THE TOP TEN SEXUALLY TRANSMITTED DISEASES				
organism	**disease**	**comment**	**treatment**	**new cases (millions) per year worldwide***
papillomaviruses (six of the 70 types)	genital warts, dysplasias	the commonest of all STDs; associated with cancer of cervix, penis, etc.	podophyllin, surgical removal	32
Chlamydia trachomatis (D–K serotypes)	non-specific urethritis,	increasing incidence	+ doxycycline, azithromycin	97
C. trachomatis (L1, L2, L3 serotypes)	lymphogranuloma venereum	mainly tropical countries	+ (doxycycline, tetracycline, erythromycin)	
Candida albicans	vaginal thrush, balanitis	very common; predisposing factors	+ (nystatin, fluconazole)	
Trichomonas vaginalis	vaginitis, urethritis	very common	+ (metronidazole)	94
herpes simplex virus types 1 and 2	genital herpes	? increasing; problem of latency and reactivation	± (acyclovir)	21
Neisseria gonorrhoeae	gonorrhea	decreasing incidence in developed countries	++ (penicillin, ceftriaxone, cefixime, ciprofloxacin spectinomycin, azithromycin)*	78
HIV	AIDS	highly lethal; incidence increasing worldwide	± (zidovudine)	2
Treponema pallidum	syphilis	decreasing incidence in developed countries	++ (penicillin)	19
Hepatitis B virus	hepatitis	especially male homosexuals (? decreasing incidence)	–	
Haemophilus ducreyi	chancroid	mainly tropical 9 million infected individuals	+ (erythromycin, ceftriaxone, cotrimoxazole)	

Table 66.4. STD Complications in Women and Infants

STDs have frequent, severe, and irreversible complications, particularly for women and children
10–40% of women with untreated chlamydial and/or gonococcal cervicitis develop PID
Approximately 17–25% of women with PID become infertile
Risk of potentially fatal tubal pregnancy increases 6–10 fold after PID; tubal pregnancy is the leading cause of maternal death in African-American women
Several biotypes of HPV are associated with cervical cancer, which kills almost 5000 North American women yearly and is the second most common cause of cancer deaths in women worldwide
STDs cause spontaneous abortion, stillbirth, premature delivery, low birth weight, and permanently disabling infant infections

