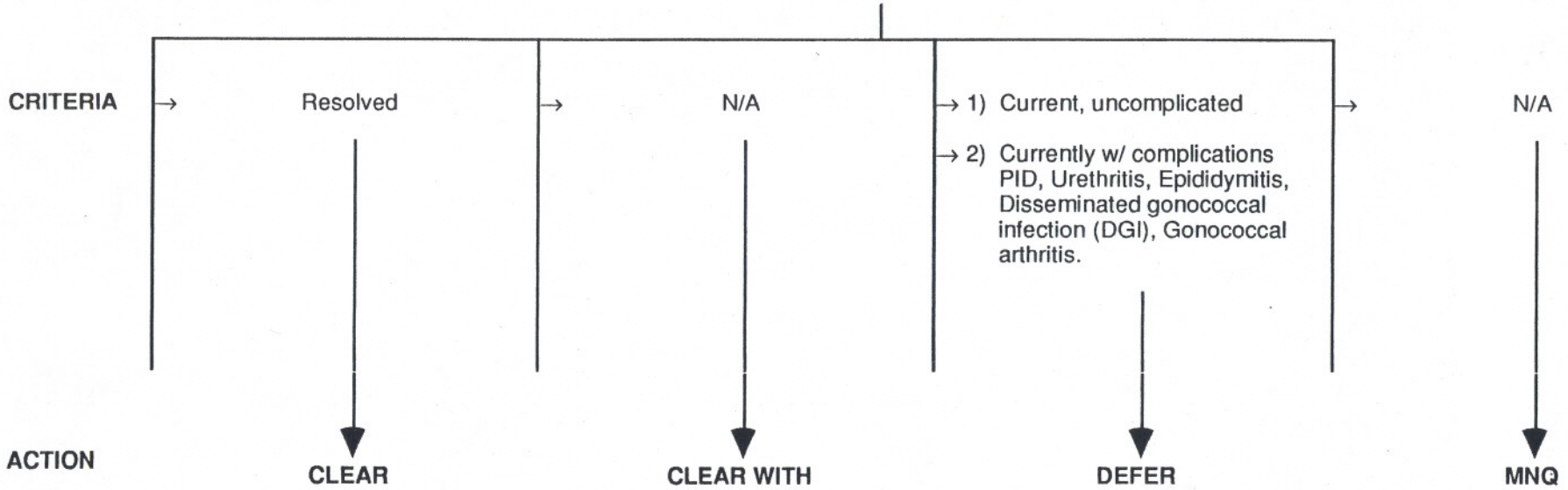
1) 80% of patients develop recurring disease.

2) Acyclovir has few side effects and is generally well tolerated: it does not require any F/U.

MEDICAL INFORMATION NEEDED: Generic information

10/28/93

GONO .A (098)

