

梅毒 (Syphilis)

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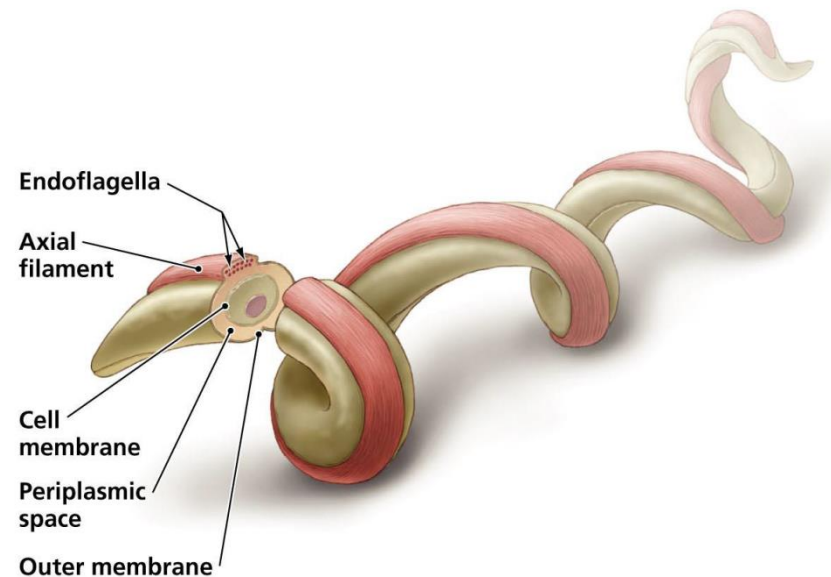
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Introduction

- **Syphilis (梅毒)**

- 致病原：*Treponema pallidum* (梅毒螺旋體)
- 傳染途徑：
 - 輸血
 - 性交或其他性行為
 - 經胎盤傳染
 - 接觸病灶傳染
- 潛伏期：10-90 天



Epidemiology of Syphilis

- **Epidemiology 流行病學**

- 全球性疾病
- 號發於20-35 歲
- 都市族群 > 鄉間族群
- 風險因子：
 - 多重性伴侶
 - 召妓
 - MSM (men sex with men ; 男性性交)

Taiwan

- 號發性別：男性
- 號發年齡：30-49歲, 70歲以上經治療過
- 號發地區：大台北地區

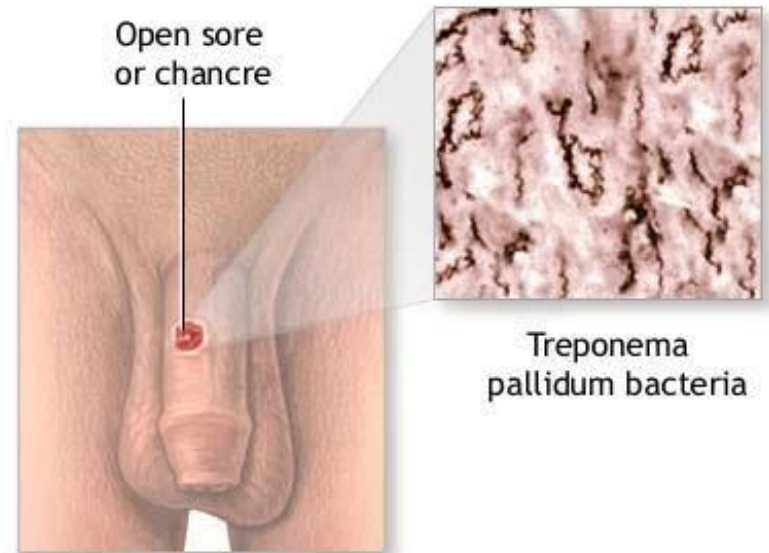
Clinical Manifestations

- **Primary (初期梅毒)**

- 2-4 weeks
- 具高度傳染力

症狀

- Painless sore (瘡)
- Chancre(硬性下疳)



Clinical Manifestations

- **Secondary (二期梅毒)**

- 4-6 週
- 具高度傳染力

症狀

- Rash (發疹)
- Fever (發燒)
- Lymphadenopathy
(淋巴結腫大)
- Malaise (全身無力)
- Syphilitic alopecia
(梅毒性脫髮)



