



Epidemiology of hepatitis A in Brazil

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Brazil



Brasil

Localization: South America

Territory extension: 8,517,876 km²

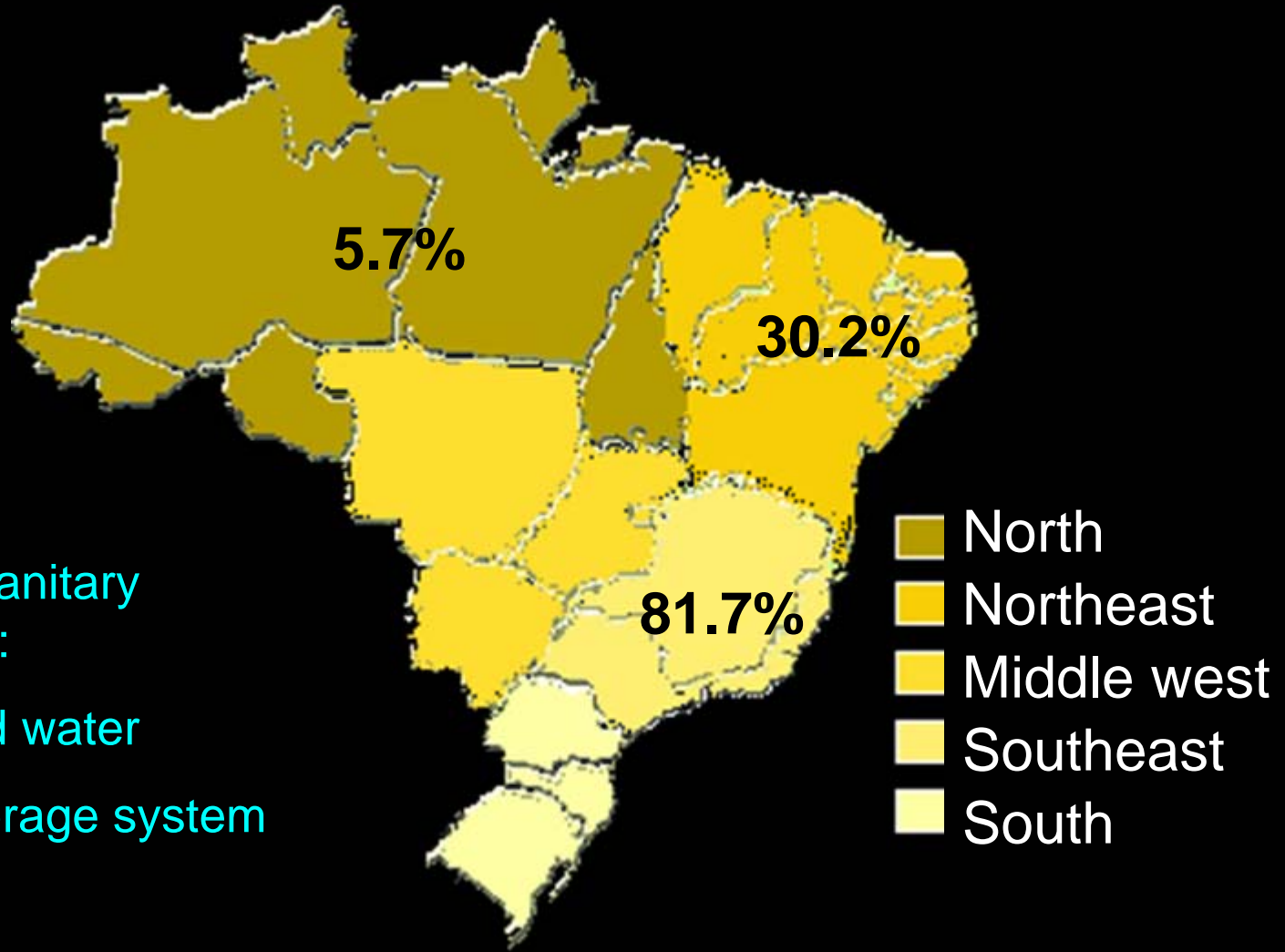
Total population 2007: 191.791.000

Urban population: 84.2%

Language: portuguese



Brazil: Federation Units



Housing sanitary conditions:

89% piped water

75% sewerage system



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Seroprevalence data

- Decreasing of HAV prevalence rates in several South American countries: shift from high to medium endemicity
- Brazil: analysis of data on HAV seroprevalence available in scientific databases

