# HIV-M. LEPRAE INTERACTION: CAN HAART MODIFY THE COURSE OF LEPROSY?

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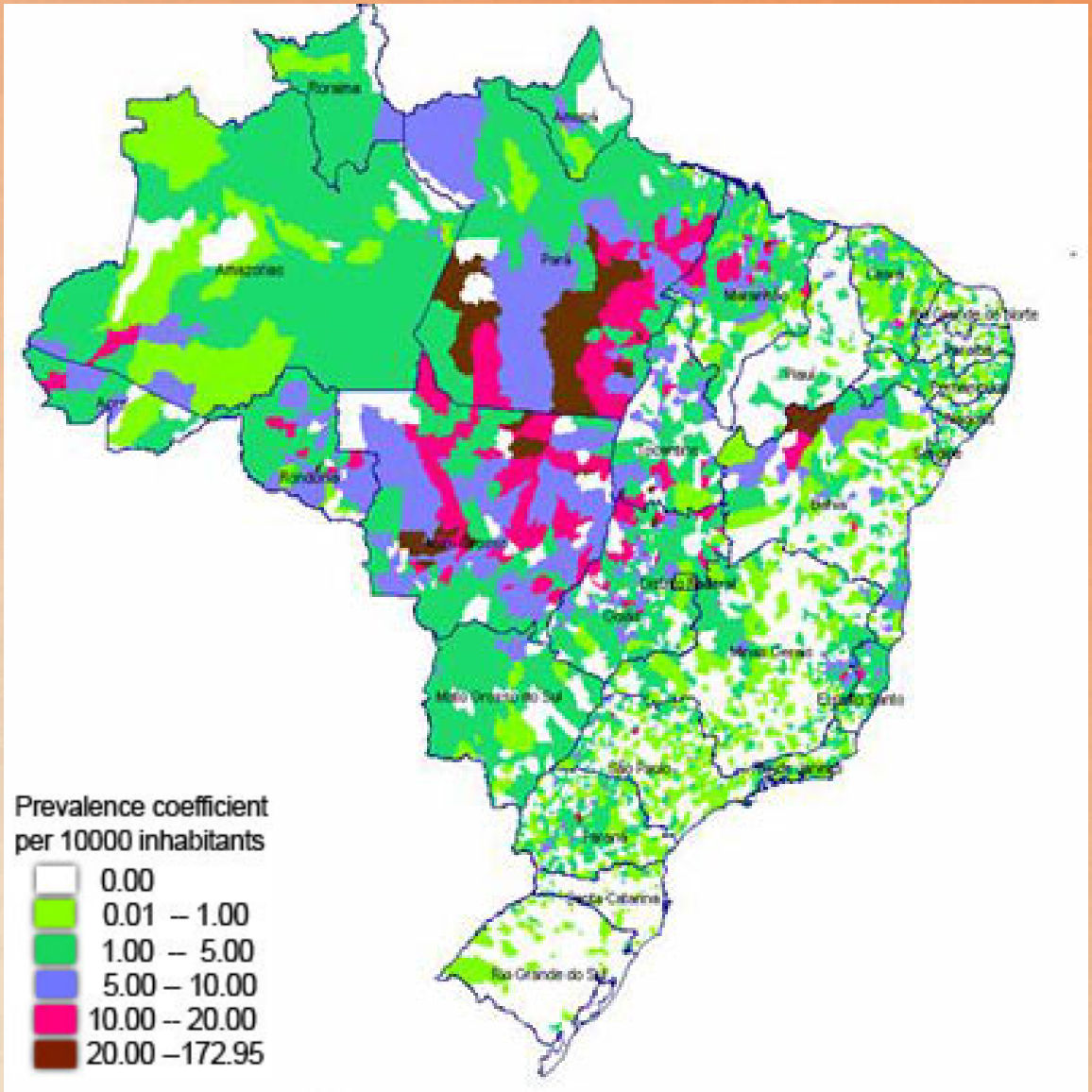
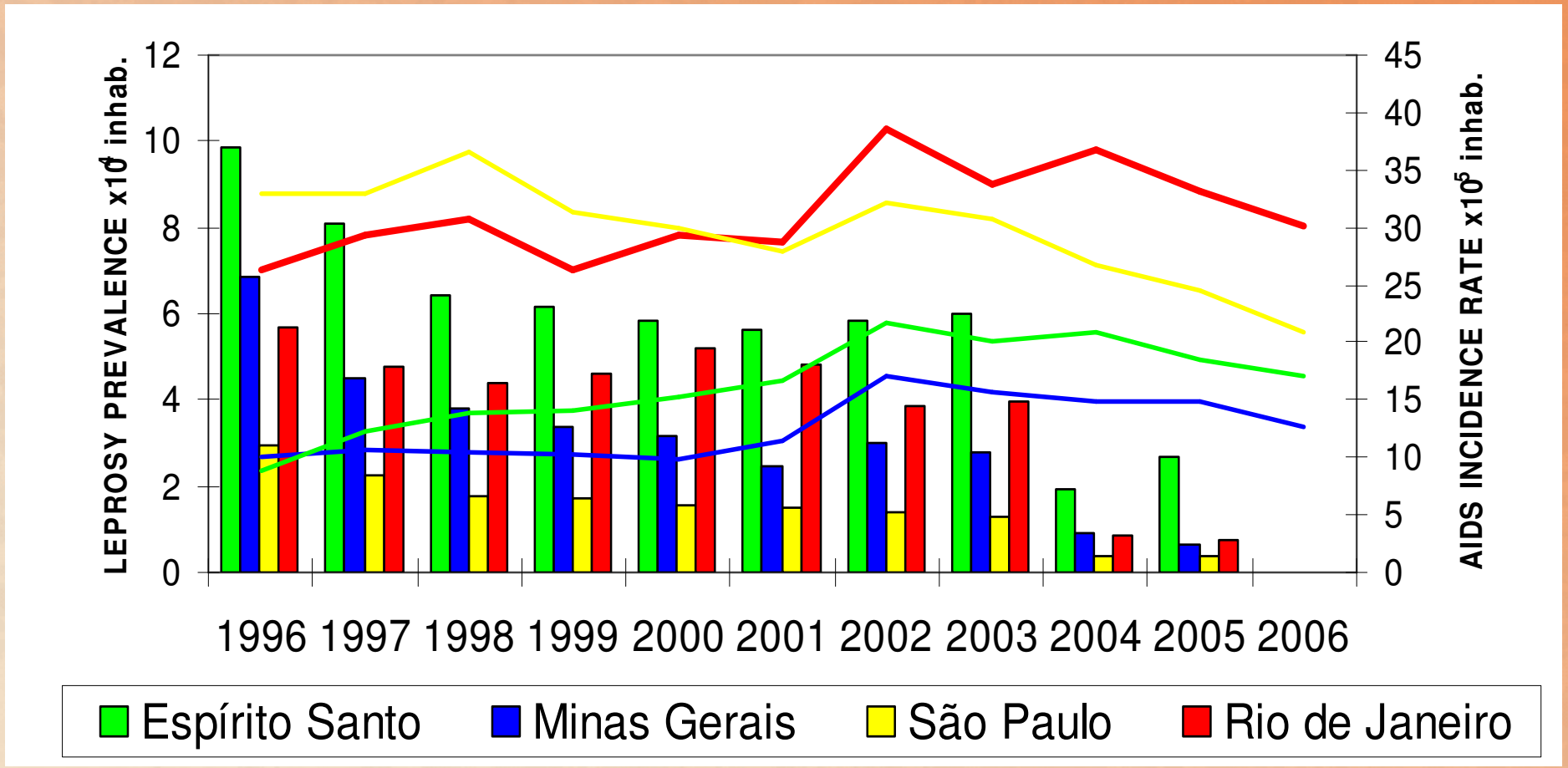
# QUESTIONS

