

# TUBERCULOSIS AND HIV

A stylized world map in a light green color is centered on a dark blue background. The map shows the outlines of continents and is used as a background for the text.

## ▶ HIV/TB INCIDENCE:

*640.000 coinfecting patients*

## ▶ HIV/TB PREVALENCE:

*10% in industrialized countries*

*25-67% in Africa*

## ▶ RISK OF DEVELOPING TUBERCULOSIS DISEASE IN HIV POSITIVE PTS

*20 times the risk of HIV negative pts*

# Tuberculosis outbreaks in the era pre-HAART

MMWR 1992 Jul 17;41(28):507-9

Transmission of multidrug-resistant tuberculosis among immunocompromised persons in a correctional system, New York, 1991

J Hosp Infect 2001 Feb;47(2):91-7

Investigation and control of a large outbreak of multi-drug resistant tuberculosis at a central Lisbon hospital, 1995-1999

AIDS 1998 Jun 18;12(9):1095-102

An outbreak of multidrug-resistant tuberculosis involving HIV-infected patients of two hospitals in Milan, Italy, 1991-1995

Italian Multidrug-Resistant Tuberculosis Outbreak Study Group.

Moro ML, Gori A, Errante I, Infuso A, Franzetti F, Sodano L, Iemoli E

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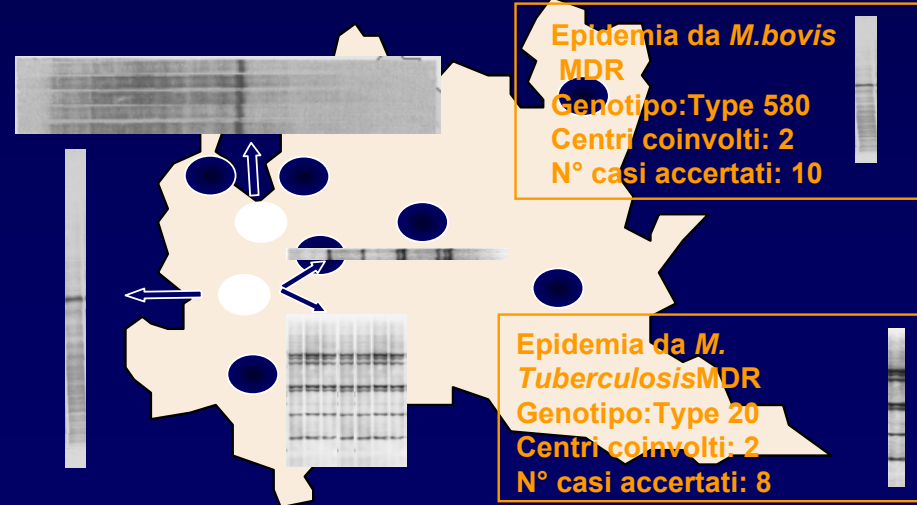
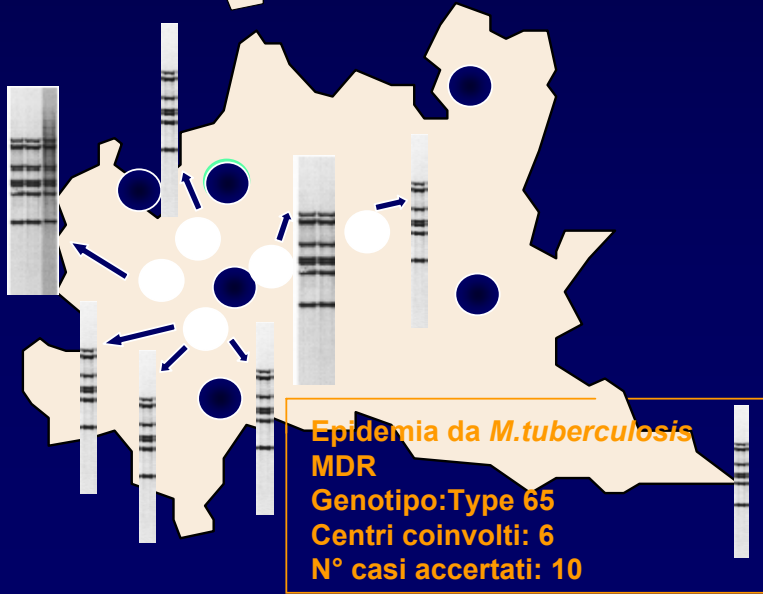
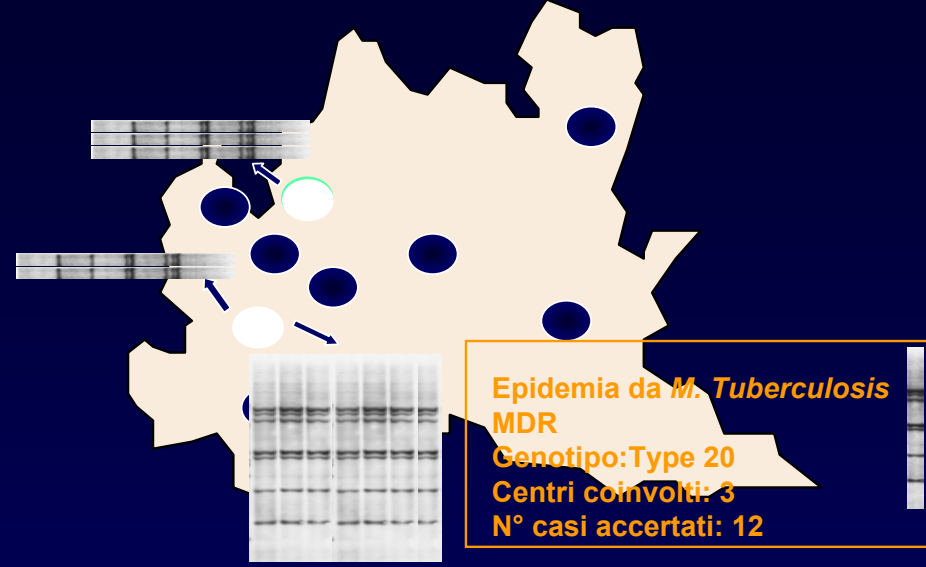
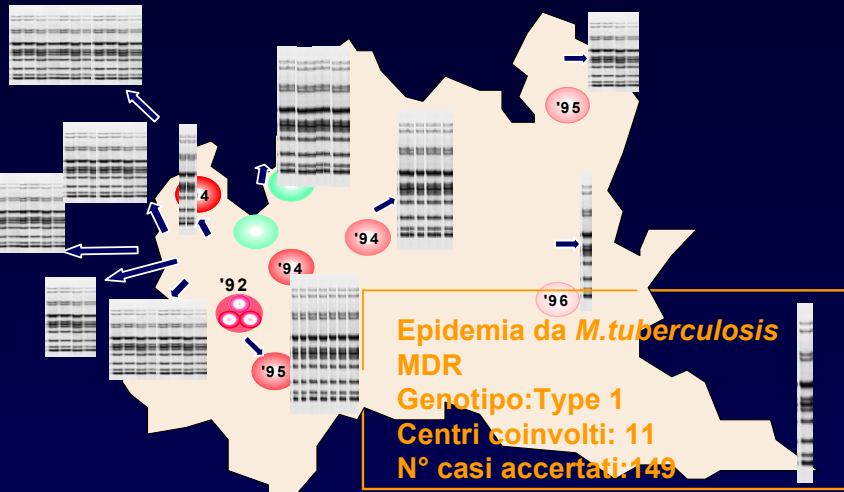
and HIV-infected patients in an urban hospital - Florida, 1988-1990