Seroprevalence studies of hepatitis A in Brazil

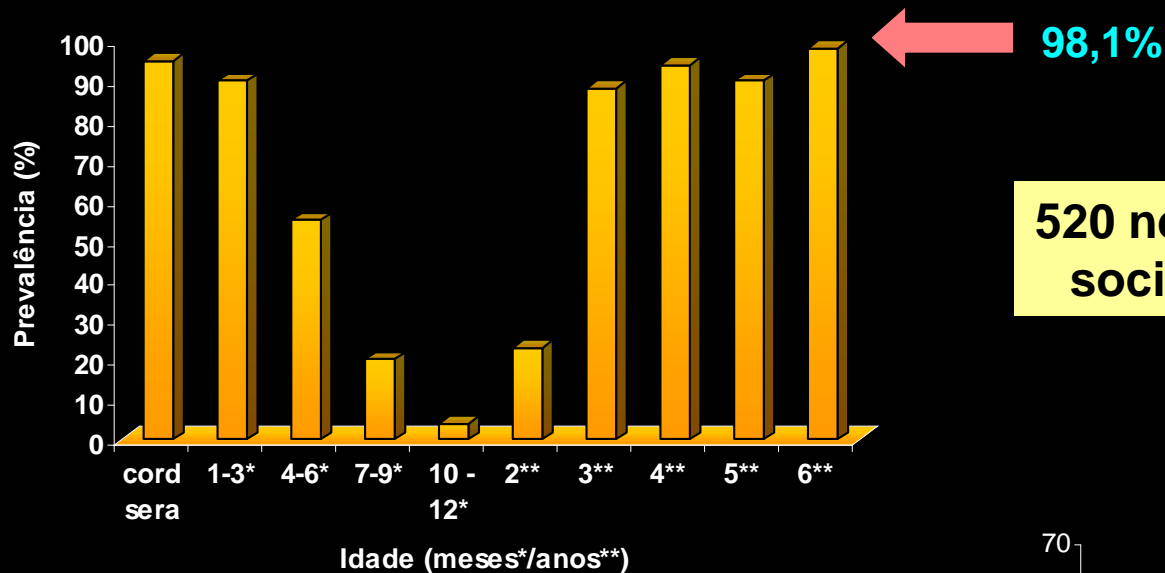
| Region | State | City | Demographic characteristics ^a | n | Overall HAV seropositivity (%) | HAV seropositivity in subjects < 10 years of age (%) | Reference |
|--------|--------------------|----------------------------------|--|------|--------------------------------|--|---------------------------|
| S | RS | Porto Alegre | Adolescents, low SEL | 199 | 51 | - | Ferreira et al. 1998 |
| | RS | Porto Alegre | Adolescents, high SEL | 188 | 11 | - | Ferreira et al. 1998 |
| | RS | Porto Alegre | General population, 1-40 years old | 461 | 56 | 42 | Clemens 2000 |
| SE | SP | São Paulo | General population, low SEL, 2-30 years old | 167 | 100 | 75 | Pannuti et al. 1985 |
| | SP | São Paulo | General population, middle SEL, 2-30 years old | 373 | 90 | 40 | Pannuti et al. 1985 |
| | SP | Campinas | Scholars, high SEL, 18-30 years old | 102 | 20 | - | Pinho et al. 1998 |
| | SP | Campinas | Blood donors, 18-30 years old | 81 | 95 | - | Pinho et al. 1998 |
| | RJ | Rio de Janeiro | Blood donors ^b | 100 | 97 | - | Yoshida et al. 1987 |
| | RJ | Niterói | General population, 0 – ≥ 61 years old | 259 | 74 | - | Abuzwaida et al. 1987 |
| | RJ | Nova Iguaçu | General population, 0 – ≥ 61 years old | 254 | 90 | - | Abuzwaida et al. 1987 |
| | RJ | Rio de Janeiro | High school students | 127 | 54 | - | Oliveira et al. 1991 |
| | RJ | Rio de Janeiro | Children < 6 years old | 520 | 65 | 78 | Vital et al. 1998a |
| | RJ | Rio de Janeiro | Children and adolescents | 720 | 32 | 20 | Vital et al. 1998a |
| | RJ | Rio de Janeiro | General population, 1 – ≥ 21 years old | 714 | 32 | 23 | Struchiner et al. 1999 |
| | RJ | Rio de Janeiro and Nova Friburgo | General population, 1-40 years old | 2090 | 56 | 25 | Clemens et al. 2000 |
| | RJ | Sumidouro | Rural population, mean age 31.3 years | 145 | 79 | 38 | Trinta et al. 2001 |
| | RJ | Rio de Janeiro | Urban population, mean age 10.8 years | 260 | 31 | 7 | Trinta et al. 2001 |
| | RJ | Rio de Janeiro | Healthcare workers, 16-82 years old | 1056 | 74 | - | Saback et al. 2001 |
| | RJ | Rio de Janeiro | Blood donors, 25 – 35 years old | 274 | 86 | - | Saback et al. 2001 |
| | RJ | Rio de Janeiro | Women > 15 years old | 874 | 84 | - | Lewis-Ximenez et al. 2002 |
| | RJ | Rio de Janeiro | General population, 1-60 years old | 699 | 87 | 57 | dos Santos et al. 2002 |
| | RJ | Duque de Caxias | General population, 1-83 years old | 3068 | 39 | 26 | Almeida et al. 2002 |
| | RJ | Macaé | General population, 1-95 years old | 1100 | 89 | 65 | Gaze et al. 2002 |
| MW | ES | Vila Velha | Children, 6-14 years old | 606 | 39 | ^b | Zago-Gomes et al. 2005 |
| | GO | Goiânia | Children < 10 years old | 310 | - | 70 | Queiróz et al. 1995 |
| | GO | Goiânia | Street youth, 7-21 years old | 397 | 90 | 32 | Queiróz et al. 1995 |
| NE | CE | Fortaleza | General population, 1-40 years old | 489 | 76 | 67 | Clemens 2000 |
| N | AM | Boca do Acre | Riverine communities, 1 – ≥40 years old | 460 | 92 | 70 | Bensabath et al. 1987 |
| | AM | Carauari | Riverine communities, Indians ^c | 359 | 95 | 73 | Gayotto et al. 1984 |
| | AM | Manaus | General population, 1-40 years old | 613 | 93 | 95 | Clemens et al. 2000 |
| | AC | Rio Purus ^d | Riverine communities, 3 – 73 years old | 349 | 93 | 90 | de Paula et al. 2001 |
| | AM | Manaus | General population, 1-40 years old | 613 | 93 | 95 | Clemens et al. 2000 |
| MT | Peixoto de Azevedo | Children, 3-9 years old | 487 | - | 86 | Assis et al. 2002 | |