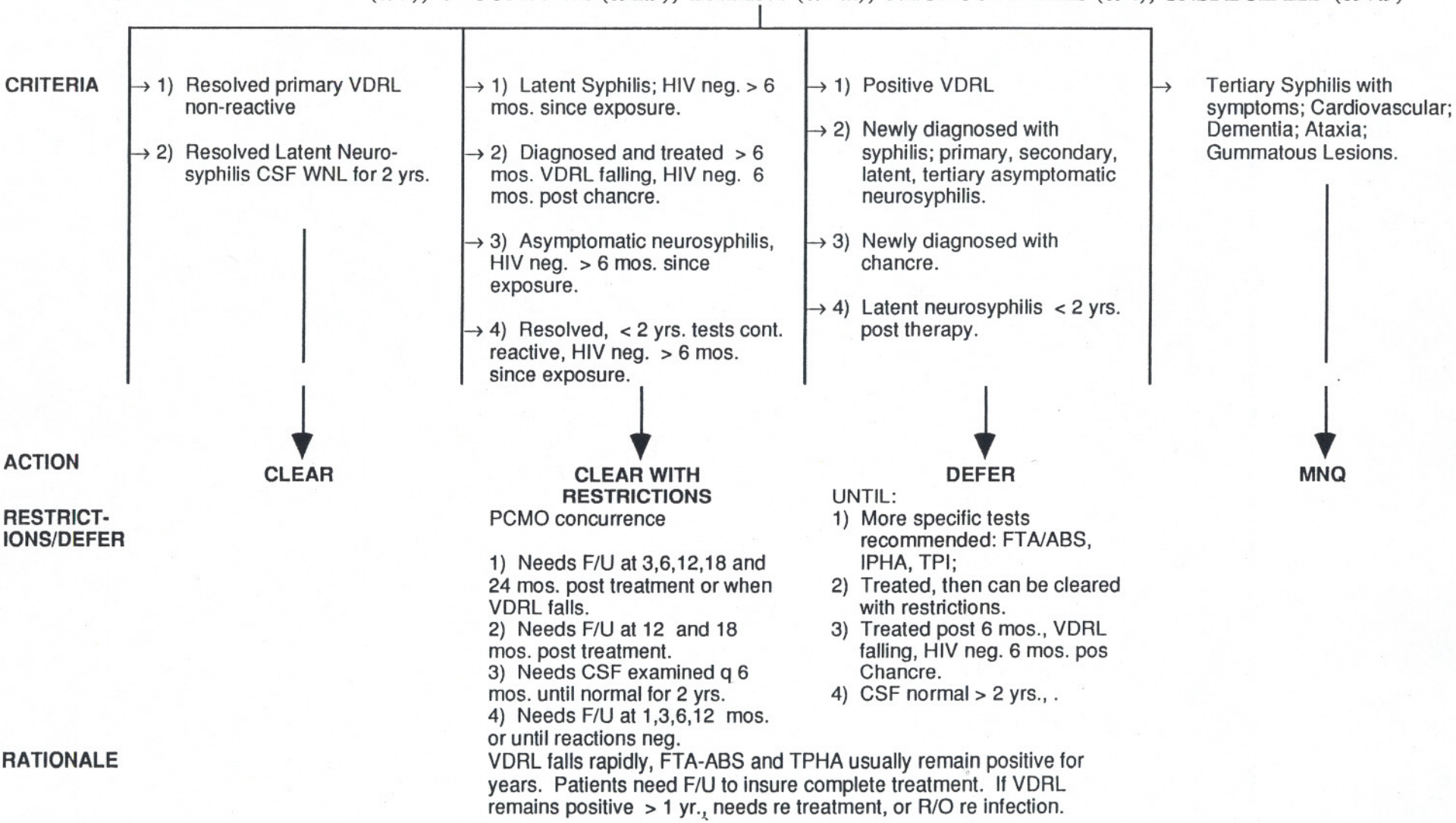


MEDICAL INFORMATION NEEDED: Generic information;

GC Culture if within 1 year; MD evaluation.

5/4/93

SYPHILIS: PRIMARY (091); SECONDARY (091.9); LATENT (097.1); NEUROSYPHILIS (094); UNSPECIFIED (097.9)