Mycobacterium tuberculosis drug resistance in patients with HIV and pulmonary tuberculosis infections in Rome, 1987-1996

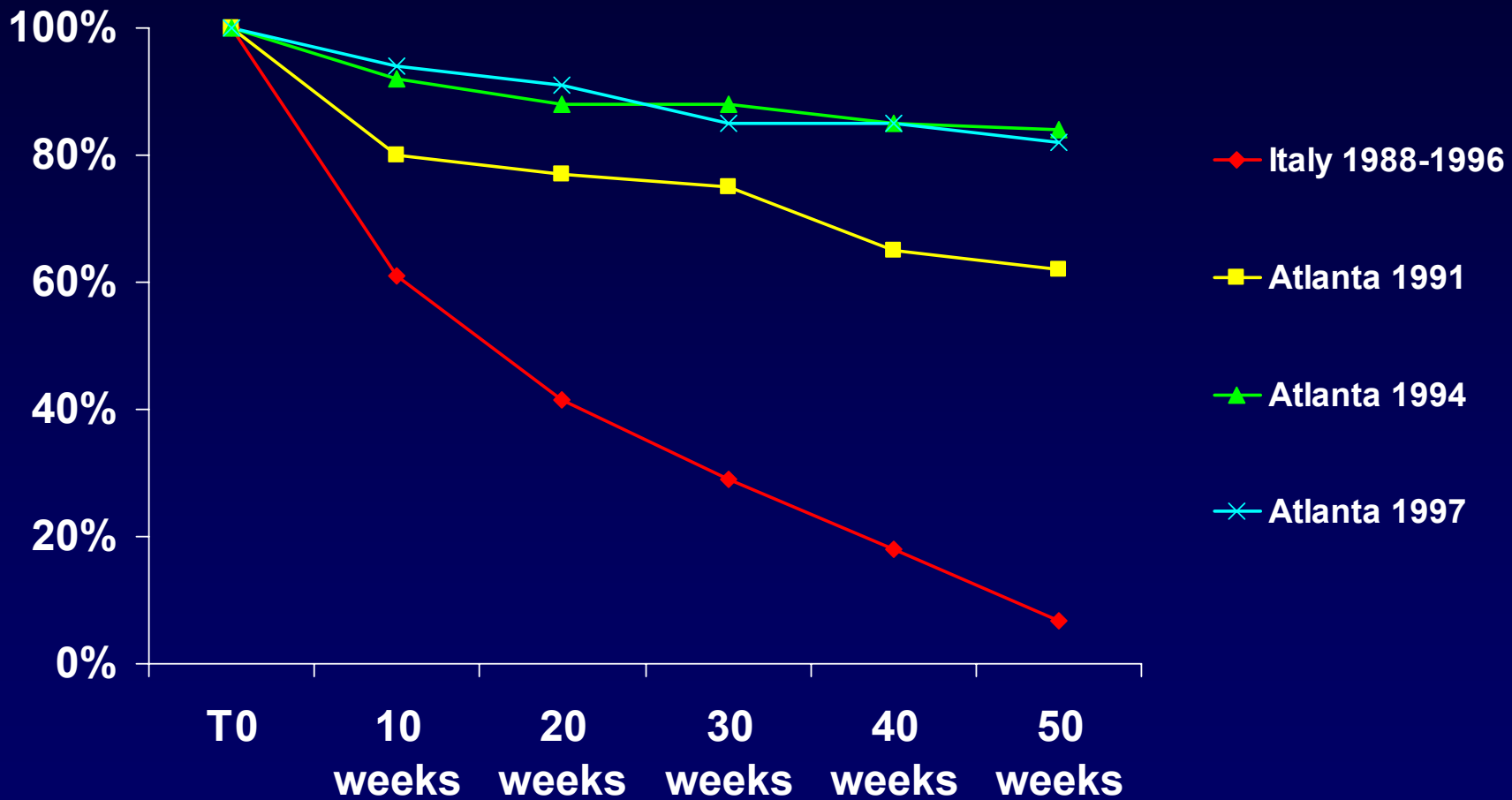
J Infect Dis 1997 Sep;176(3):637-42

Nosocomial spread of human immunodeficiency virus-related multidrug-resistant tuberculosis in Buenos Aires, 1994-1995