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Seroprevalence data

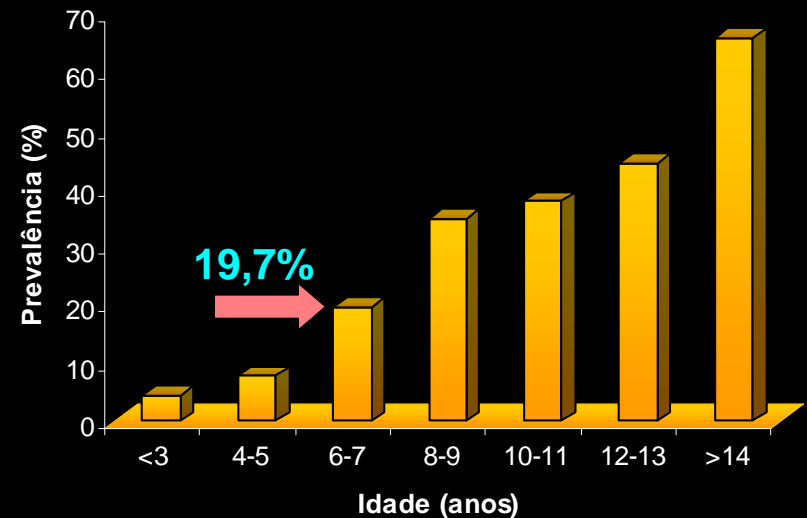
- Changes in HAV seroprevalence have been observed in population groups with low and middle-high socioeconomic levels living in metropolitan regions
- Data from two studies carried out in Rio de Janeiro, Southeast of Brazil (serum samples collected 17 and 21 years apart)

Age-specific prevalence of anti-HAV in children and adolescents, Southeast of Brazil, 1978-1995