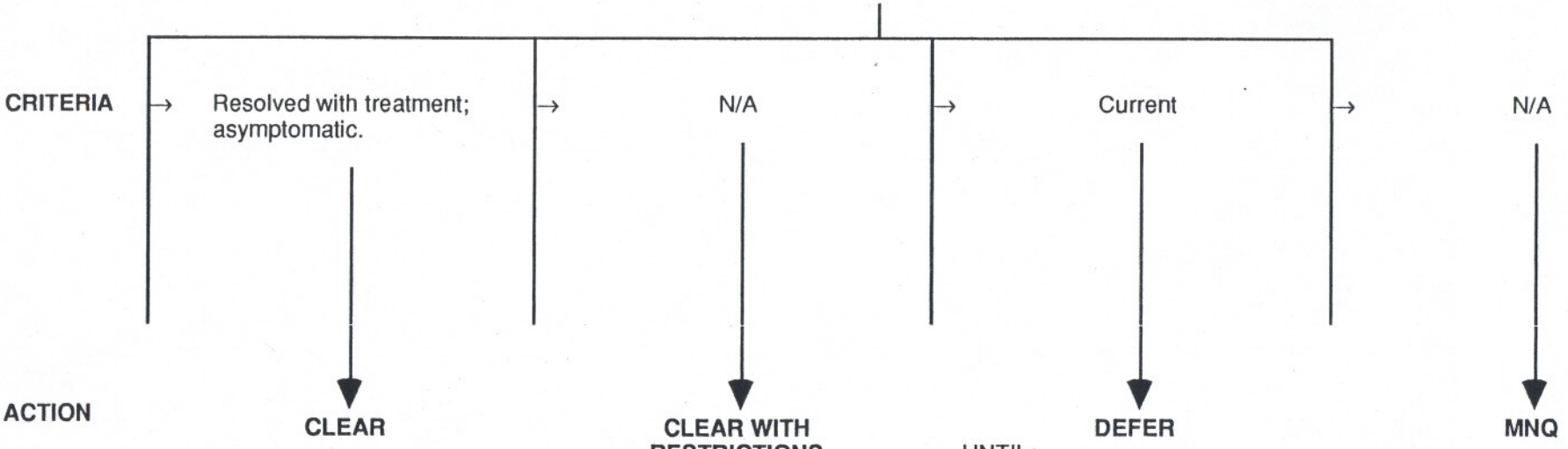


MEDICAL INFORMATION NEEDED:

Generic evaluation; MD evaluation: VDRL; FTA/ABS; TPHA, TPI; test for other STD's, HIV, if positive history, check if properly treated.
Lab work should read positive for FTA/ABS and VDRL neg. (1 - 8).
Treatment needed next 2 - 3 yrs.; Labwork/tests/F/U needed/meds. FTA/ABS: Fluorescent Treponenal Antibody Adsorption.

10/28/93

TRICHOMONIASIS (131.0), I PECIFIC VAGINITIS (616.10)



RESTRICT-IONS/DEFER

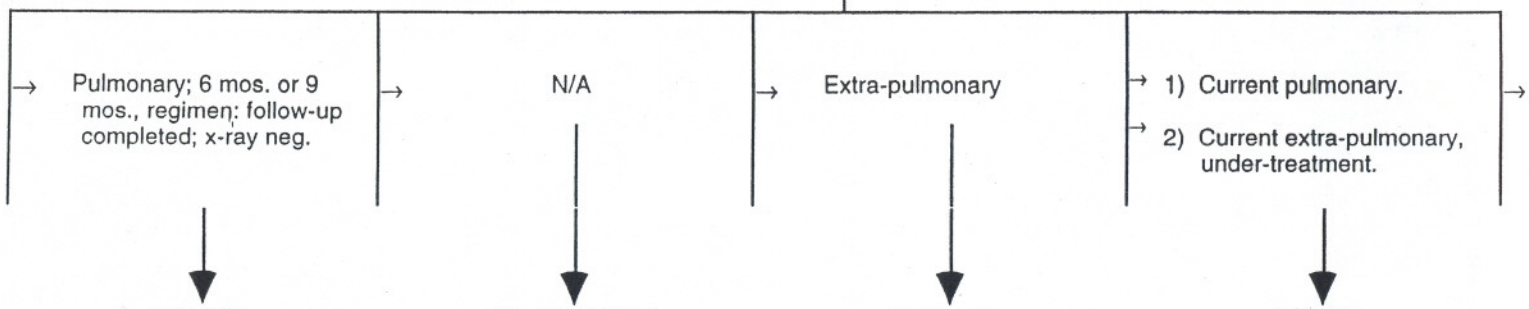
UNTIL:

1&2) Resolved and PAP WNL.

RATIONALE

MEDICAL INFORMATION NEEDED: Generic information

TUBERCULOSIS (010.9)



RESTRICT-IONS/DEFER

UNTIL:

1) Pulmonary: F/U of sputum (smear & culture); x-ray at end of treatment for baseline comparison. Treatment completed

2) Extra-Pulmonary: Treat-ment dependent upon body system involved: requires MRB for review & F/U recommendation.

RATIONALE

Tuberculosis may relapse and more recently is being associated with AIDS.

TB may infect any organ or system; lymph, bones, renal, neurological, G.I. Usually can be cured. Sometimes TB has caused renal damage or bone deformity that may inter-fere with PCV's functioning.

Pulmonary TB: Clinical tests at CDC showed 90% success with 6 mos. threat-ment regimen and 90+% success with 9 mos. treatment regimen. F/U recom-mendations from Joint Statement of American Thoracic Society and CDC.