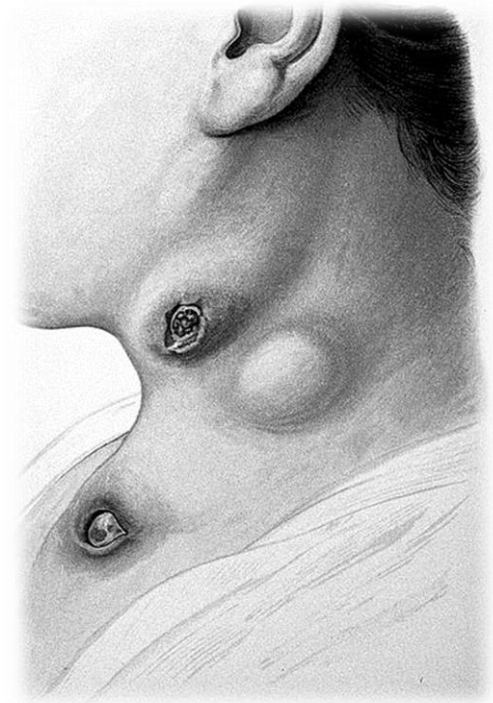
Clinical Manifestations

- **Tertiary (三期梅毒)**

- 3-7 年
- 具傳染力

症狀

- Organ damage (器官損壞)
- Gumma (梅毒腫)
- CNS invasion (入侵中樞神經)
- Cardiovascular invasion (入侵心血管)



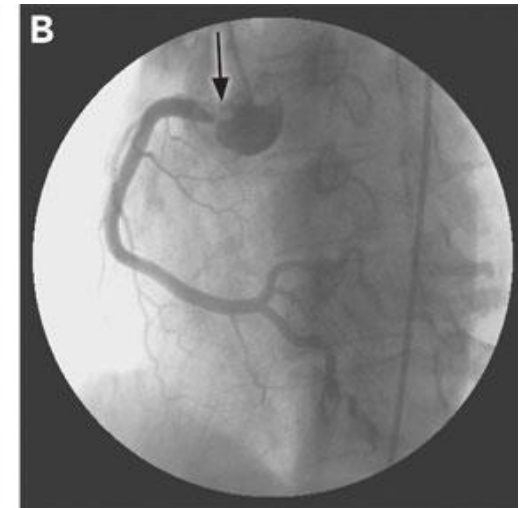
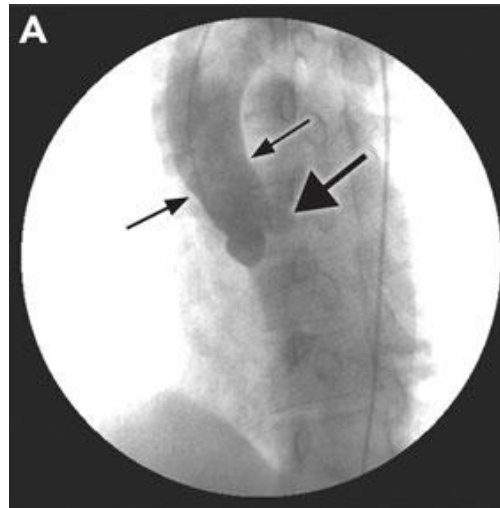
Clinical Manifestations

- **Cardiovascular (心臟性梅毒)**

- 三期梅毒未經治療可發展為心臟性梅毒
- 男性 > 女性；黑人 > 高加索人

症狀

- coronary artery stenosis (冠狀動脈狹窄)
- chest pain (胸痛)
- heart attack (心臟病)
- heart failure (心衰竭)



