



# Leprosy control, elimination & eradication



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## Background



- WHA 1991 resolution "...to eliminate leprosy as a public health problem...." defined elimination as prevalence below 1/10,000
- All but three countries claim to have reached the elimination target
- "Global Strategy for Further Reducing the Leprosy Burden and Sustaining Leprosy Control Activities" agreed for 2006 – 2010 by WHO and ILEP in 2005
- "Leprosy eradication" mentioned by prominent individuals at recent 17<sup>th</sup> International Lep Cong in Hyderabad in February 2008





## Dreams of eradication

- Elimination and eradication of human disease have been the subject of numerous conferences, symposia, workshops, planning sessions, and public health initiatives for more than a century.
- In nineteen sixties plans to eradicate malaria, yellow fever & yaws



## Achievements

- Small pox eradication achieved
- Plans & activities to eradicate poliomyelitis and guinea worm disease
- Progress towards "elimination as a public health problem" for leprosy, lymphatic filariasis, onchocerciasis & chagas disease



# Meetings-Documents

1963: *The Evolution and Eradication of Infectious Diseases*

1966: *WORLD ERADICATION OF INFECTIOUS DISEASES*

1980: *Eradication of Infectious Diseases: A Critical Study*

1993: *Recommendations of the International Task Force on Disease Eradication*

1997: *THE ERADICATION OF INFECTIOUS DISEASES*

1998: *BULLETIN OF THE WORLD HEALTH ORGANIZATION*

Logos: SCIOLA AZZO POTTEREAU, IILEP

## Definition: Control



- Control:** The reduction of disease incidence, prevalence, morbidity or mortality to a locally acceptable level as a result of deliberate efforts; continued intervention measures are required to maintain the reduction.



## Definition: Elimination

- **Elimination of infections:** Reduction to zero of the incidence of infection caused by a specific agent in a defined geographical area as a result of deliberate efforts; continued measures to prevent re-establishment of transmission are required.



## Definition: Eradication

- **Eradication:** Permanent reduction to zero of the worldwide incidence of infection caused by a specific agent as a result of deliberate efforts; intervention measures are no longer needed.



## Definition: Extinction

- **Extinction:** The specific infectious agent no longer exists in nature or in the laboratory.



## Definitions - Summary

- **Control** (reduction of disease to acceptable level)
- **Elimination** (reduction to zero new cases in defined area)
- **Eradication** - "Permanent **reduction to zero** of **worldwide** incidence of infection caused by a specific agent **as a result of deliberate efforts; intervention efforts are no longer necessary**"
- **Extinction** - (total destruction of species inc from labs)



## Pre-requisites for an infection to be eradicated

- an effective intervention is available to interrupt transmission of the agent;
- practical diagnostic tools with sufficient sensitivity and specificity are available to detect levels of infection that can lead to transmission;
- humans are essential for the life-cycle of the agent, which has no other vertebrate reservoir and does not amplify in the environment.

Dahlep Workshop, CDC, 1999



## Problems with leprosy

- **Diagnosis / ascertainment difficult**
- **Sources and modes of infection still unclear**
- **Immunity not understood and not solid**
- **Relapses occur**
- **Armadillo reservoir – possibly others**



## Some more problems

- Case finding and treatment not very effective at reducing incidence
- BCG Vaccine widely used but efficacy variable
- Chemoprophylaxis has some effect but large scale feasibility is unclear



## Feasibility of leprosy eradication

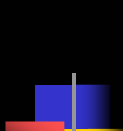
Leprosy was discussed explicitly by the 1993 International Task Force and in the 1998 *Bulletin WHO*, and in both contexts was considered not to be eradicable....





## Real Question

- **Real question today is not if we should put our efforts in to eradication of leprosy but there are many more important issues related to elimination-eradication debate of leprosy that require our attention**



## Elimination as a Public health Problem

- Means control of the disease in a defined area
- It has had enormous impact – MDT identified in 1981; in 1991 MDT coverage was patchy, often less than 10%; in a few years it reached 100%; 15 million received MDT.