MEDICAL INFORMATION NEEDED:

Generic information;
MD Evaluation;
CXR if Pulmonary.

5/4/93

ADDENDUM

INFECTIOUS DISEASE

Histoplasmosis/ Coccidioidomycosis: Coccidioidomycosis is a common disease in California and the Southwestern USA. Frequently, it is asymptomatic and resolves without complications. Occasionally, a cavity in the lung remains. Applicants, with a lung cavity remaining after resolution of either disease, require high altitude restrictions (,8,000 ft.). The cavity form, with symptoms and COPD, is considered ill and difficult to manage. To assess lung function, spirometry should be done. An FEV of >70% is considered adequate lung function. Both diseases can be diagnosed with blood titers.

Lyme Disease: Is frequently misdiagnosed. The Lyme titer (IFA) should be >1:128 with the corresponding history of tick bite, rash, muscle aches, etc. Proper treatment should also be documented to ensure that no complications occur later.

Mononucleosis: Mononucleosis usually resolves without complications. The typhoidal and the chronic active form must be resolved for at least a year.

Chronic Fatigue Syndrome: No definitive blood tests exist for diagnosis. Any applicants with a history of Chronic Fatigue Syndrome should be totally free of symptoms and fully active for at least 3 years before being considered recovered. Their work histories and references should be carefully checked.

Tuberculosis and PPD Testing: INH therapy will almost always affect the liver and elevate the SGOT. If the patient becomes jaundiced or the SGOT is very elevated, then INH therapy should be reconsidered. The SGOT is then measured only if the patient is symptomatic or complaining of headache, nausea, or fatigue. However, standard treatment for TB or INH prophylaxis requires close f/u. Six months post completion of treatment for TB, patients are released from medical care and only require routine f/u. PC will require baseline LFTs and OCR before going overseas.

SEXUALLY TRANSMITTED DISEASES

Any applicant with more than 3 episodes of STD's during the preceding 5 years, should be considered STD "prone". Because of their behavior and refusal to practice safe sex, they are at high risk for HIV infection. Considering the high rates of HIV infection in many countries with Peace Corps programs, it was the opinion of the Infectious Disease consultant that these people are not appropriate for Peace Corps. They are at high risk for contracting a fatal disease.

Any applicant with an STD within the previous 6 months before applying, must have a repeat HIV test six months post exposure to the STD infection. This time period will account for the sero-conversion "window". It takes up to six months to sero-convert after infection with HIV.

Syphilis: If the applicant has a positive history of syphilis, recheck the VDRL and the FTA-ABS (fluorescent treponemal antibody-absorption test). The FTA will remain positive for years after infection with Syphilis, while the VDRL will have returned to neg. (1-8). If the VDRL is positive, the applicant must be evaluated for further treatment. The applicant has either been re-infected or the initial treatment failed.

1/30/95

PEACE CORPS

-- (ca.
• all apps
starting INH with
asked for baseline
• apps > 35 months
LFTs for INH
• inform as of INH
D/C'd

March 30, 1995

[redacted]

Dear [redacted]

It has come to our attention during a review of your medical history that you have had a POSITIVE PPD TEST in the past.

As part of your medical processing, it requested that you provide Medical Services with documentation of the induration(in mm) of the positive results of the PPD test. If you cannot locate this information, please have your physician assist you with providing the following evaluation(s):

1) PPD re-test with documentation of induration - to be used as a baseline for follow-up overseas.

2) IF RE-TEST IS NEGATIVE, re-test again in 2 weeks for a booster reaction and document the results of induration.

** The re-testing does not pose a threat to your health and is used to optimize your protection against tuberculosis while serving overseas as a Peace Corps Volunteer.

This evaluation should be sent to:

Peace Corps
Medical Services
Washington, DC 20526

Any charges incidental to this request must be at no expense to the Peace Corps.

Thank you for your interest in Peace Corps service.

Sincerely,

Ada Hellyer, RN
Medical Services

[redacted]

TUBERCULOSIS SCREENING AND PREVENTION UPDATE August 1991
M/MS

Goal: Identify infected persons in a population at risk, and provide preventive treatment ('prophylaxis') or identify and treat clinical disease.