- Does co-infection increase susceptibility to disease?
- Does it modify the pathogenesis of leprosy lesions?
- Does it worsen leprosy reactions?
- Does antiretroviral treatment modify the immunologic behaviour of leprosy?
- Can immune reconstitution inflammatory syndrome (IRIS) be related to infection by *M. leprae*?

# LEPROSY PREVALENCE IN BRAZIL



# Leprosy prevalence and AIDS incidence rates South-east region states, 1996-2006




Ministério da Saúde/SVS/SINAN
SPS/Coordenação Nacional de DST/Aids

# OBJECTIVE

To determine whether anti-retroviral treatment is associated with worsening of the manifestations of leprosy

# PATIENTS

- Longitudinal retrospective observational study.
- Data of 1026 leprosy patients >15 years old diagnosed between 1996 and 2006 at the Souza Araújo Outpatient Clinic, Leprosy Laboratory, Oswaldo Cruz Institute, Rio de Janeiro, Brazil.
- Data of 59 co-infected patients diagnosed with leprosy.
- Co-infected patients excluded due to non-compliance or death: 4

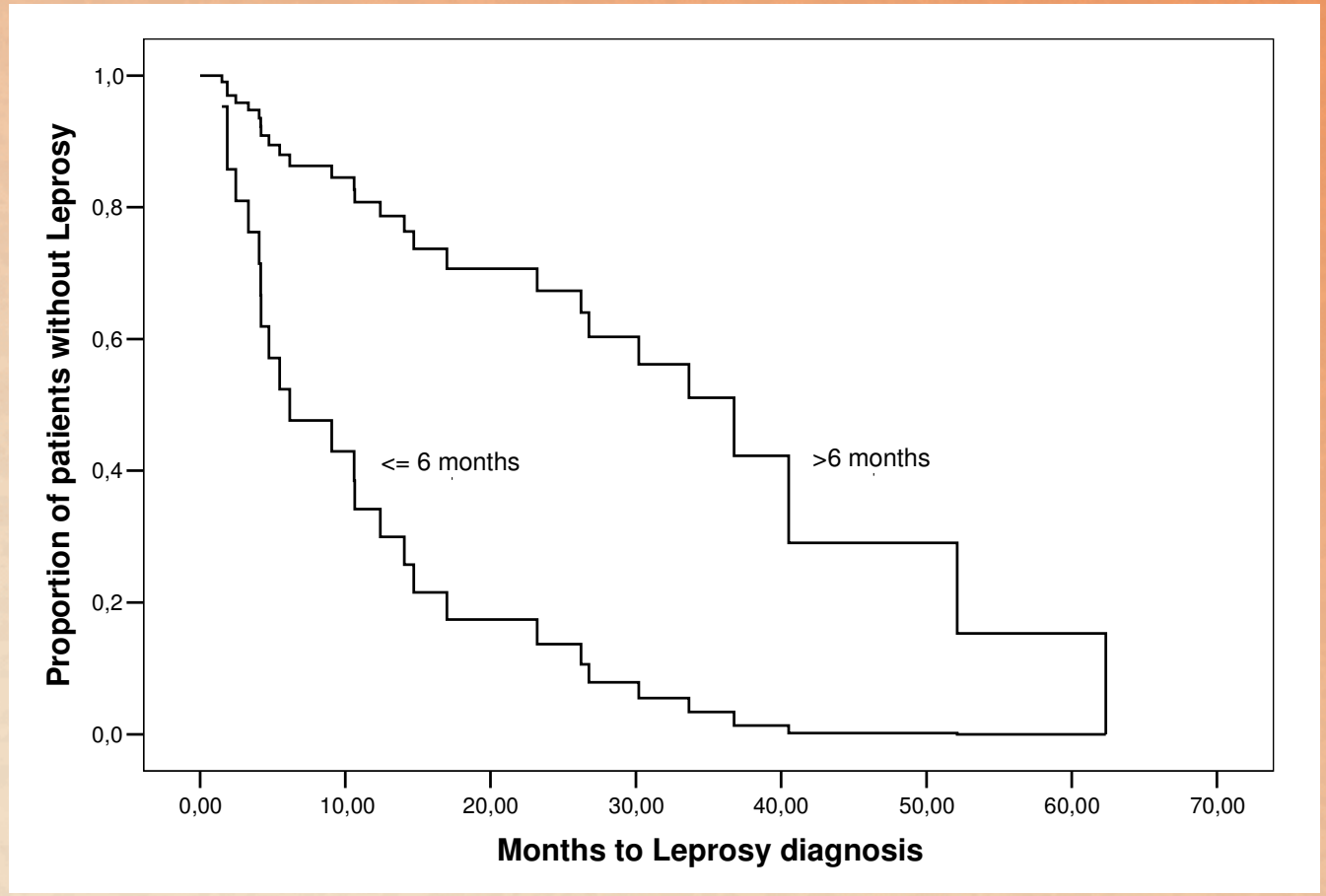
# METHOD
# Definitions

- CO-INFECTION:
  - Presence of HIV infection in a known leprosy patient
- LEPROSY REACTION:
  - Immune-inflammatory event represented by reversal reaction, erythema nodosum leprosum and/or acute neuritis.
- IMMUNE RECONSTITUTION INFLAMMATORY SYNDROME:
  - Leprosy reaction during the first 6 months of HAART
  - ⇑ CD4 and
  - ⇓ viral load.

# Diagnosis of leprosy and HIV co-infection between 1996-2006

| Year Dx | HIV- | HIV+ | Total |
|---|---|---|---|
| 1996 | 82 (95) | 4 (5) | 86 |
| 1997 | 70 (96) | 3 (4) | 73 |
| 1998 | 102 (97) | 3 (3) | 105 |
| 1999 | 137 (97) | 4 (3) | 141 |
| 2000 | 125 (94) | 8 (6) | 133 |
| 2001 | 85 (91) | 8 (9) | 93 |
| 2002 | 79 (94) | 5 (6) | 84 |
| 2003 | 83 (98) | 2 (2) | 85 |
| 2004 | 64 (90) | 7 (10) | 71 |
| 2005 | 79 (93) | 7 (7) | 86 |
| 2006 | 68 (89) | 8 (11) | 76 |
| Total | 967 (94.5) | 59 (5.5) | 1026 |