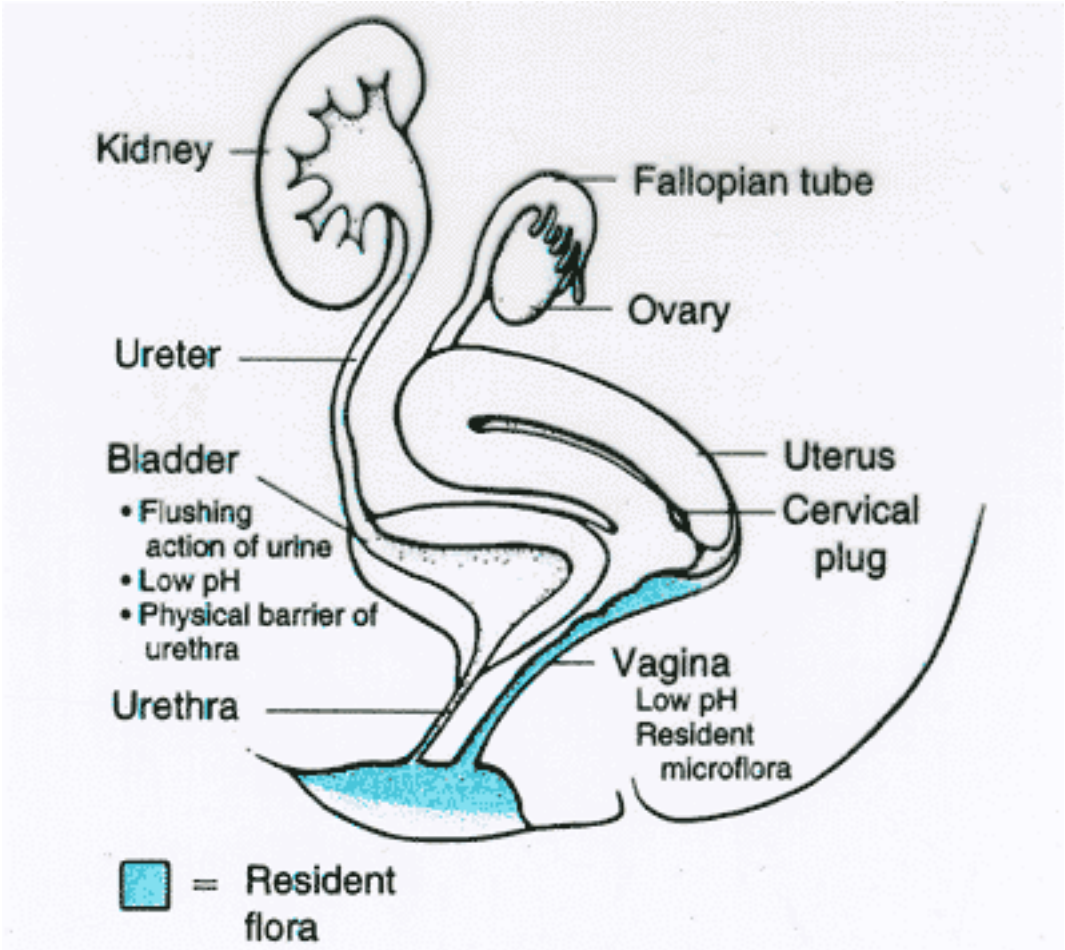


Figure 1-4 Overview of defenses of the urogenital tract. A female figure is used for illustration because in women the uterus and fallopian tubes, as well as the bladder, must be protected from bacterial colonization.

STRATEGIES ADOPTED BY SEXUALLY TRANSMITTED MICROORGANISMS TO COMBAT HOST DEFENSES

host defenses	microbial strategies	examples
integrity of mucosal surface	specific attachment mechanism	gonococcus or chlamydia to urethral epithelium
urine flow (for urethral infection)	specific attachment; induce own uptake and transport across urethral epithelial surface in phagocytic vacuole	gonococcus
	infection of urethral epithelial or subepithelial cells	herpes simplex virus (HSV), chlamydia
phagocytes (especially polymorphs)	induce negligible inflammation	*Treponema pallidum*; mechanism unclear, perhaps poorly activates alternative complement pathway due to sialic acid coating
	resist phagocytosis	gonococcus (capsule) *T. pallidum* (absorbed fibronectin)
complement	C3d receptor on microbe binds C3b/d and reduces C3b/d-mediated polymorph phagocytosis	*Candida albicans*
inflammation	induce strong inflammatory response, yet evade consequences	gonococcus, *C. albicans*, HSV, chlamydia; mechanism unknown
antibodies (especially IgA)	produce IgA protease	gonococcus
cell-mediated immune response (T cells, lymphokines, natural killer cells etc.)	antigenic variation; allows re-infection of a given individual with an antigenic variant	gonococcus, chlamydia, papillomaviruses (not HSV or *T. pallidum*)
	antigenic variation within a given individual	HIV
	poorly understood factors cause ineffective cell-mediated immune response	*T. pallidum*, HIV

36e

SPIRAL ORGANISMS OF MEDICAL IMPORTANCE

family	genus	species	subspecies	disease
Spirochaetales	*Treponema*	*pallidum*	*pallidum*	syphilis
		pallidum	*pertenue*	yaws
		carateum	–	pinta
	Borrelia	*recurrentis*	–	relapsing fever
		burgdorferi	–	Lyme disease
Leptospiraceae	*Leptospira*	*icterohaemorrhagiae*	–	leptospirosis
		hardjo	–	(Weil's disease)