RISK ASSESSMENT

Risk factors: conditions predisposing to TB

HIV	Renal failure	Diabetes
Steroid use	Silicosis	
Gastrectomy	Jejunoileal bypass	
Malignancies	Leukemia and lymphoma	
Low body weight (<10% below ideal)		

High risk groups: high incidence of TB in specific populations, with or without individual risk factors

- HIV
- IV drug use
- Alcoholics
- Close contacts of known/suspected TB cases
- Foreign-born persons from areas of high prevalence
- Low-income populations/ethnic minority groups
- Residents of long-term care facilities, prisons, etc.

Most PCVs can be considered members of a high risk group, fortunately few have any risk factors.

SCREENING METHODS

Tine PPD: Appropriate for large scale screening of low risk populations- not PCVs who reside in endemic areas or have possible TB contacts (health care facilities, etc). Any positive tine requires Mantoux test to confirm.

Mantoux PPD: Best test for following elevated-risk groups. Allows quantification of low-level responses, which improves interpretation of future tests.

History of BCG: PPD reactivity is <u>not</u> lifelong following BCG as immunity decreases without re-exposure. Most will have a small or negative PPD after 10 years. A large reaction is usually due to TB. Useful to measure PPD despite BCG history to find the majority who are negative and can continue PPD testing during periods of exposure.[1]

Retest
1st Booster- if (-) do 2nd test in 2 weeks
if (+), Rx

1 Importance of booster effect unclear as it does interfere with strict use of PPD criteria, however large increases in size of reaction in a person from a high risk group or with individual risk factors is often considered an indication for preventive therapy despite past BCG.

American Thoracic Society/CDC Diagnostic Standards for Tuberculosis

Based on the increase in size of induration following Mantoux PPD or the current size if recent PPD status unknown.

PPD Converter: Increase in size of PPD reaction of:

*Always Rx c INH

≥10 mm for age <35
≥15 mm for age ≥ 35 (note change)

An increase from 6 mm to 14 mm is only 8 mm and does not meet criteria for a 10 mm increase. Previous 'negative' reactions may be 5-9 mm and make correct identification of the converter difficult.

- Preventive therapy indicated for converters at any age (benefits exceed risk).

PPD Reactor: Size of reaction meets criteria (≥5, 10 or 15 mm) based on presence of risk factors and/or high risk group.

- No risk factors: Preventive therapy based on age as benefits are lower. Treat if age <35 and:
  PPD ≥ 10 mm if member of high risk group
  PPD ≥ 15 mm otherwise

- Positive risk factors: Preventive therapy indicated for all ages and:
  PPD ≥ 5 mm for HIV, recent contacts, or CXR showing old TB
  PPD ≥ 10 mm for all others with a risk factor

Category	age < 35	age ≥ 35
PPD converter	INCREASE OF ≥ 10 mm TREAT	INCREASE OF ≥ 15 mm TREAT
HIV, recent close contact, old TB on CXR	≥ 5 mm TREAT	≥ 5 mm TREAT
Other risk factors	≥ 10 mm TREAT	≥ 10 mm TREAT
High risk group, no individual risk factors	≥ 10 mm TREAT	~~DO NOT~~ TREAT
Low risk group, no individual risk factors	≥ 15 mm TREAT[2]	~~DO NOT~~ TREAT

REFERENCE: MMWR May 18, 1990 and Ann Rev Resp Dis (90) 142:725

[2] Many specialists continue to use 10 mm as a cut-off, as ruling out TB exposure based only on history is difficult. Persons form areas of non-TB mycobacteria such as the Southwestern US are likely to have cross-reactivity, and the higher cut-off point is recommended.

BCG VACCINATION AND THE SKIN TEST FOR TUBERCULOSIS

Peace Corps Office of Medical Services
February, 1992

There is much confusion regarding the evaluation of individuals who have a history of vaccination with BCG, a relative of the TB organism. The BCG vaccine is widely used as a childhood vaccine in many developing countries, as it offers some protection against severe forms of tuberculosis. It is also used in Europe for adults traveling to endemic areas, however the protective effects of BCG vaccination in adults may be less. Because of misunderstandings of the effectiveness of this vaccine and of the mechanism underlying a positive skin test for TB (PPD test), many U.S. physicians falsely believe that lifelong "false positive" skin tests inevitably occur after BCG vaccination. The truth is that most individuals who were vaccinated as a child will have a normal (negative) PPD test. Those with a positive PPD test are likely to have a true positive due to silent (dormant) TB infection, especially if they belong to a risk group for TB exposure.