## Challenge

- Elimination efforts have helped in controlling leprosy, bringing MDT to all countries of the world, have helped in clearing backlogs of accumulated cases of leprosy, have prevented suffering and disabilities in huge numbers of persons. The challenge is how do we continue to provide a minimum standard of services.

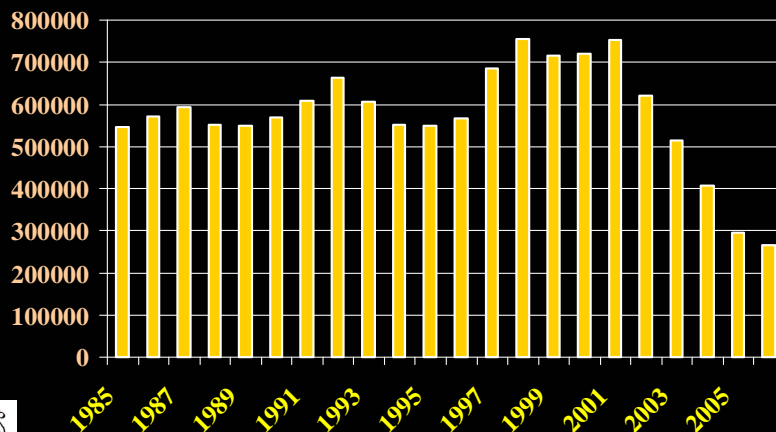


## Some key issues

- Ensuring continuing referral services support to PHC systems where leprosy is endemic, maintaining competences of staff, maintaining basic services for diagnosis and treatment of disease and its complications, research on new drugs, early sero diagnosis, etc.