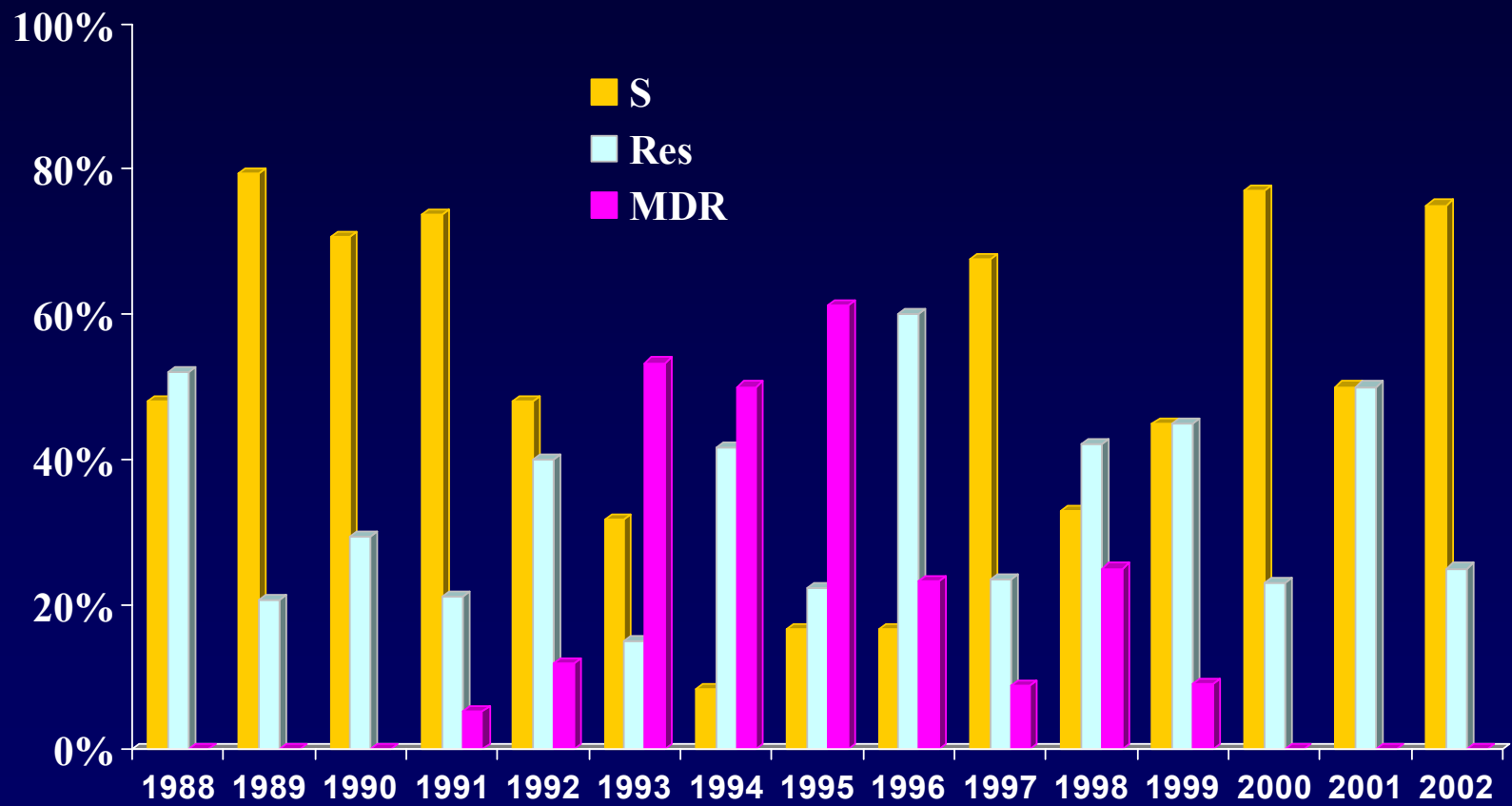
# Emergence of MDR-TB outbreaks in Lombardia