The following facts should be considered when monitoring an individual with a history of BCG vaccination:

1. Skin test reactivity following BCG vaccination is highly variable, both for the size of the response and for the duration of response over months and years. Frequently there is no detectable response at all. Positive PPD reactions due to BCG vaccine are very unlikely 10-15 years later.

2. BCG vaccination in the first few years of age has the lowest rate of response, in some studies less than 20%. Rarely is the initial response greater than 10 mm in size.

3. A 5-unit PPD intradermal skin test is not contra-indicated in those with a history of BCG vaccination.[1] A large response is highly suggestive of TB infection. Responses due to BCG are small (usually less than 9 mm) and uncommon.

4. Most persons given BCG vaccine belong to a group that has a high risk of TB exposure, making a true positive test likely, which indicates a silent infection.

Experts in tuberculosis detection and prevention agree that PPD testing and the use of INH therapy has an important role in the preventive health care

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[1]Journal of the American Medical Association, 253:3438 (1985)

for those who have a history of BCG vaccination. For the majority of persons, a history of childhood or remote BCG vaccination should be disregarded and skin testing and INH therapy given per the standard guidelines. As there can be debate about the need to use INH in some PPD-positive persons who have had BCG vaccine, the following guideline is in use by the Peace Corps:

1. All applicants (regardless of BCG exposure) must have a skin test (PPD 5U) done unless their test was positive in the past 10 years or they have been treated for tuberculosis in the past.

2. Applicants ~~under age 35~~ of any age who have a newly diagnosed* positive reaction to the PPD test and a normal chest x-ray are considered to have silent TB (subclinical or latent infection), and must begin a 6 month course of INH to prevent illness due to reactivation of the TB in the future. Reactivation occurs with changes in the immune system due to age, other infections, nutrition, and other causes.

3. Applicants with a history of BCG vaccine and a positive PPD test (with a normal chest xray) who are individually advised by a specialist in TB or pulmonary diseases that INH is not indicated for them can submit this information for review by the Peace Corps. This information should specify the reasons why the applicant is at low risk for both silent infection and likely to have a false-positive PPD test.

Tuberculosis is a constant risk for those serving in developing countries, and is growing in importance due to the increase in TB among HIV infected populations. It is relatively easily transmitted by airborne particles during close contact with infected persons, many of whom are not aware of their diagnosis. The Peace Corps follows the recommendations of the Centers for Disease Control and the American Thoracic Society, and must insist that applicants receive adequate screening for TB before, during, and after service. We request the cooperation of applicants who have been given inaccurate information about the BCG test and of their physicians, who may not have been informed of this aspect of TB screening.

* recent converter (< 2 yrs) regardless of age → TREAT

Peace Corps Office of Medical Services
M/VS/MS
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Problem-Oriented Diagnosis

To Flu on
SRB TB discussion.

Positive PPD and Chemoprophylaxis for Tuberculosis Infection

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The appearance of an indurated area of 5 mm or more 48 to 72 hours after administration of purified protein derivative (PPD) is considered a positive reaction in persons who have recently had close contact with an individual with active tuberculosis, in persons with radiographic findings consistent with a past history of tuberculosis or in persons with known or suspected human immunodeficiency virus infection. Ten or more millimeters of induration is considered a positive reaction in persons at increased risk of tuberculosis. Induration of 15 mm or more is considered a positive result in all other persons. Candidates for a six-month course of isoniazid include persons under age 35 who are recent converters and have induration of 10 mm or more and persons over age 35 with 15 mm or more of induration. Patients with HIV infection and those with radiographic evidence of previous tuberculosis should receive 12 months of therapy. A regimen of pyrazinamide and either ethambutol, ofloxacin or ciprofloxacin is recommended for contacts of patients with multidrug-resistant tuberculosis.

This statement is misleading. They mean persons >35 yrs who are recent converters w/15mm induration.

This year inaugurates a new series of articles, "Problem-Oriented Diagnosis," prepared by different medical faculty. This is the fifth in a series from the University of California-San Diego family practice residency program. Guest editor of the series is William A. Norcross, M.D.