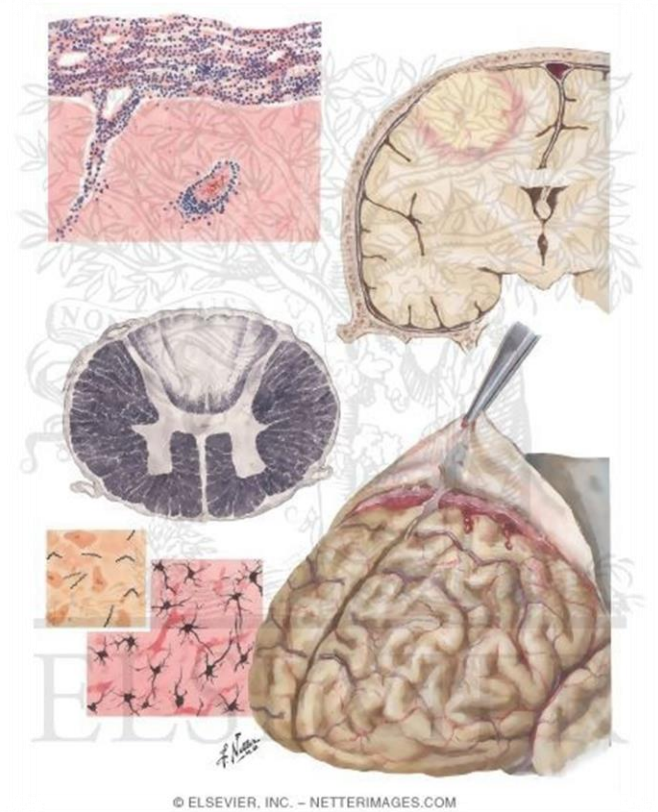
Clinical Manifestations

- **Nervous system (神經性梅毒)**

- 三期梅毒未經治療可發展為神經性梅毒
- 男性 > 女性；高加索人 > 黑人

症狀

- Headache (頭痛)
- Memory loss (失憶)
- Epilepsy (癲癇)
- Dementia paralytica (麻痺性癡呆)



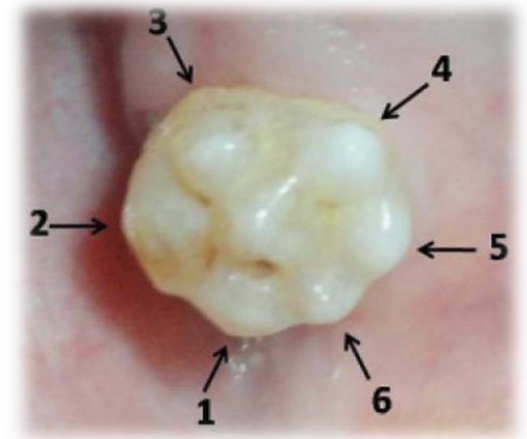
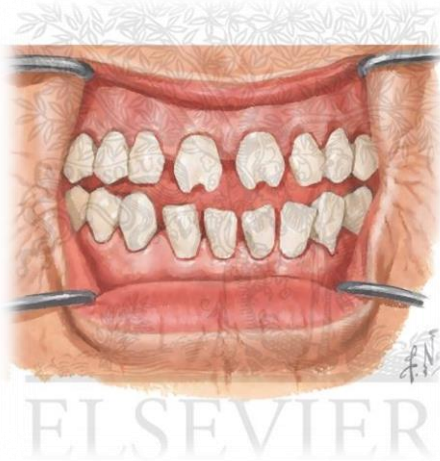
Clinical Manifestations

- **Congenital syphilis (先天性梅毒)**

- 非遺傳性
- 在懷孕前四個月梅毒無法穿透胎盤

症狀

- 多為水泡病變而非典型的硬性下疳(二期梅毒)
- Hutchinson's Teeth
- Mulberry molar (第一白齒桑葚狀)



Clinical Manifestations

- **Latent (隱性梅毒)**

- 早期隱性梅毒：
 - 無症狀帶原 ≤ 1 year
 - 具傳染力

- 晚期隱性梅毒：
 - 無症狀帶原 > 1 year
 - 低傳染力

Diagnosis

The Common Methods

- **Serology**
 - Mainstay for syphilis testing
 - Two classes of serologic tests
 - Non-treponemal
 - Treponemal

The Uncommon Methods

- Rabbit Infectivity Test (RIT) : Limited to research settings
- Dark Field Microscopy : Useful only during primary infection
- Immunostaining : Direct fluorescent antibody or silver stain
- Polymerase Chain Reaction (PCR) : Not commercial available

Diagnosis

Non-treponemal tests :