36f

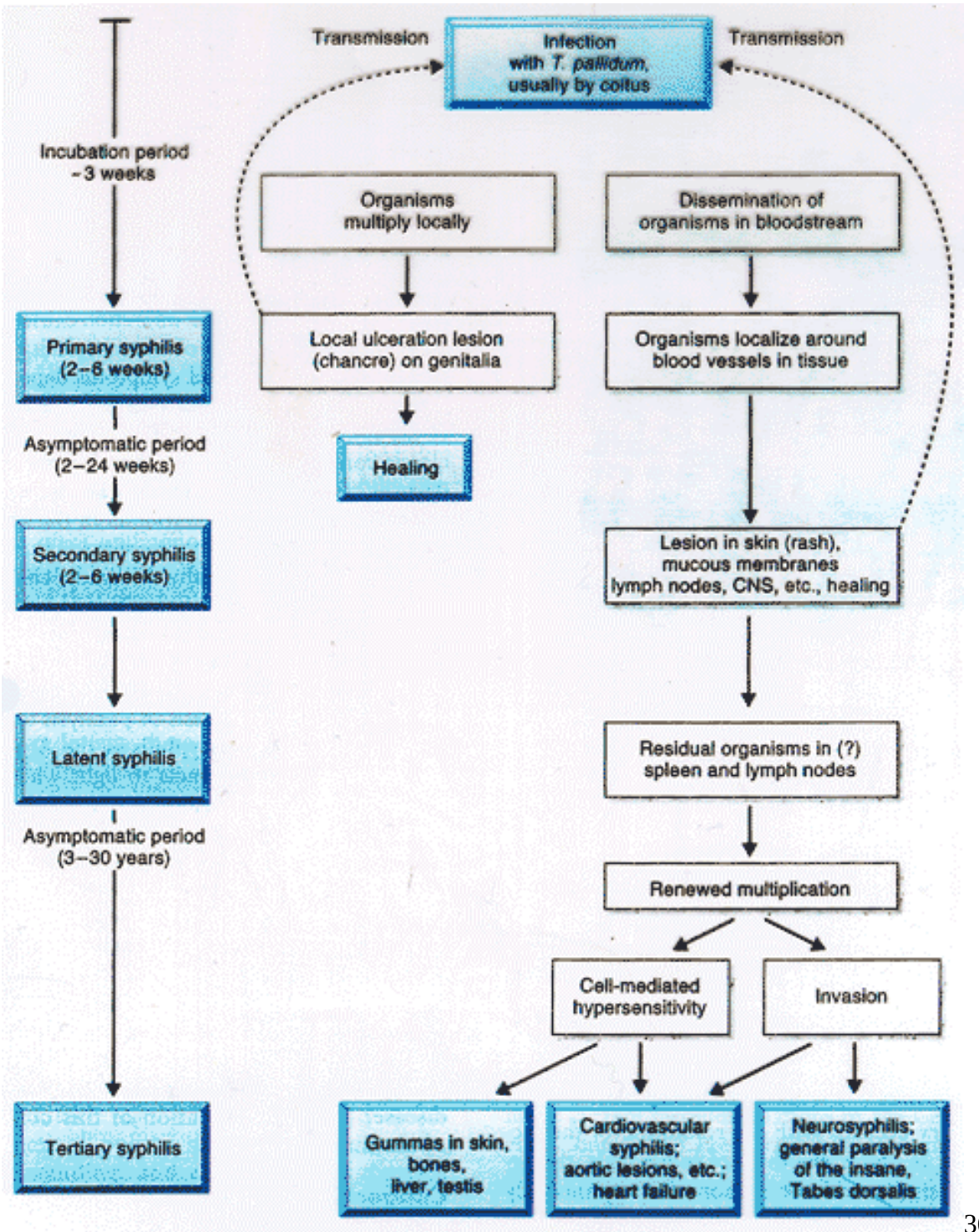
Species	Disease	Mode of Transmission	Diagnosis	Morphology	Growth in Bacteriologic Media	Treatment
T pallidum	Syphilis	Intimate (sexual) contact; across the placenta	Microscopy; serologic tests.	Thin, tight, spirals, seen by darkfield illumination, silver impregnation, or immunofluorescent stain.	–	Penicillin G.
B burgdorferi	Lyme disease	Tick bite	Clinical observations; microscopy.	Large, loosely coiled; stain with Giemsa's stain.	+	Tetracycline or amoxicillin for acute; penicillin G for chronic.
B recurrentis	Relapsing fever	Louse bite	Clinical observations; microscopy.	Large, loosely coiled; stain with Giemsa's stain.	+	Tetracycline.
L interrogans	Leptospirosis	Food or drink contaminated by urine of infected animals (rats, dogs, pigs, cows)	Serologic tests.	Thin, tight spirals, seen by darkfield illumination.	+	Penicillin G.

