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Swiss Tropical and Public Health Institute
Schweizerisches Tropen- und Public Health-Institut
Institut Tropical et de Santé Publique Suisse

Associated Institute of the University of Basel

Department of Epidemiology & Public Health
Infectious Disease Modelling

Swiss TPH Winter Symposium 2017

Helminth Infection – from Transmission to Control

Elimination of Schistosomiasis japonica in China: the last mile towards 2025

Guojing Yang

Outlines

- Burden of the disease
- Stages of control efforts
- Experiences & Lessons
- The way forward

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- **Burden of the disease**
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- **Experiences & Lessons**
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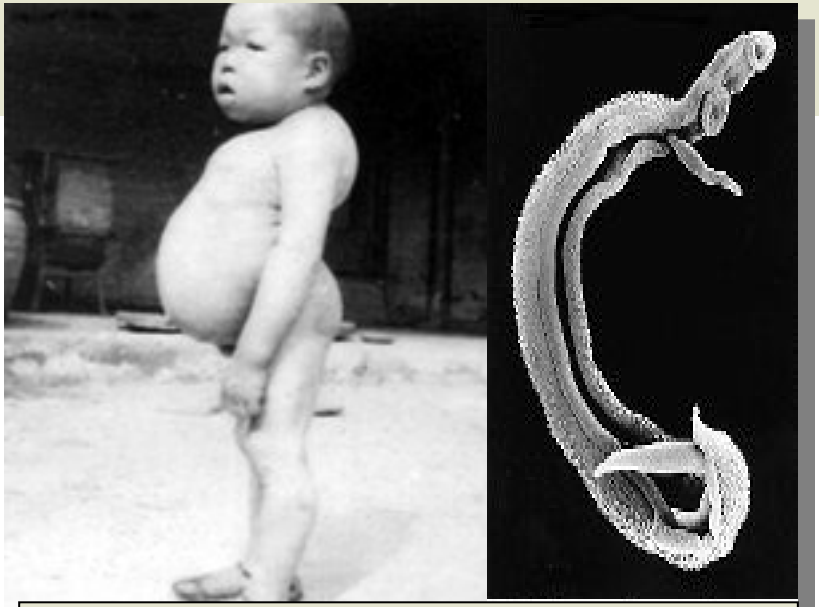
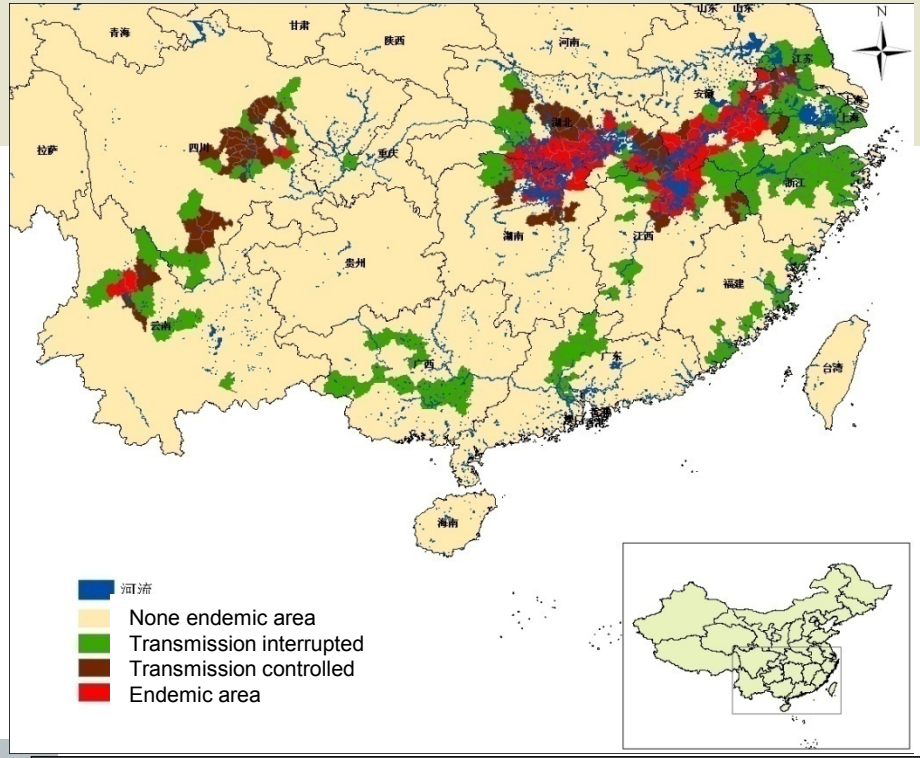
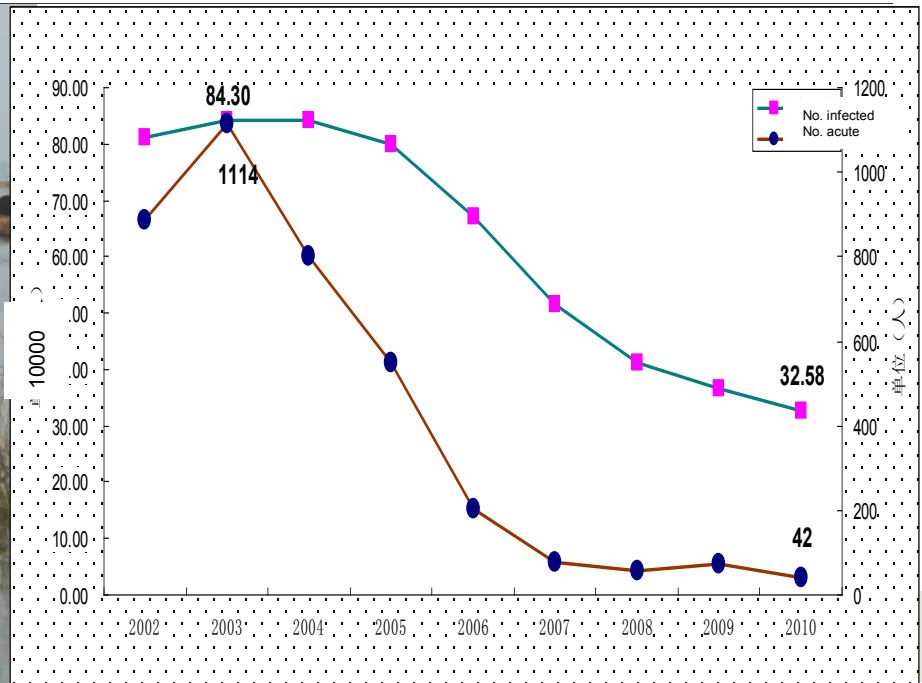
Burden of the disease