# Survival analysis in HIV-1 positive patients affected by multidrug resistant tuberculosis

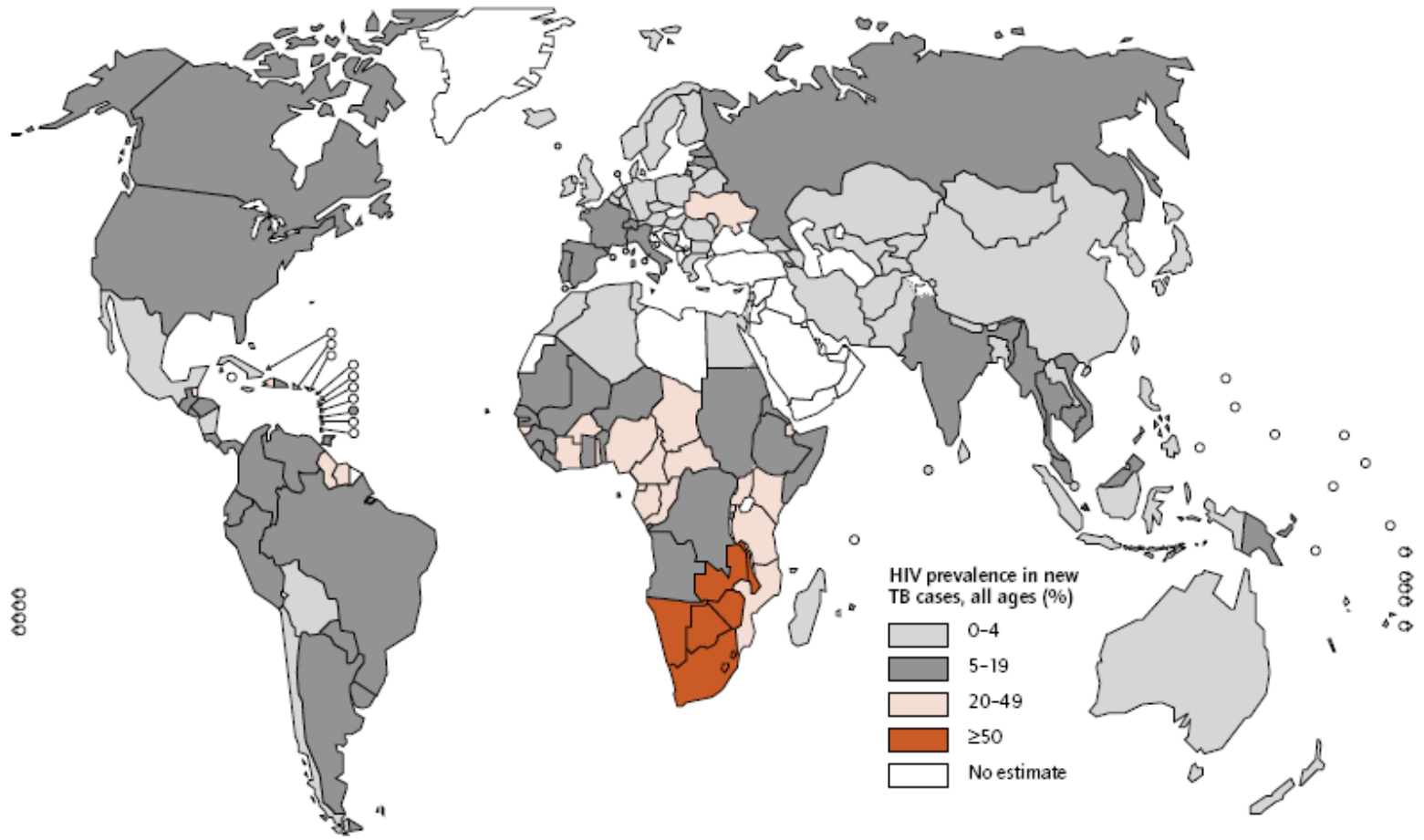


# Trends in drug resistant tuberculosis among HIV-infected patients, 1988-2002 (L. Sacco Hospital)



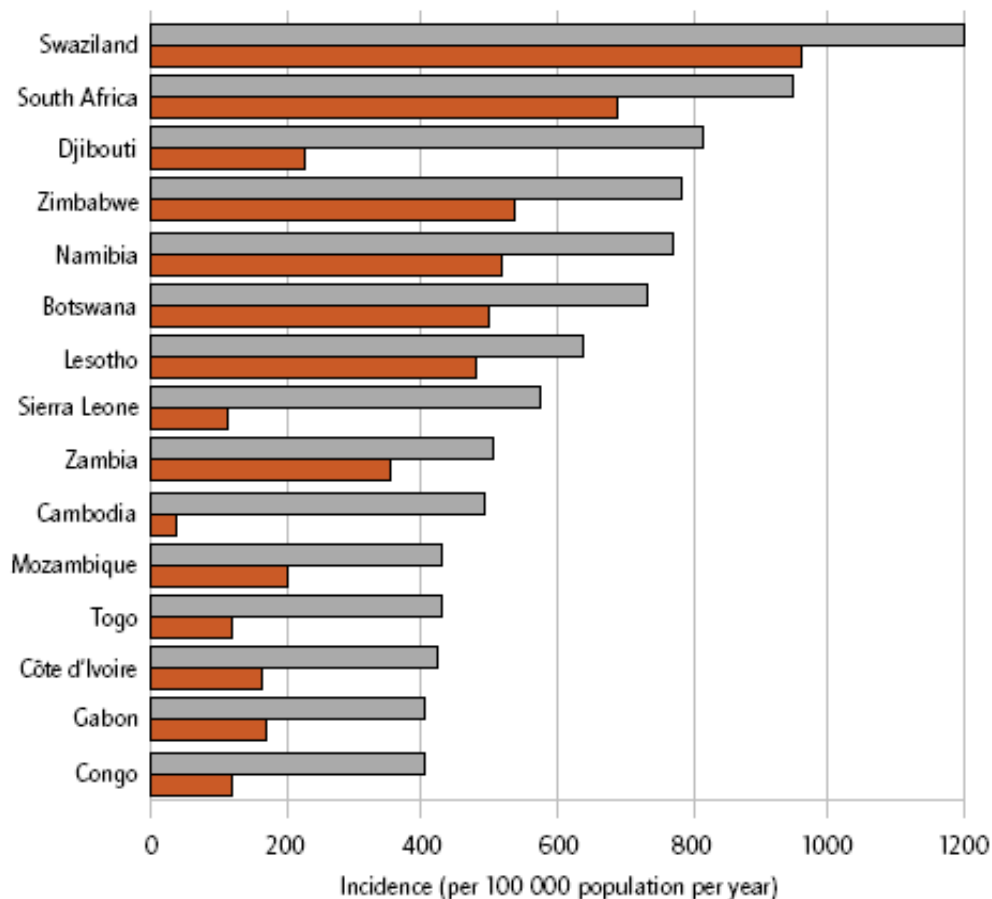
# Estimated HIV prevalence in new TB Cases

**FIGURE 1.3**  
Estimated HIV prevalence in new TB cases, 2007



■ **FIGURE 1.4**

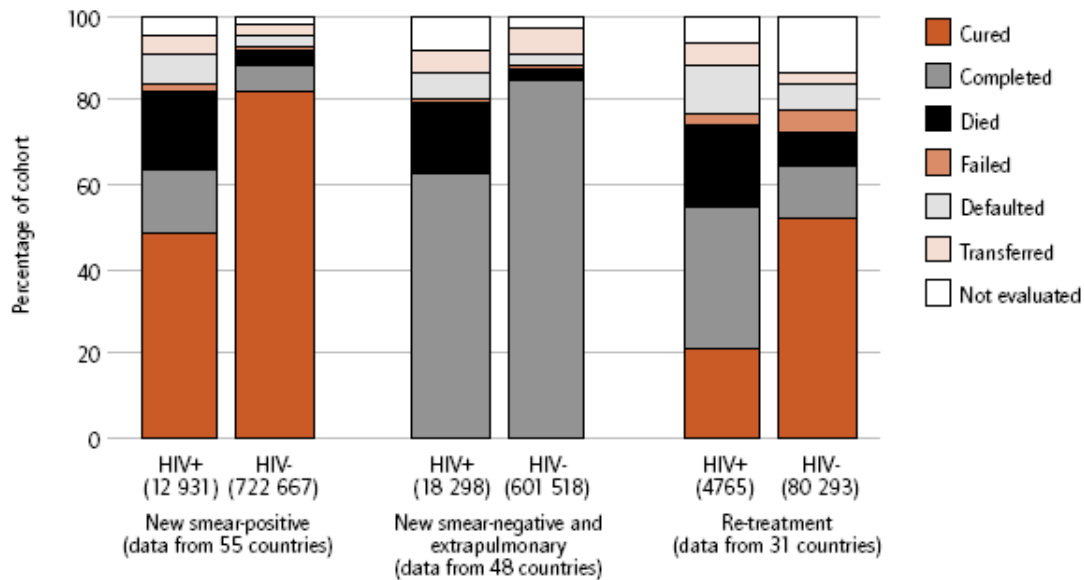
Fifteen countries with the highest estimated TB incidence rates per capita (all forms; grey bars) and corresponding incidence rates of HIV-positive TB cases (red bars), 2007