36g

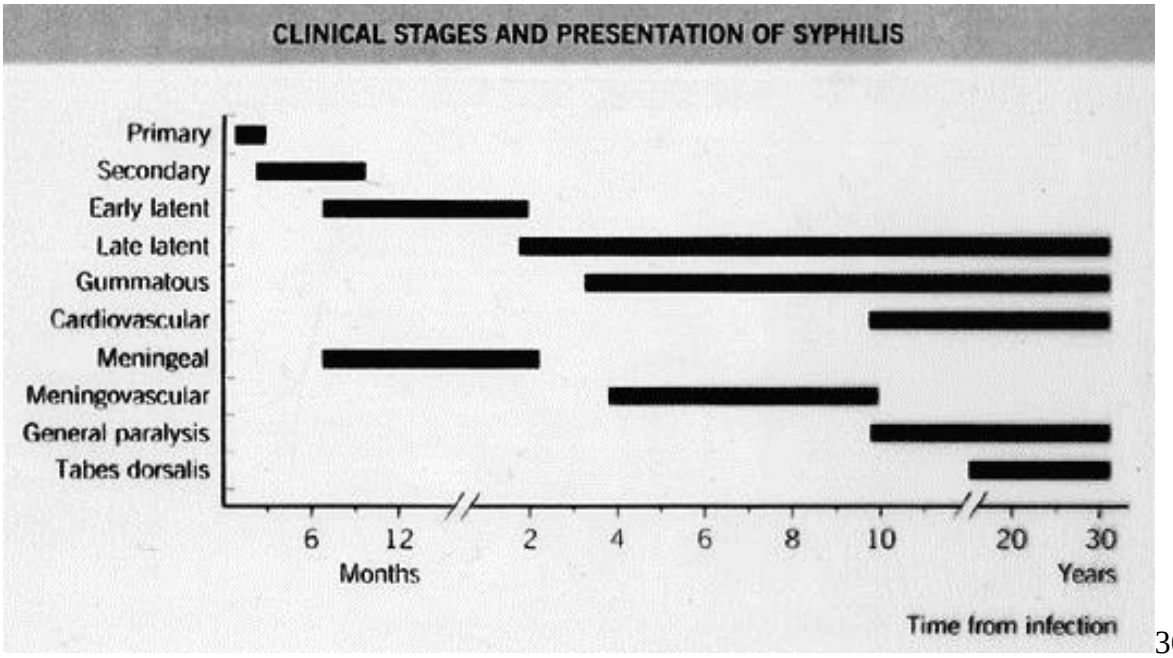
Order Spirochaetales

SPIROCHAETALES	HUMAN DISEASE	ETIOLOGICAL AGENT
FAMILY SPIROCHAETACEAE		
Genus *Cristispira*	None	—
Genus *Serpulina*	None	—
Genus *Spirochaeta*	None	—
Genus *Treponema*	Syphilis	*T. pallidum* subspecies *pallidum*
	Bejel	*T. pallidum* subspecies *endemicum*
	Yaws	*T. pallidum* subspecies *pertenue*
	Pinta	*T. carateum*
Genus *Borrelia*	Epidemic relapsing fever	*B. recurrentis*
	Endemic relapsing fever	Many *Borrelia* species
	Lyme borreliosis	*B. burgdorferi, B. garinii, B. afzelii*
FAMILY LEPTOSPIRACEAE		
Genus *Leptonema*	None	—
Genus *Leptospira*	Leptospirosis	*L. interrogans*