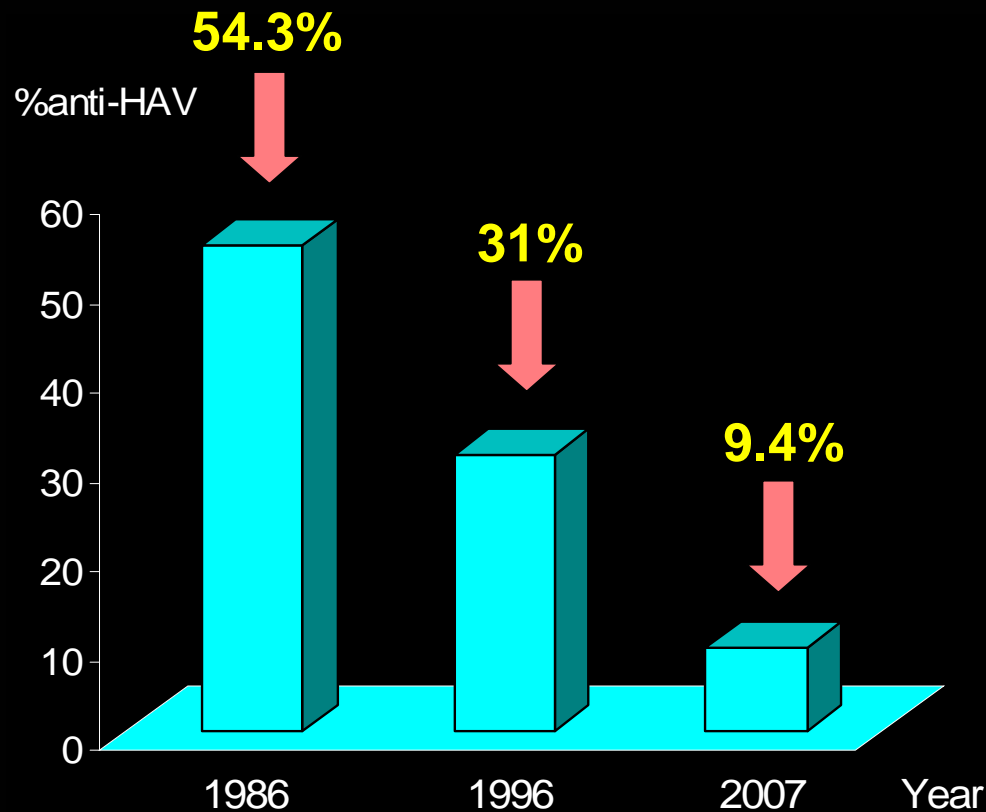


520 neonates and children, low socioeconomic status: 1978

720 children and adolescents, low socioeconomic status: 1995



Seroprevalence of hepatitis A in health care students, Southeast of Brazil, 1986 - 2007



Demographic and serological characteristics of reported outbreaks of HAV in Brazil

| City/State | Type of institution | Year of outbreak | Age group (years old) | Type of sample | n | anti-HAV IgGn (%) | anti-HAV IgMn (%) | HAV immune ^a before outbreakn (%) | Reference |
|----------------------------|-----------------------------|------------------|-----------------------|-----------------------|-----|-------------------|-------------------|--|-----------------------|
| Rio de Janeiro/RJ | Brazilian oil company | 1980 | 20-30 | Employees | 73 | 59 (80.8) | 14 (19.2) | 45 (61.6) | Sutmoller et al. 1982 |
| Rio de Janeiro/RJ | Public school | 1999 | 10-18 | Students | 509 | 274 (54) | 25 (4.9) | 249 (48.9) | Villar et al. 2002 |
| Rio de Janeiro/RJ | Orphanage | 1999 | 0-12 | Children ^b | 331 | 201 (61) | 45 (14) | 156 (47.1) | de Paula et al. 2002 |
| | | | | Staff | 166 | 156 (94) | 2 (1.2%) | 154 (92.8) | |
| Paracambi ^c /RJ | Public school | 2000 | 5-15 | Students | 299 | 142 (47.5) | 93 (31.1) | 49 (16.4) | Villar et al. 2004 |
| | | | 18-70 | Staff | 25 | | 3 (12) | | |
| Rio de Janeiro/RJ | Day care center | 2004 | 0-42 | Children ^d | 66 | 54 (81.8) | 43 (65.1) | 11 (16.7) | Amado et al. 2005 |
| | | | 2-57 | Staff | 21 | 20 (95.2) | 1 (4.7) | 19 (90.5) | |
| Altamira/PA | Xicrin village ^e | 2004 | - | Amerindians | 352 | 345 (98) | 107 (38) | 238 (67.6) | Nunes et al. 2004 |

Epidemiology of hepatitis A in Brazil

Major conclusions from seroepidemiological studies

- Results of seroepidemiological studies and reported hepatitis A outbreaks indicate a change in the epidemiological pattern of hepatitis A in Brazil.
- Those same results indicate that the youngest individuals, especially those under 10 years of age, are mostly unprotected from HAV infection, regardless of their socioeconomic status