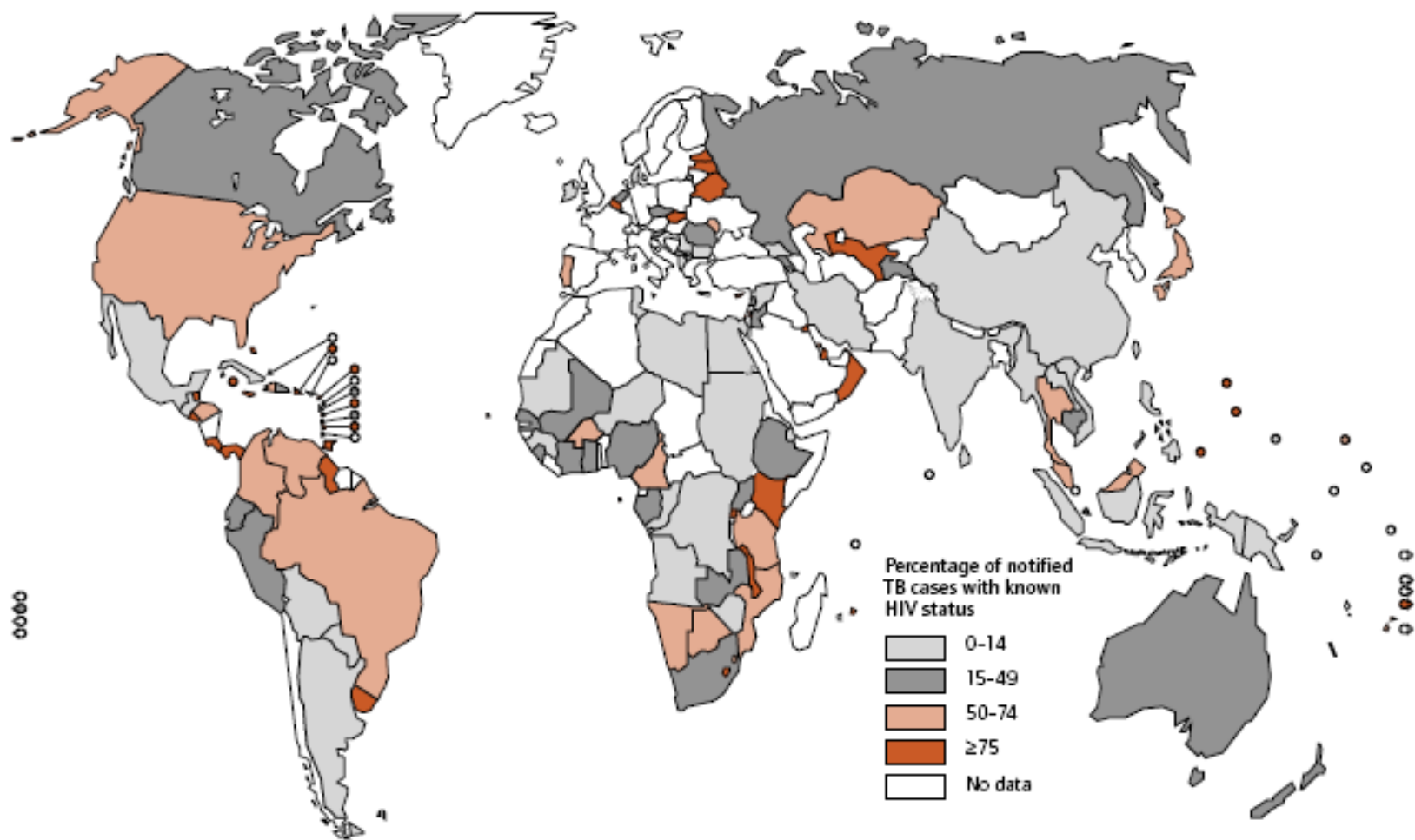
# Outcome

■ **FIGURE 1.26**

Treatment outcomes for HIV-positive and HIV-negative TB patients, 2006 cohort. The numbers under the bars are the numbers of patients included in the cohort.