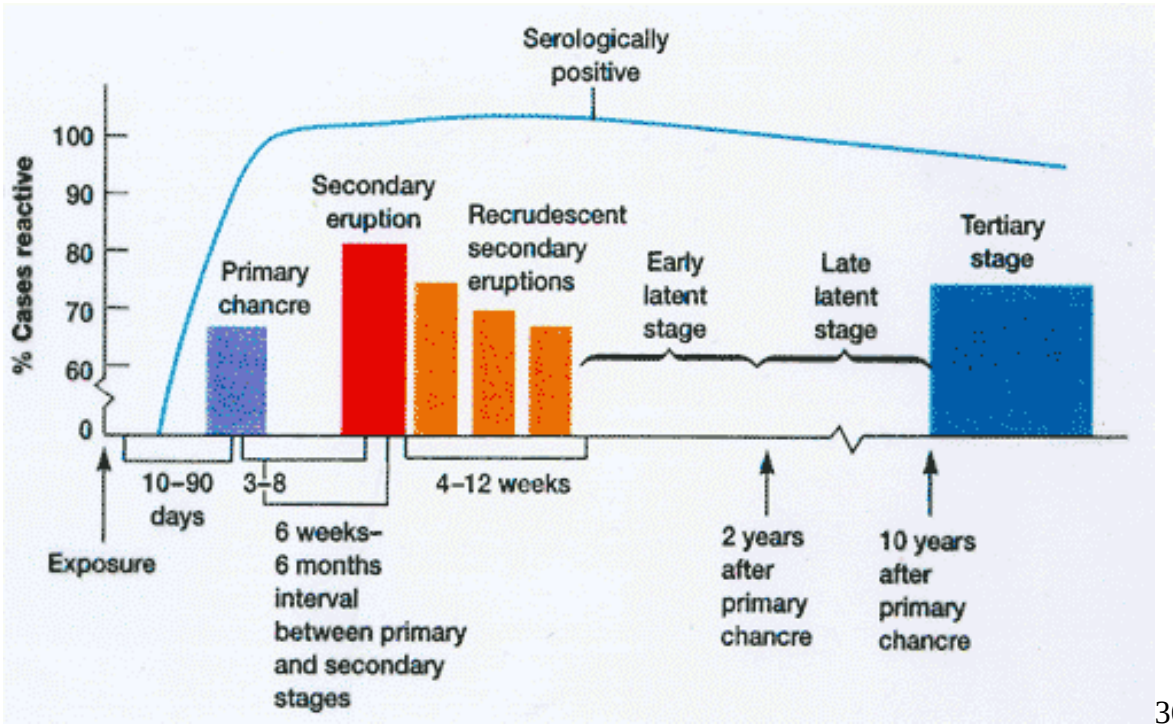
36h


Transmission
Infection with T. pallidum, usually by coitus
Transmission
Incubation period ~3 weeks
Organisms multiply locally
Dissemination of organisms in bloodstream
Primary syphilis (2–6 weeks)
Local ulceration lesion (chancre) on genitalia
Organisms localize around blood vessels in tissue
Asymptomatic period (2–24 weeks)
Healing
Secondary syphilis (2–6 weeks)
Lesion in skin (rash), mucous membranes lymph nodes, CNS, etc., healing
Latent syphilis
Residual organisms in (?) spleen and lymph nodes
Asymptomatic period (3–30 years)
Renewed multiplication
Cell-mediated hypersensitivity
Invasion
Tertiary syphilis
Gummas in skin, bones, liver, testis
Cardiovascular syphilis; aortic lesions, etc.; heart failure
Neurosyphilis; general paralysis of the insane, Tabes dorsalis

36i


CLINICAL STAGES AND PRESENTATION OF SYPHILIS
Primary
Secondary
Early latent
Late latent
Gummatous
Cardiovascular
Meningeal
Meningovascular
General paralysis
Tabes dorsalis
6
12
2
4
6
8
10
20
30
Months
Years
Time from infection

36j


Serologically positive
% Cases reactive
100
90
80
70
60
0
Primary chancre
Secondary eruption
Recrudescent secondary eruptions
Early latent stage
Late latent stage
Tertiary stage
10–90 days
3–8
4–12 weeks
Exposure
6 weeks–6 months interval between primary and secondary stages
2 years after primary chancre
10 years after primary chancre