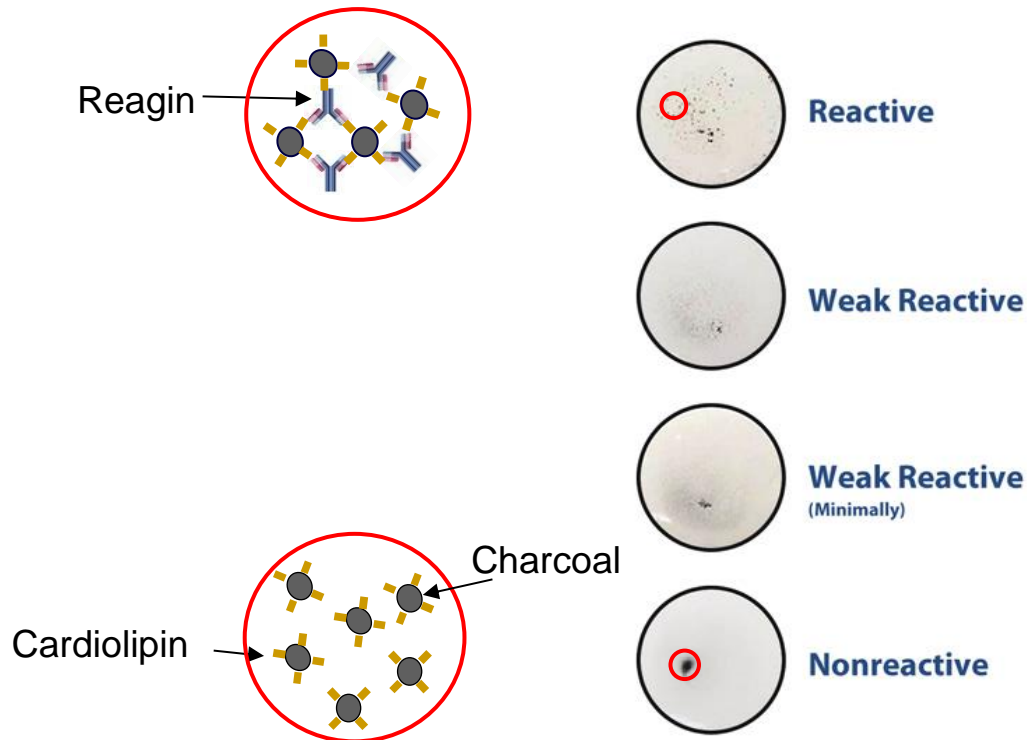
- Rapid Plasma Reagin (RPR)
- Venereal Disease Research Laboratory (VDRL)

Principle :

- *T. pallidum* infection leads to the production of reagin
 - **Reagin** – Antibodies to substances released from cells damaged by *T. pallidum*
- Reagin reacts with cardiolipin
 - **Cardiolipin** – a phospholipid component of certain eukaryotic and prokaryotic membranes

Diagnosis

RPR and VDRL are agglutination assays



Diagnosis

Non-treponemal tests :

- **Advantages**

1. Rapid turnaround time – Minutes
2. Inexpensive
3. No specialized instrumentation required
4. Usually revert to negative following therapy
5. Can be used to monitor response to therapy

- **Limitations**

1. Results are subjective
 - Intra- and Inter-laboratory variability
2. Non-specific :
 - False positive can result from other infectious or non-infectious conditions (EBV, Lupus, Autoimmune disease, etc.)
3. Limited sensitivity in early/primary syphilis and in late/latent syphilis

Diagnosis

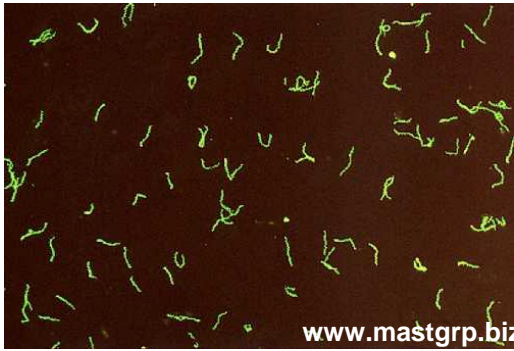
- **Treponemal Assays :**

- Fluorescent treponemal antibody (FTA-ABS)
- Treponema pallidum particle agglutination (TP-PA)
- Enzyme Immunoassay (EIA)
- Multiplex Flow Immunoassay (MFI)
- Microhemagglutination assay (MHA)

- **Principle :**

- Infection leads to production of specific antibodies directed against *T. pallidum*
- Treponemal tests detect IgG or total IgM/IgG antibodies directed against *T. pallidum*