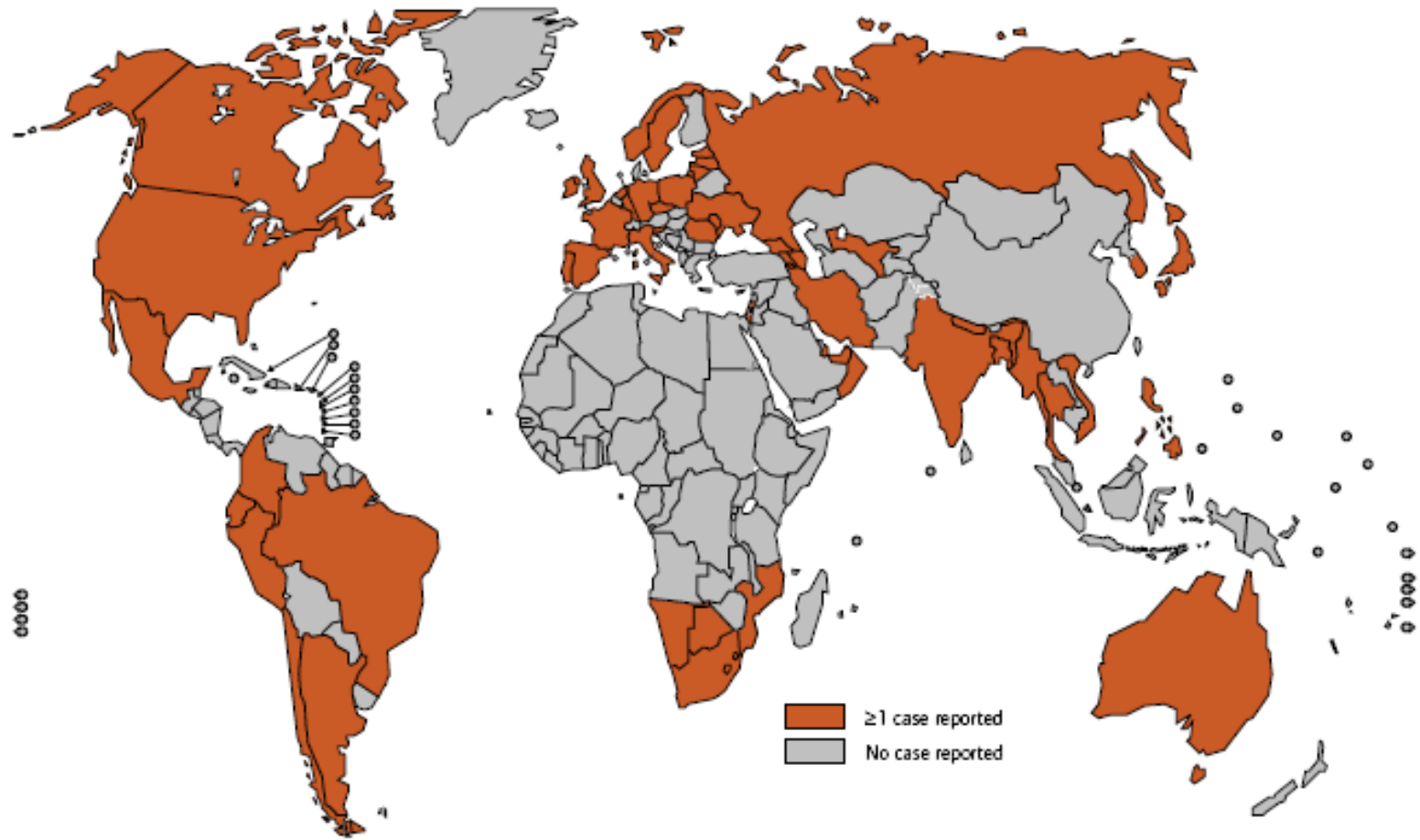


**FIGURE 2.6**  
HIV testing for TB patients, 2007



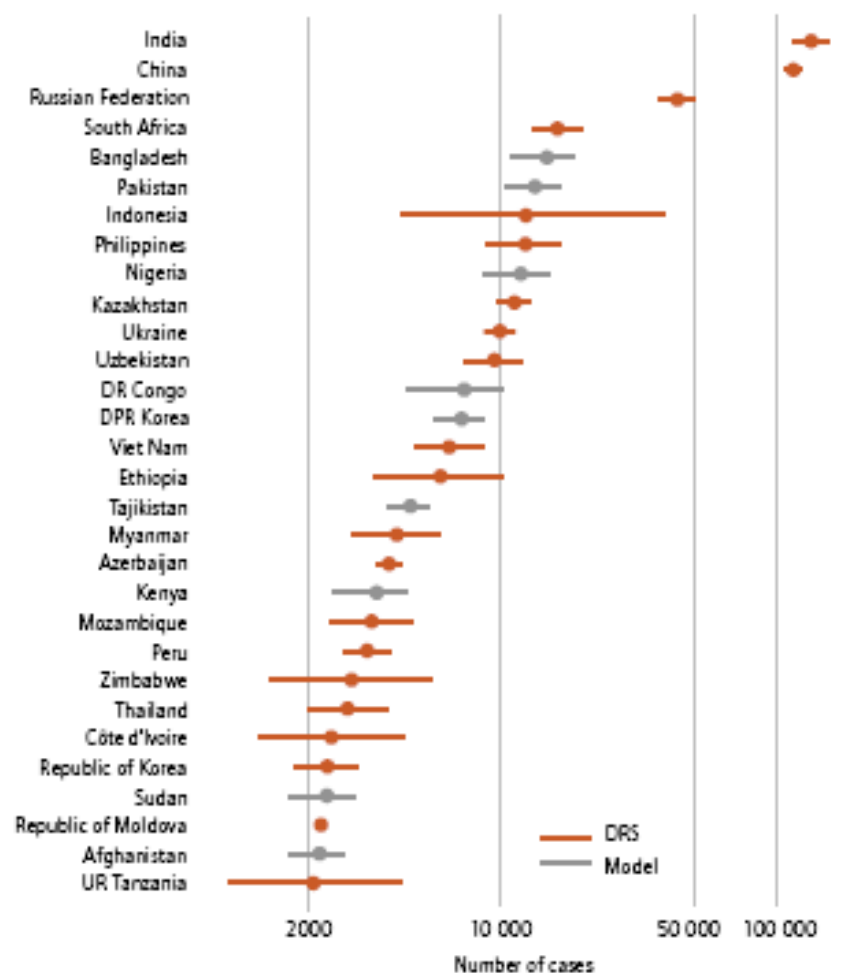
■ **FIGURE 2.12**

Countries that had reported at least one case of XDR-TB by the end of 2008



■ **FIGURE 1.6**

Countries with the highest numbers of estimated MDR-TB cases, 2007. Horizontal lines denote 95% confidence intervals. The source of estimates is drug resistance surveillance or surveys (DRS, in red) or modelling (in grey).