The incidence of tuberculosis has risen dramatically in this country. Just at the time when we thought we had conquered this ancient plague, *Mycobacterium tuberculosis* has again become a formidable foe. After a 31-year decline (from 1953 to 1984) in the incidence of tuberculosis, a dramatic increase in the number of reported cases occurred in 1985.[1] The Centers for Disease Control and Prevention mainly attributes the increase to the large number of individuals infected with the human immunodeficiency virus (HIV).[2] Also contributing to the increase are immigrants from developing countries with a high prevalence of tuberculosis, contacts of patients with active tuberculosis, underserved low-income populations, alcoholics and injecting drug users.[2]

In 1992 a record number of tuberculosis cases (26,673) were reported to the CDC, an increase of 390 cases over the previous year.[3] This increase was met with additional spending on public health measures, such as education and tuberculosis screening. The most recently available national statistics indicate a 5.1 percent decrease in reported cases for 1993 (25,313 cases).[4] However, the number of cases in 1993 represents a 14 percent increase over the number of cases in 1985, when the incidence first began to climb.[4]

The best defense against the tuberculosis epidemic is increased vigilance. The primary care clinician must try to prevent spread of tuberculosis by identifying infected persons and prescribing adequate treatment and chemoprophylaxis. In a recent review of patient records, a high rate of physician error was demonstrated in both the treatment of active disease and the use of isoniazid chemoprophylaxis.[1] The study findings underscore the lack of up-to-date information available to clinicians.

ositive PPD for Tuberculosis

Generally, first-line screening for tuberculosis consists of the intradermal Mantoux test (purified protein derivative, or PPD) and a chest radiograph for those who test positive. However, regardless of the PPD results, chest radiograph should be obtained in anyone with symptoms of tuberculosis (cough, hemoptysis, fatigue, fever, night sweats and weight loss), especially if they are members of very high-risk populations such as the homeless or those with HIV infection.[5] Certain conditions known to put individuals at risk for the development of active tuberculosis are listed in *Table 1*.[2,6]

TABLE 1

Medical Conditions Associated with Increased Risk of Active Tuberculosis

Silicosis
Diabetes mellitus
Prolonged corticosteroid therapy
Immunosuppressive therapy
Hematologic and reticuloendothelial diseases
Human immunodeficiency virus infection
End-stage renal disease
Intestinal bypass
Gastrectomy
Chronic malabsorption syndromes
Cancer of the oropharynx or urogenital tract
Body weight 10 percent or more below ideal

HIV = human immunodeficiency virus.
Derived from references 2 and 6.

Administration and Evaluation of the Screening Skin Test

Although multipuncture tests (Tine test) are easier to store and administer, the PPD test is considered the only reliable test on which to base management decisions about tuberculosis.[2] An intradermal injection of 0.1 mL (5 tuberculin units, or TU) of PPD solution is carefully administered on the volar surface of the forearm with a disposable tuberculosis syringe. The injection is made just beneath the skin, with the bevel of the needle facing upward. The technique for injection of the solution must be practiced and perfected, since PPD injected too deeply under the skin or too close to the surface will not react reliably.

The wheal that results from correct administration will be 6 to 10 mm in diameter and clearly distinct from the surrounding skin. If there is substantial leakage of blood from too-deep penetration of the needle or if there is leakage of PPD solution from the injection site resulting in a wheal that is less than 6 mm, the PPD test is invalid and must be given again. The repeat dose can be administered immediately and should be several centimeters away from the first site.[6]

The patient must return for clinical evaluation of the test in 48 to 72 hours.[2,6] The induration can be marked with a pen and measured with a metric ruler. The diameter of induration is measured transversely to the long axis of the forearm.[2] A strongly positive test will remain visible for an extended length of time (up to a week or so), but for the sake of accuracy, the marginal reaction needs appropriate evaluation at the specified time. The PPD reaction is measured by its induration, not by the surrounding erythema. The exact measurement in millimeters must be recorded, because if an active case of tuberculosis is identified, it must be reported to the local health department, and the exact measurement of the initial screening test is required.

The CDC recommendations for evaluation of the significant PPD reaction have

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