## New Cases of Leprosy in the World

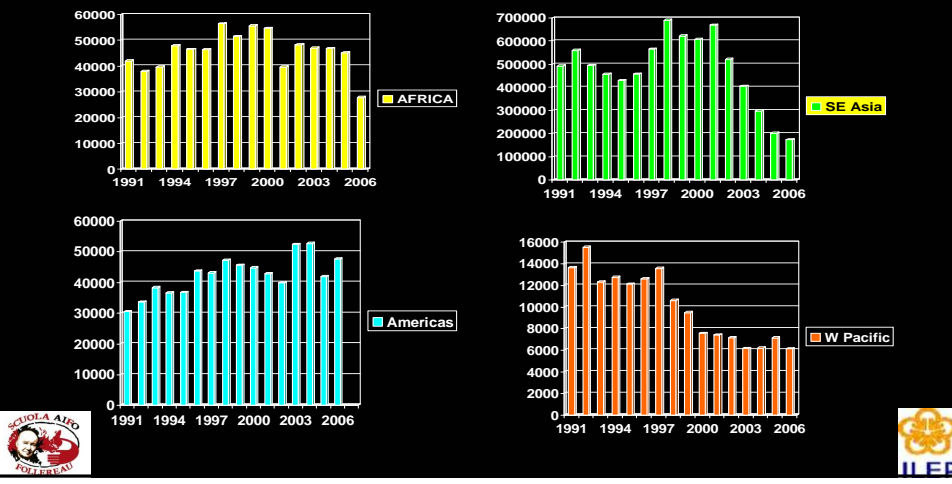


Global data shows a great picture

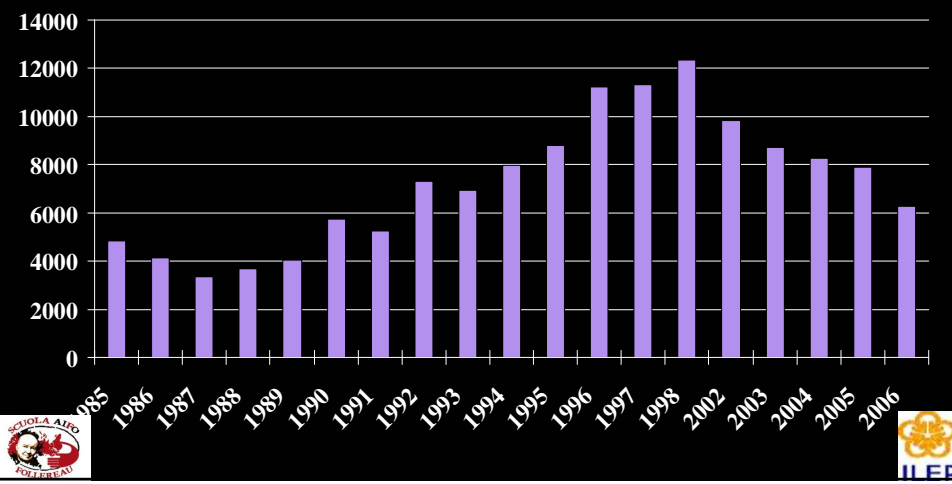
We need to look at countries or even more locally to understand what is happening.