WHO/HTM/TB/2004.329

# **TB/HIV**

## **A CLINICAL MANUAL**

### *Clinical features suggestive of HIV coinfection in TB patients*

<b>Past history</b>	<ul style="list-style-type: none"><li>◦ sexually transmitted infection (STI)</li><li>◦ herpes zoster (shingles), which often leaves a scar</li><li>◦ recent or recurrent pneumonia</li><li>◦ severe bacterial infections (sinusitis, bacteraemia, pyomyositis)</li><li>◦ recent treated TB</li></ul>
<b>Symptoms</b>	<ul style="list-style-type: none"><li>◦ weight loss (&gt; 10 kg or &gt; 20% of original weight)</li><li>◦ diarrhoea (&gt; 1 month)</li><li>◦ retrosternal pain on swallowing (suggests oesophageal candidiasis)</li><li>◦ burning sensation of feet (peripheral sensory neuropathy)</li></ul>
<b>Signs</b>	<ul style="list-style-type: none"><li>◦ scar of herpes zoster</li><li>◦ pruritic (itchy) papular skin rash</li><li>◦ Kaposi sarcoma</li><li>◦ symmetrical generalized lymphadenopathy</li><li>◦ oral candidiasis</li><li>◦ angular cheilitis</li><li>◦ oral hairy leukoplakia</li><li>◦ necrotizing gingivitis</li><li>◦ giant aphthous ulceration</li><li>◦ persistent painful genital ulceration</li></ul>

### **PRACTICAL POINT**

**Always look in the mouth of any patient. Many mouth lesions are highly suggestive of HIV infection, and others are pathognomonic.**

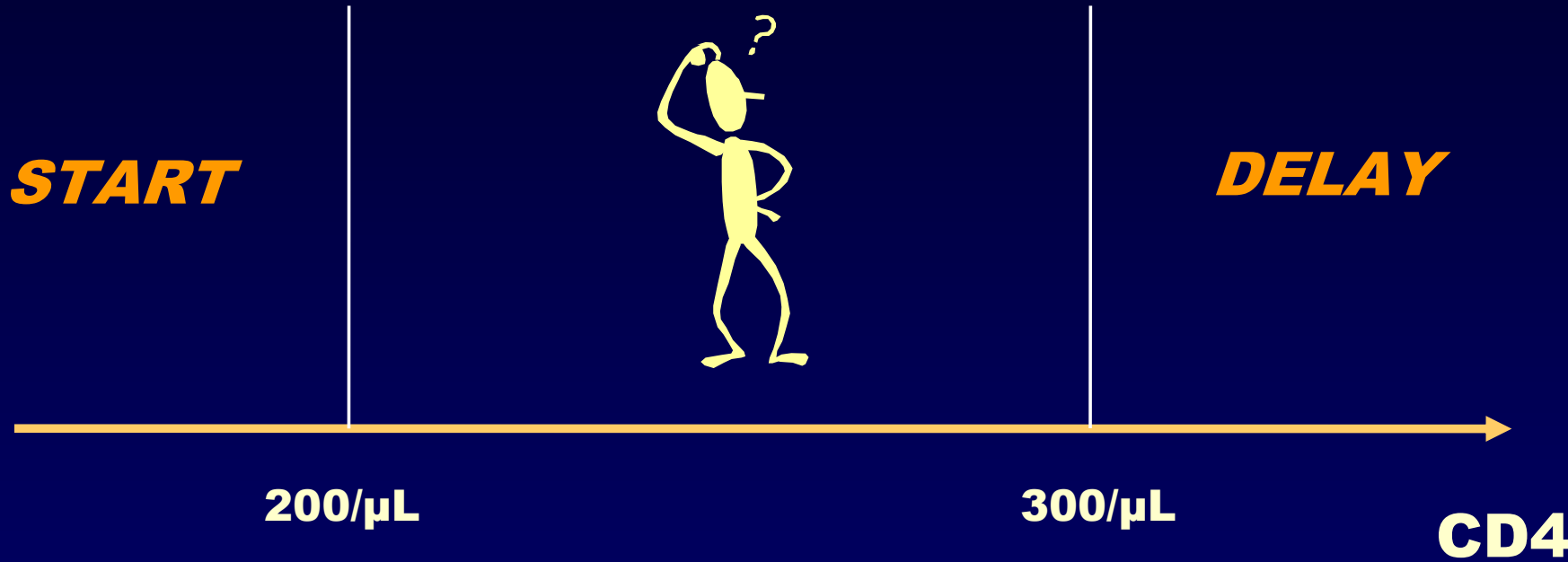
### **PRACTICAL POINT**

**Full blood count (FBC) findings suggestive of HIV infection are unexplained anaemia, leukopenia or thrombocytopenia.**

## **PRACTICAL POINT**

**In high HIV-prevalence regions, anyone with TB is in a high-risk group for HIV.**

# When to start HAART ?

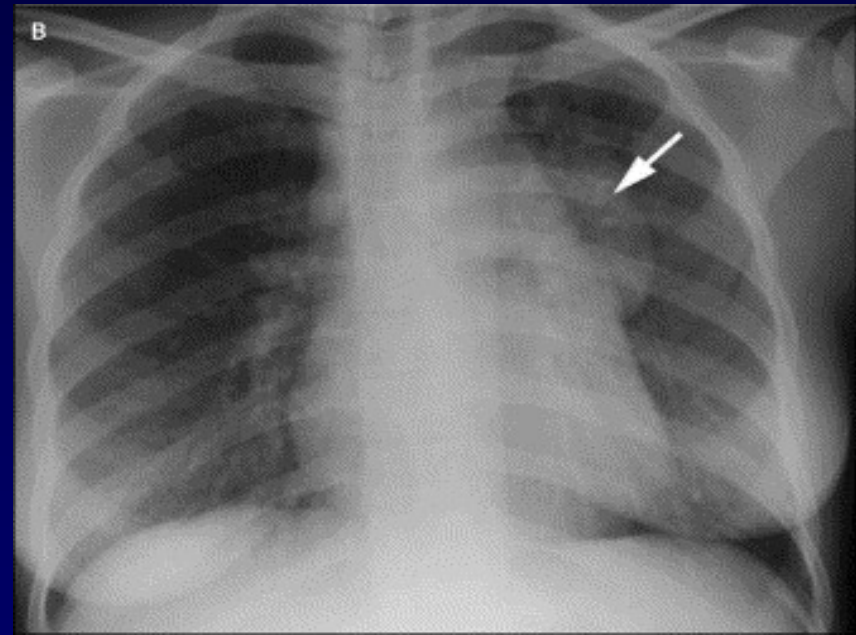
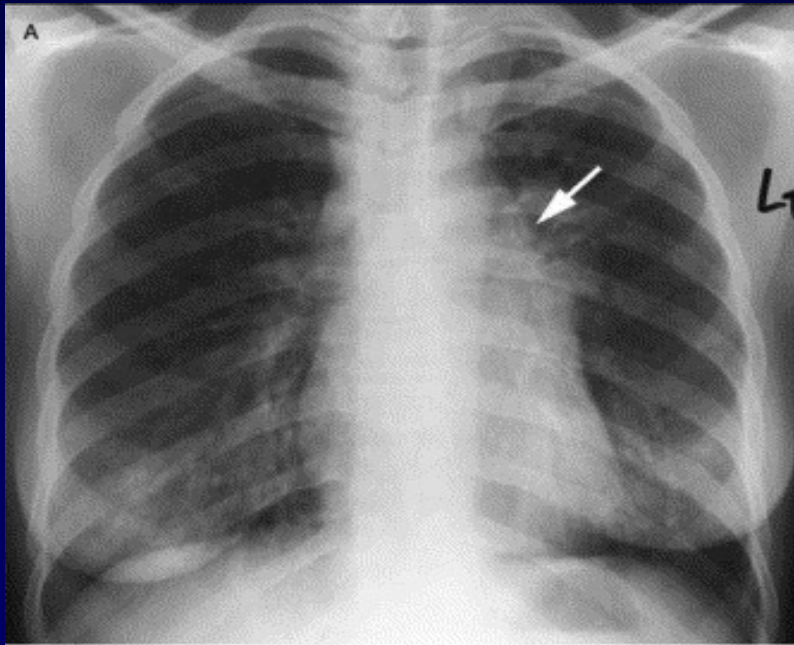