# Proportion of patients without leprosy since HIV diagnosis according to period from start of ARV treatment (≤6 months or >6 months).



# Characteristics of the two leprosy patient groups at the beginning of MDT

| | | **HIV$^+$ N = 54** | **HIV$^-$ N = 967** | ***p* value** |
|---|---|---|---|---|
| Clinical Form n (%) | PB | 42 (78) | 489 (51) | <0.0001 |
| | MB | 12 (22) | 478 (49) | |
| Immunohistologic Form n (%) | NP | 1 (2) | 109 (11) | |
| | I | 5 (9) | 62 (6) | |
| | TT | 0 (0) | 5 (1) | |
| | BT | **36 (67)** | **316 (33)** | |
| | BB | 7 (13) | 123 (13) | |
| | BL | 4 (7) | 146 (15) | |
| | LL | 1 (2) | 205 (21) | |

# Characteristics of the two leprosy patient groups at the beginning of MDT

| | | **HIV$^+$ N = 54** | **HIV$^-$ N = 967** | *p* value |
|---|---|---|---|---|
| Disability grade n (%) | 0 | 36 (67) | 602 (62) | 0.244 |
| | 1 | 12 (22) | 177 (18) | |
| | 2 | 5 (9) | 174 (18) | |
| | NA | 1 (2) | 14 (2) | |
| Baciloscopic index MB patients Median (min-max) | | 0.54 (0.16-4.16) | 3.00 (0.16-5.50) | **0.003** |
| Leprosy Reactions n (%) | | 17 (32) | 182 (19) | **0.032** |

# Immunologic and viral load characteristics in HIV infected patients.

| | At HIV diagnosis | | | At leprosy diagnosis | | | p value |
|---|---|---|---|---|---|---|---|
| | n | Mean | Median (min-max) | N | Mean | Median (min-max) | |
| $CD4^+$ lymphocytes (Cells/ml) | 31 | 205 | 149 (7-711) | 44 | 330 | 307 (24-883) | 0,006 |
| $CD8^+$ lymphocytes (Cells/ml) | 16 | 842 | 778 (73-2699) | 31 | 974 | 779 (379-3564) | 0,241 |
| Viral load $X10^3$ (copies/μL) | 23 | 543,64 | 41,0 (0-5700) | 35 | 37,39 | 1022 (0-400) | 0,001 |

# CONCLUSIONS

- ART and immune reconstitution were critical factors driving the development of new leprosy lesions.
- Co-infection increased severity and duration of reactions in this group of patients .

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