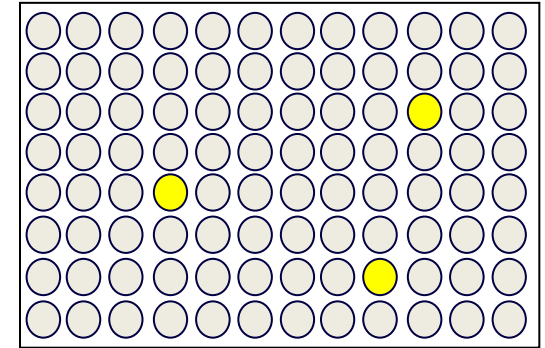
FTA-ABS



TP-PA

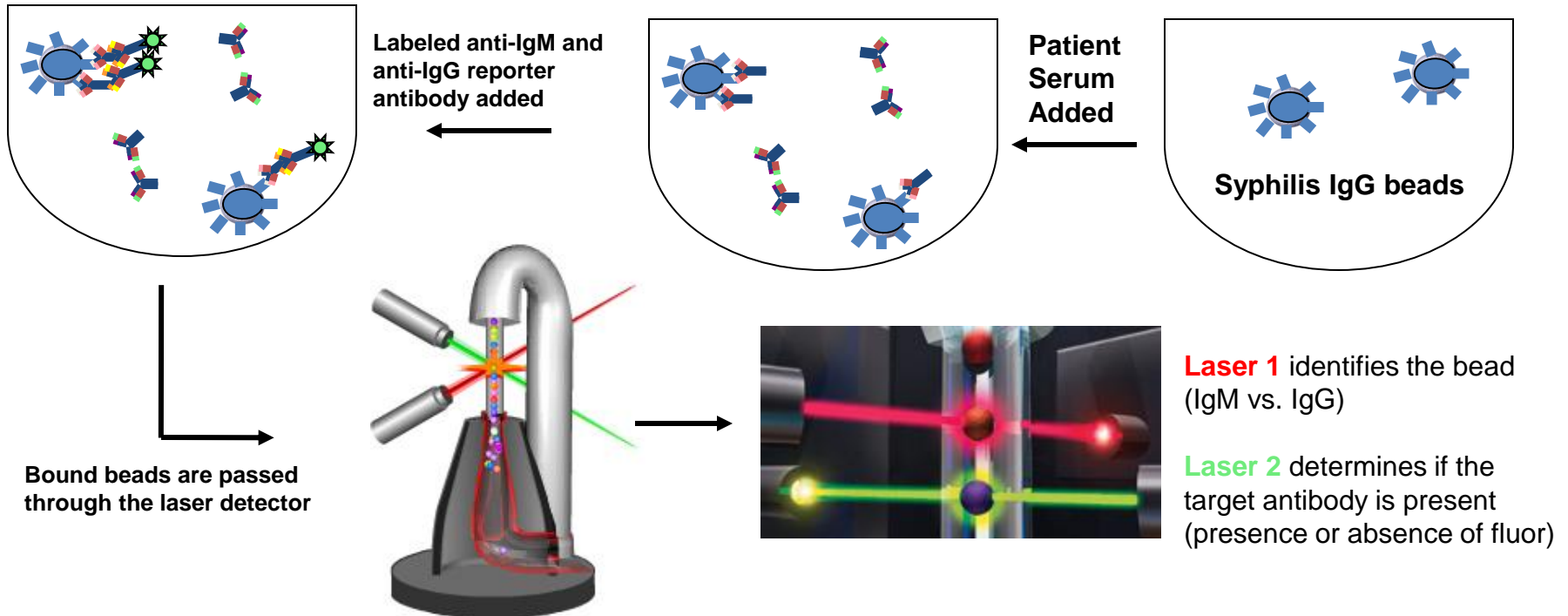


Conventional EIA



Yellow wells = positive

Multiplex Flow Immunoassay (MFI)



Diagnosis

Treponemal Assays :