### **11.11.3 Immune reconstitution syndrome**

Occasionally, patients with HIV-related TB may experience a temporary exacerbation of symptoms, signs or radiographic manifestations of TB after beginning anti-TB treatment. This paradoxical reaction in HIV-infected patients with TB is thought to be a result of immune reconstitution. This occurs as a result of the simultaneous administration of ART and anti-TB drugs. Symptoms and signs may include high fever, lymphadenopathy, expanding central nervous system lesions and worsening of CXR findings. A thorough evaluation is necessary to exclude other causes, particularly TB treatment failure, before diagnosing a paradoxical reaction. For severe paradoxical reactions, prednisone (1–2 mg/kg for 1–2 weeks, then gradually decreasing doses) may help, although there is no evidence for this.

# La sindrome da immunoricostituzione (SIR)

Peggioramento di segni/sintomi o nuove manifestazioni di TB (adenopatie cervicali/mediastiniche, nuovi infiltrati polmonari o lesioni cerebrali) in pazienti con iniziale risposta alla terapia antitubercolare.



# DRUG - DRUG INTERACTIONS

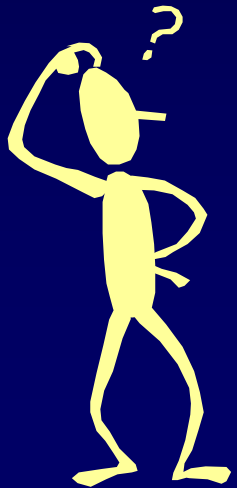
*Clin Pharmacokinet* 2002; Lopez-Cortes LF et al.

**Pharmacokinetic interactions  
between efavirenz and rifampicin  
in HIV-infected patients with tuberculosis**

*Clin Pharmacol Ther* 1997; Borin MT, et al  
**Pharmacokinetic study of the  
interaction between rifampin and  
delavirdine mesylate**

*Antimicrob Agents Chemother* 2001; Polk RE, et al.

**Pharmacokinetic Interaction  
between amprenavir and rifabutin or rifampin  
in healthy males**



*Clin Pharmacol Ther* 2001; Gallicano K, et al.

**A pharmacokinetic study of intermittent rifabutin dosing  
with a combination of ritonavir and saquinavir  
in patients infected with human immunodeficiency virus**

# Interazioni farmacologiche di rifampicina/rifabutina con gli antiretrovirali

DRUG INTERACTIONS WITH RIFAMYCIN

viral drug (AVD)	Rifampin (RIF)			Rifabutin (RBT)		
	RIF's effect on AVD	AVD's effect on RIF	Comments	RBT's effect on AVD	AVD's effect on RBT	Comments
zidovudine	80% decrease	No data	Contraindicated	45% decrease	No data	Contraindicated
zalcitabine	35% decrease	Unchanged	No dosage adjustments required; not recommended*	No data	293% increase	Not recommended†
didanosine	89% decrease	No data	Contraindicated	34% decrease	173% increase	The dose of didanosine should be increased to 1g q8h and RBT should be decreased to 150mg daily
zalcitabine	82% decrease	No data	Contraindicated	32% decrease	200% increase	No dosage adjustments required; RBT should be decreased to 150mg daily
zalcitabine	81% decrease	Unchanged	Contraindicated	15% decrease	200% increase	The dose of RBT should be decreased to 150mg daily
zalcitabine/ritonavir	75% decrease	No data	Contraindicated	Unchanged	290% increase	Not recommended†
zalcitabine	37–68% decrease	Unchanged	No data	16% decrease	Unchanged	No dosage adjustments required
zalcitabine	96% decrease	Unchanged	Contraindicated	80% decrease	342% increase	Contraindicated
zalcitabine	25% decrease	Unchanged	The dose of efavirenz should be increased to 800mg daily	Unchanged	32% decrease	The dose of RBT should be increased to 450–600mg daily

zalcitabine is not well tolerated and could hinder the adherence to antituberculosis treatment.

zalcitabine association is possible using 150mg 2–3 times/week, however, it is not recommended due to the high risk of RBT toxicity (uveitis, leukopenia and arthralgia).

#### **11.11.4** Options for ART in patients with TB

Possible options for ART in patients with TB include the following:

- Defer ART until completion of TB treatment.
- Defer ART until the completion of the initial phase of TB treatment and then use ethambutol and isoniazid in the continuation phase.
- Treat TB with a rifampicin-containing regimen and use efavirenz + two NsRTIs.