Incidence of hepatitis A in Brazil

- Surveillance data on the incidence of hepatitis A in Brazil are lacking

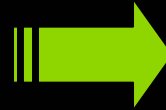
No pre-1994 data available

Underreporting of hepatitis A cases 1994/1999

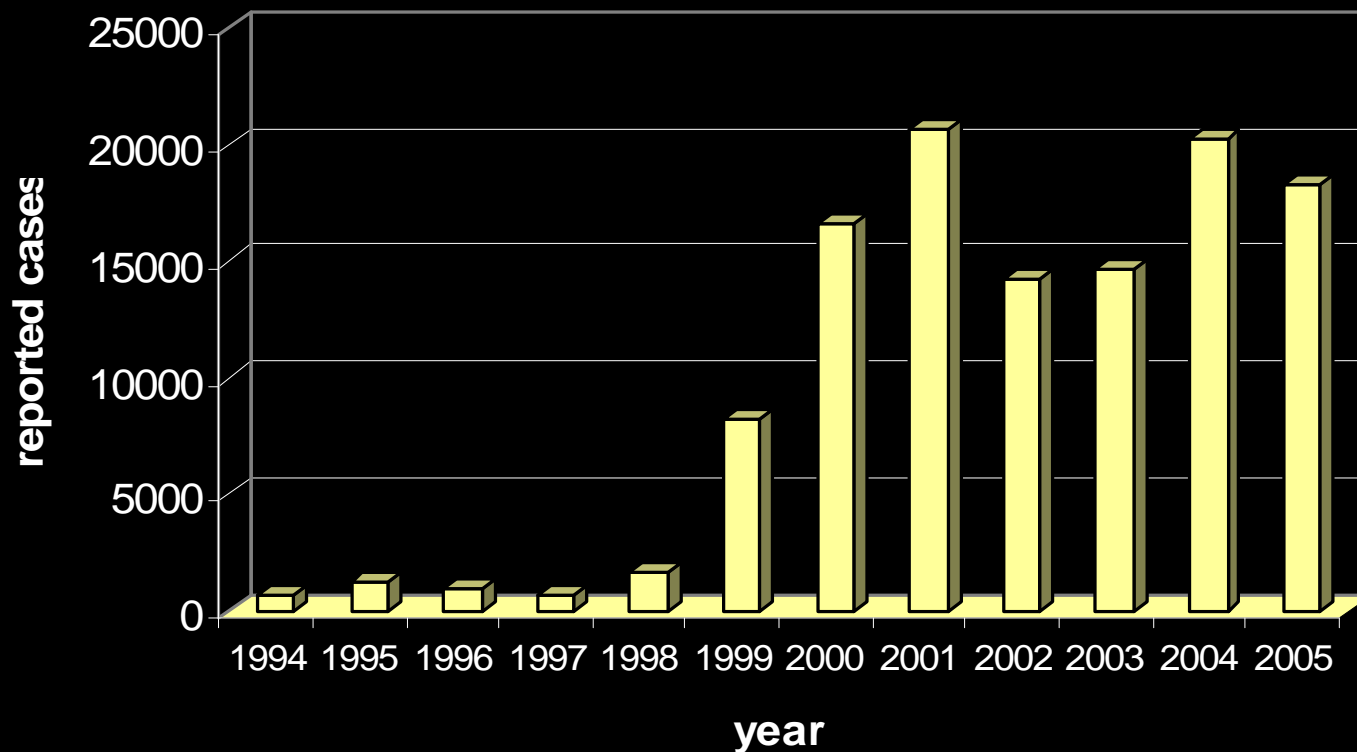
Several reported cases still classified as “acute hepatitis due to unknown cause”