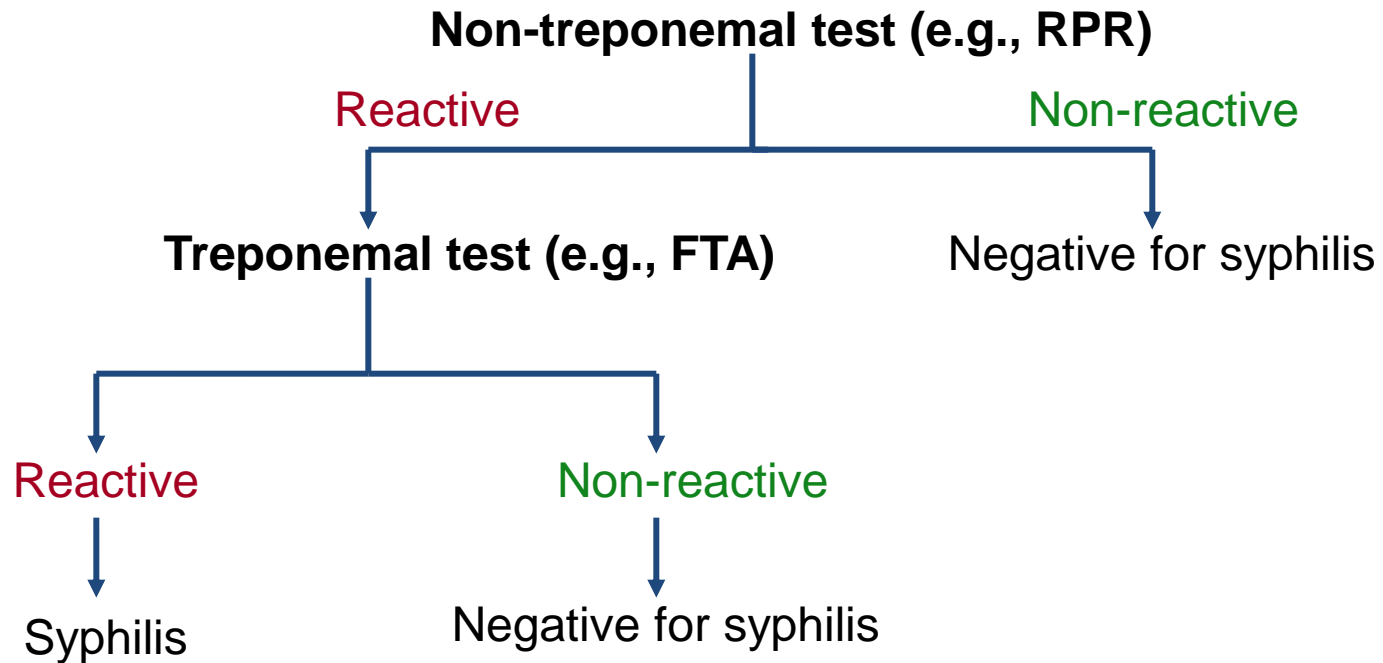
- **Advantages**

1. High Specificity
2. Possibly higher sensitivity during early and late syphilis stages compared to non-treponemal tests
3. Newer Methods
 - Objective result interpretation
 - Automation option
 - High throughput
 - High reproducibility/precision

- **Limitations**

1. Remain positive despite treatment
 - Cannot be used to monitor response to therapy
2. Conventional Methods
 - Subjective interpretation requiring technician expertise to read
3. Expensive instrumentation and higher cost/test

Syphilis Screening Algorithms: Traditional versus Reverse Screening



法訂傳染性疾病通報

病例定義（**Case definition**）

（一）梅毒通報範圍

- 1、活性梅毒通報定義：同時符合通報條件1+2 或僅符合通報條件3 者。
- 2、非活性梅毒通報定義：僅符合通報條件2 者。

（二）通報條件

- 1、臨床症狀出現硬下疳或全身性梅毒紅疹等臨床症狀。
- 2、未曾接受梅毒治療或病史不清楚者，**RPR（+）或VDRL（+），且TPHA=1**
：**320 以上(包括320)**。
- 3、曾經接受梅毒治療者，**VDRL 價數上升四倍**。

（三）需 1 週內通報。

治療

- (1) 一期、二期或早期隱性梅毒-適用長效盤尼西林，1次注射完成治療；對不能每天接受注射，以及合作程度不好的病人最適宜。方法：
：診斷後即時接受Benzathine penicillin, 2.4 m.u. IM ST
- (2) 對盤尼西林過敏之病患-可用下列任一種方法：
 - Doxycycline, 100 mg bid p.o. x14 days
 - Tetracycline, 500 mg q6h p.o. x14 days
- (3) 晚期梅毒
 - Benzathine penicillin, 2.4 m.u. IM qw x3 weeks
- (4) 神經性梅毒-下列任一種方法：
 - Crystalline penicillin G, 2~4 m.u.IV q4h x10~14 days
 - Crystalline penicillin G, 2~4 m.u.IM + probenecid
 - 500mg p.o. q4h x10~14 days