36k

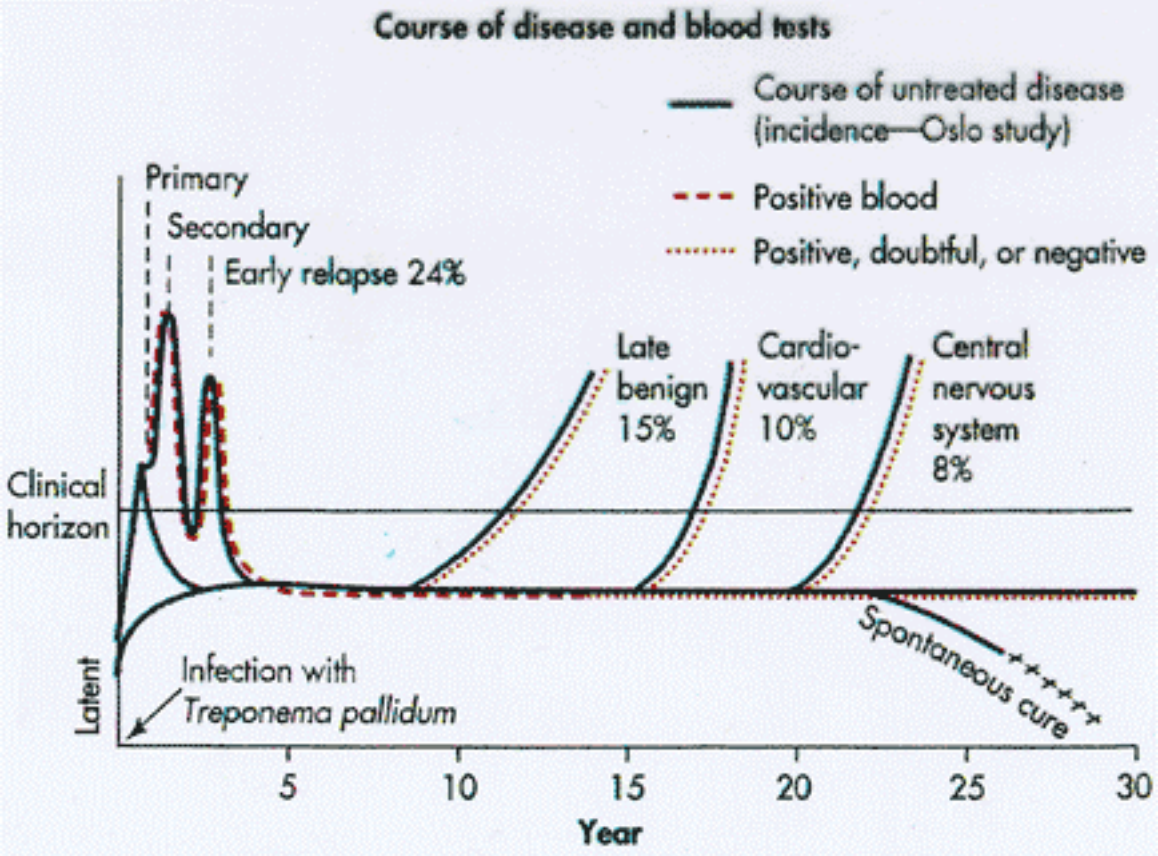


FIGURE 41-5. The natural history of untreated acquired syphilis was carefully chronicled at the University of Oslo. (Modified from Morgan H: *South Med J* 26:18-22, 1933; incidence data from Clark E, Danbolt N: *J Chron Dis* 2:311-344, 1955.)

TABLE 41-2 Diagnostic Tests for Syphilis

DIAGNOSTIC TEST	METHOD OR EXAMINATION
Microscopy	Darkfield
	Direct fluorescent-antibody staining
Culture	Not available
Serology	Nontreponemal tests
	VDRL
	RPR
	Treponemal tests
	FTA-ABS
	MHA-TP

36m

TABLE 41-3 Sensitivity and Specificity of Serological Tests for Syphilis

	SENSITIVITY (%)				
TEST	PRIMARY	SECONDARY	LATENT	LATE	SPECIFICITY (%)
NONTREPONEMAL					
VDRL	78 (74-87)	100	95 (88-100)	71 (37-94)	98 (96-99)
RPR	86 (77-100)	100	98 (95-100)	73	98 (93-99)
TREPONEMAL					
FTA-ABS	84 (70-100)	100	100	96	97 (94-100)
MHA-TP	76 (69-90)	100	97 (97-100)	94	99 (98-100)

36n

FALSE POSITIVES IN SYPHILIS SEROLOGY	
test	**conditions associated with false positive results**
non-specific (non-treponemal) VDRL RPR	viral infection, collagen vascular disease, acute febrile disease, post-immunization, pregnancy, leprosy, malaria
specific (treponemal) FTA-ABS TPHA	diseases associated with increased or abnormal globulins, lupus erythematosus, skin diseases, antinuclear antibodies, drug misuse, pregnancy

Fig. 19.7 Serologic tests for syphilis and conditions associated with false-positive results. (FTA-ABS, fluorescent treponemal antibody absorbtion test; RPR, rapid plasma reagin test; TPHA, *Treponema pallidum* hemagglutination assay; VDRL, Venereal Disease Research Lab test.)