Reported hepatitis A cases, Brazil, 1994-2005

During 2000-2005, 14,000-21,000 cases of hepatitis A reported annually



Rate of 7.5 to 11 cases/100,000



Source: National Reportable Diseases Surveillance System, Health Ministry

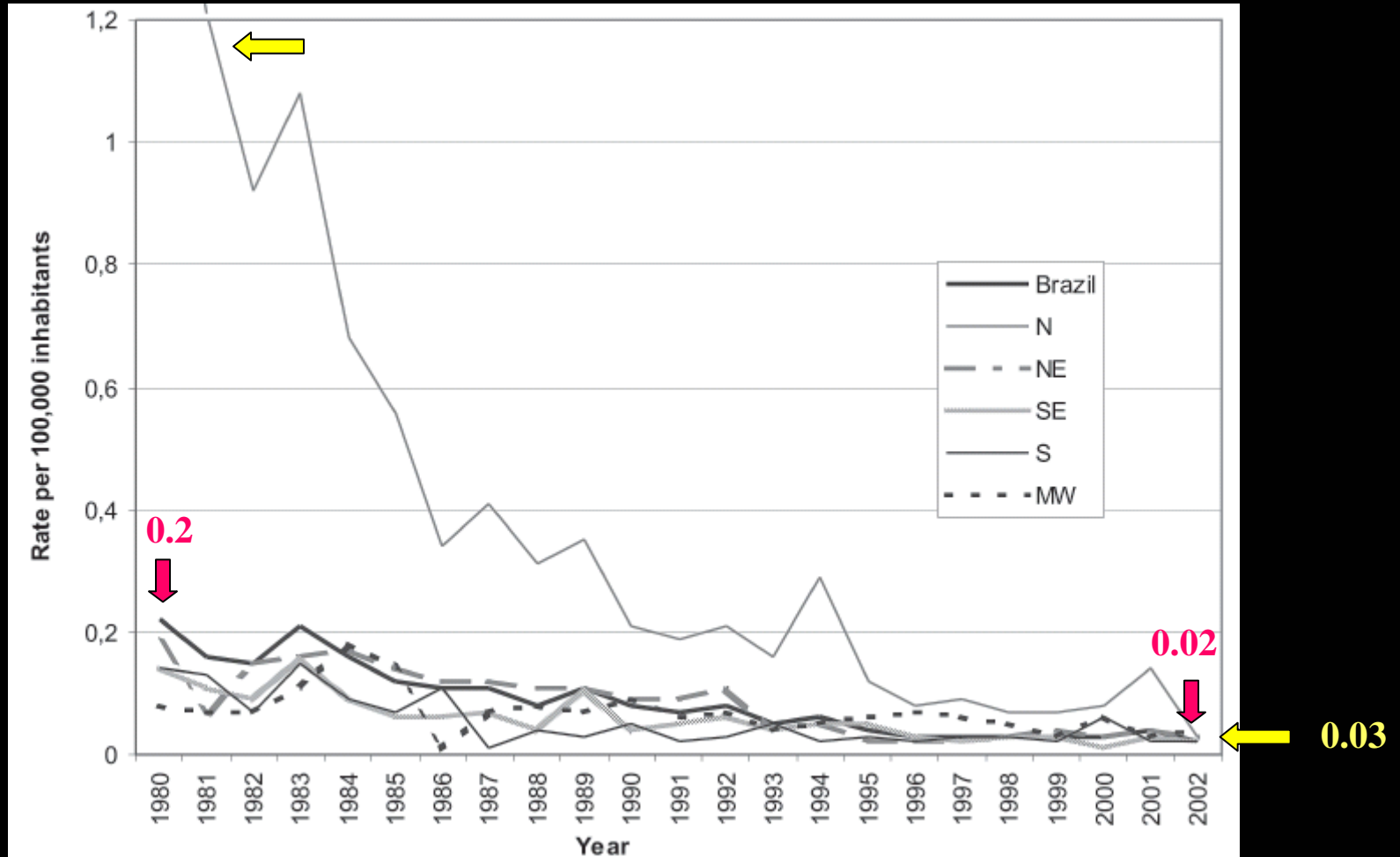


Mortality rates of hepatitis A in Brazil

- Hepatitis A mortality rates over the last 20 years were evaluated in order to generate reliable information on the trends seen in hepatitis A incidence in Brazil

Fatal cases correspond to individuals that were hospitalized and generally well investigated and properly diagnosed

Hepatitis A mortality rates per 100,000 population of Brazil and of each region individually, 1980 - 2002



Source: National Reportable Diseases Surveillance System, Health Ministry



A progressive decline in the incidence of **fatal cases** related to HAV infection in Brazil might be occurring



Since these cases constitute a small, but predictable portion of all **acute hepatitis A cases** ...

... which are in turn part of the total number of **HAV infections...**



These data suggest a possible decline in HAV circulation in all Brazilian regions over the last decades

Controlling of hepatitis A in Brazil

Major aspects to be improved:

- Obtention of more solid data about the epidemiology of the disease in the country: a population-based seroprevalence study coordinated by the Ministry of Health is under course in four Brazilian regions
- Provide better standards of sanitary conditions at the poorest Brazilian regions