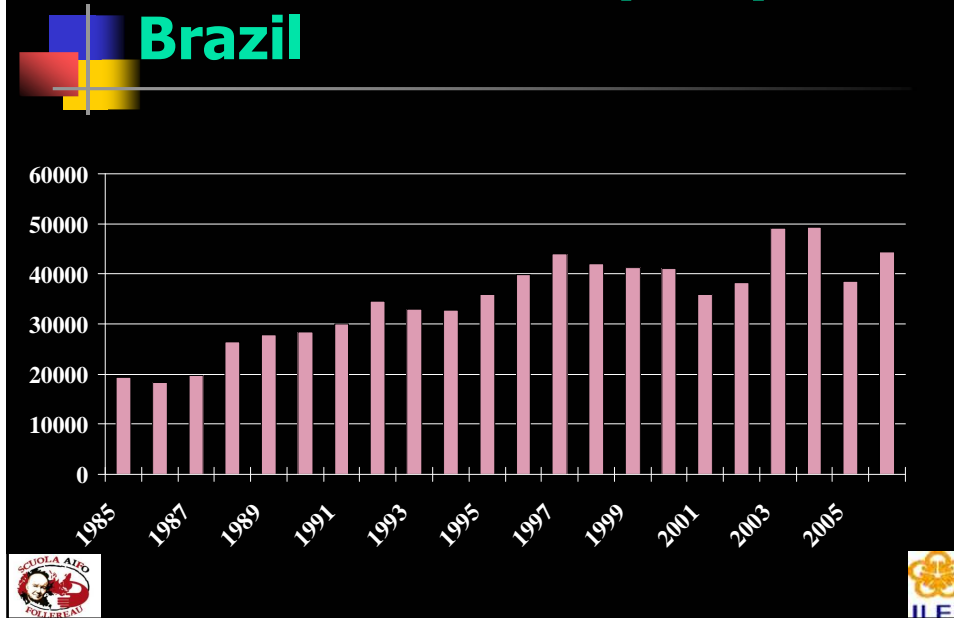
# New Cases of Leprosy in WHO regions



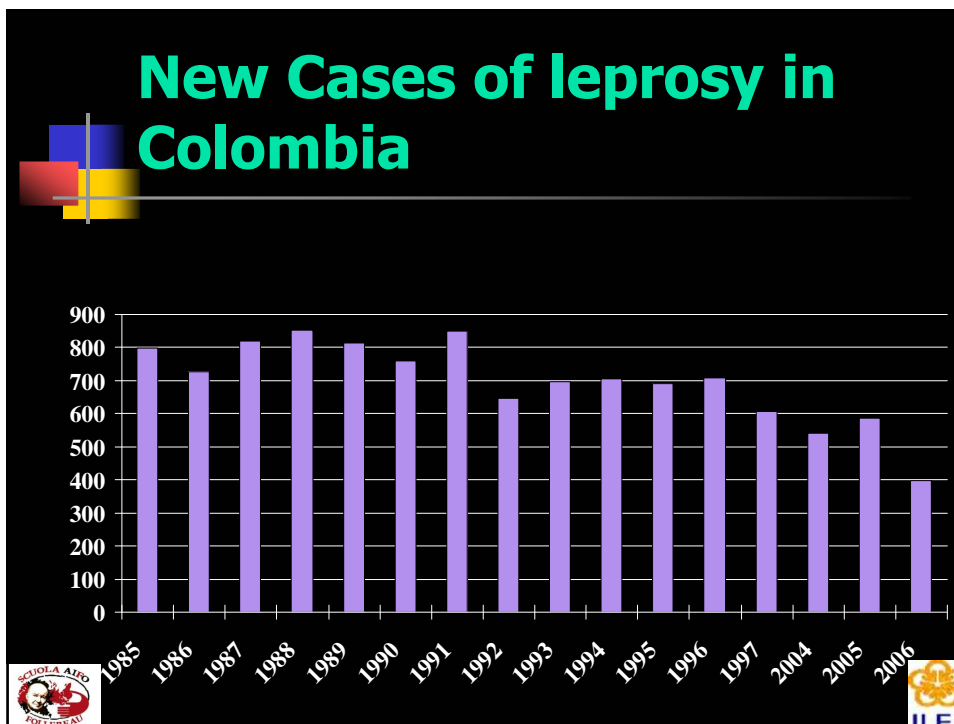
# New Cases of Leprosy in Bangladesh



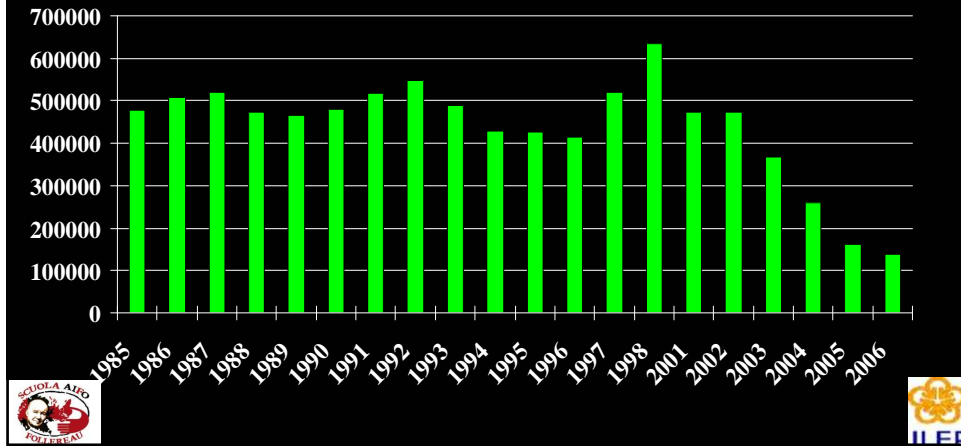
## New Cases of Leprosy in Brazil



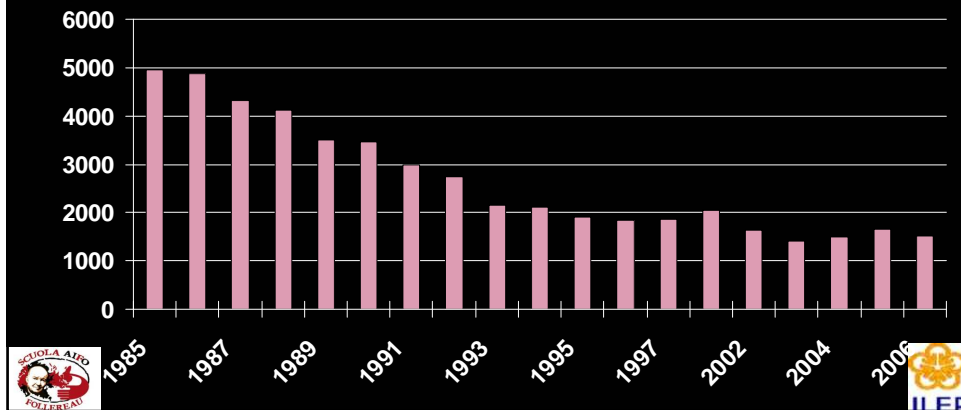
## New Cases of leprosy in Colombia



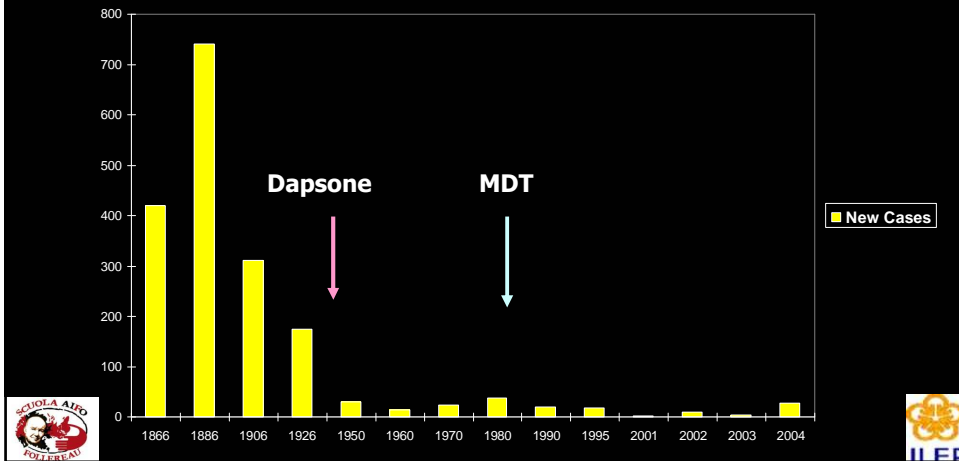
## New Cases of Leprosy in India



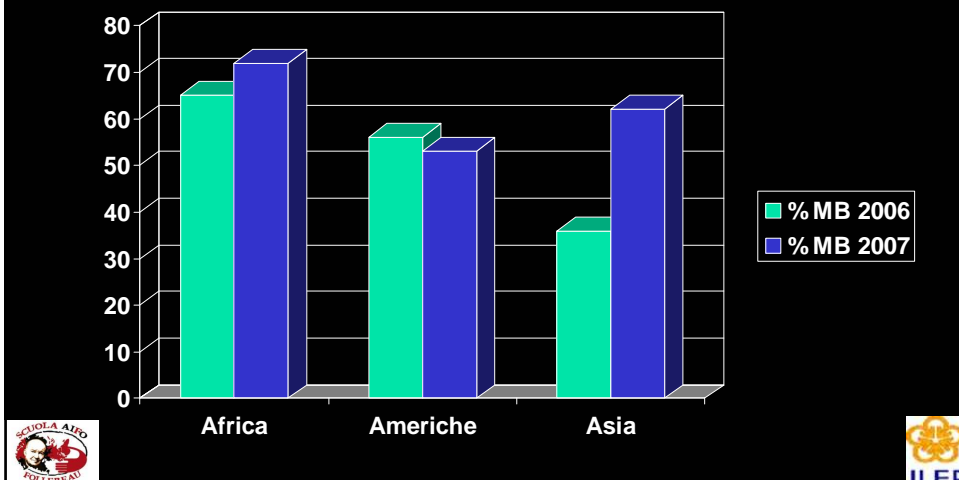
## New Cases of Leprosy in China



# New cases in Hawaii 1866 - 2004



# % of MB cases AIFO Projects 2006-07





## What do these graphs show?

- The situation is very different from country to country
- Operational factors can confound
- Countries where numbers are small, in hundreds or less than hundred, show that decreases can be long drawn and uneven



## Conclusions

- Remarkable success compared to 15 years ago in **control** of leprosy – we need to work so that it can be sustained
- Long way to go before we can even think of **elimination**. If we wish to think of elimination then we need **new instruments** to prevent & diagnose leprosy.
- **Eradication** is not feasible at present.





# Thank you

Acknowledge use of some slides of Prof. Paul Fine, Prof. Anthony Bryceson & Prof. Cairns Smith in this presentation