- Schistosomiasis japonica has been endemic in P.R. China for more than 2100 years
- Estimated 11.6 million people were infected in 1950s



Schistosomiasis japonica





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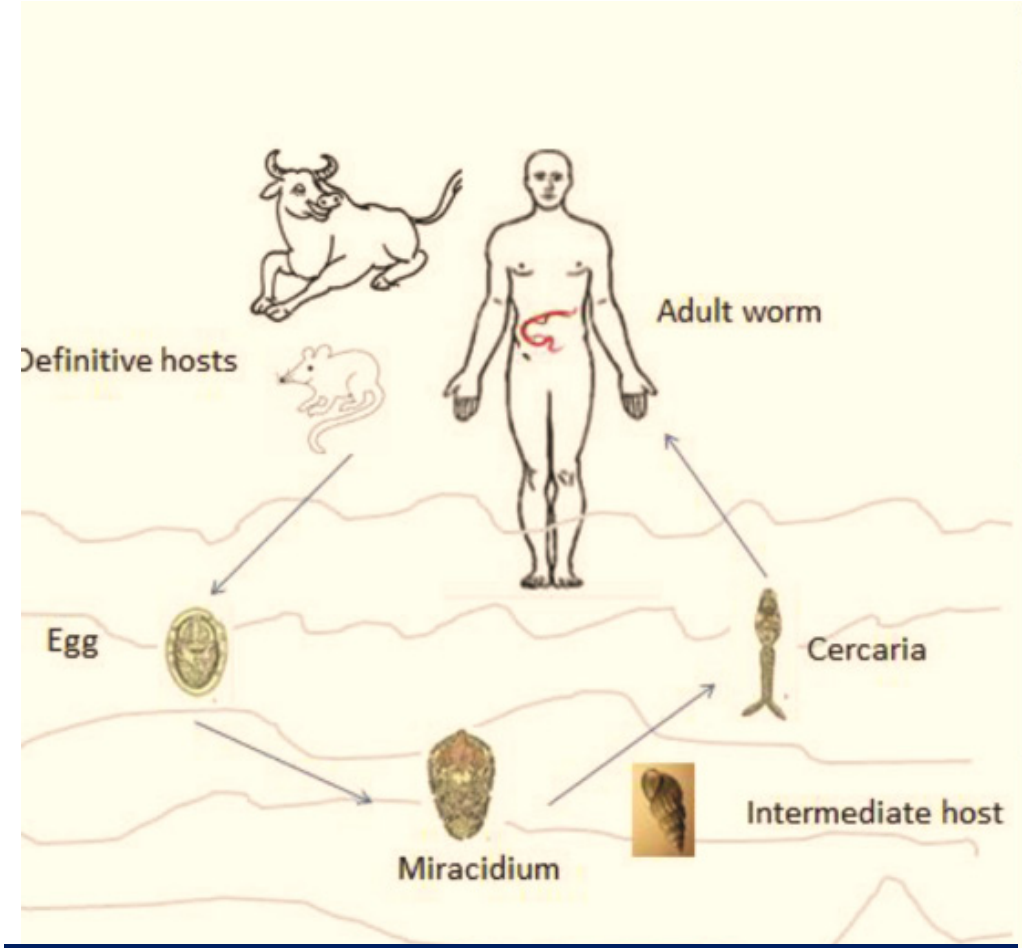
Schistosomiasis japonica progression in human beings



Disease Progression
Acute schistosomiasis
Cercarial dermatitis
Katayama fever
Bloody diarrhea
Abdominal pain
Portal hypertension
Liver cirrhosis
Chronic schistosomiasis
No symptoms or
Intermittent abdominal pain
Diarrhea
Rectal bleeding
Advanced schistosomiasis
Splenomegaly
Ascites
Colonic tumoroid proliferation
Growth retardation

More severe morbidity than other schistosomiasis

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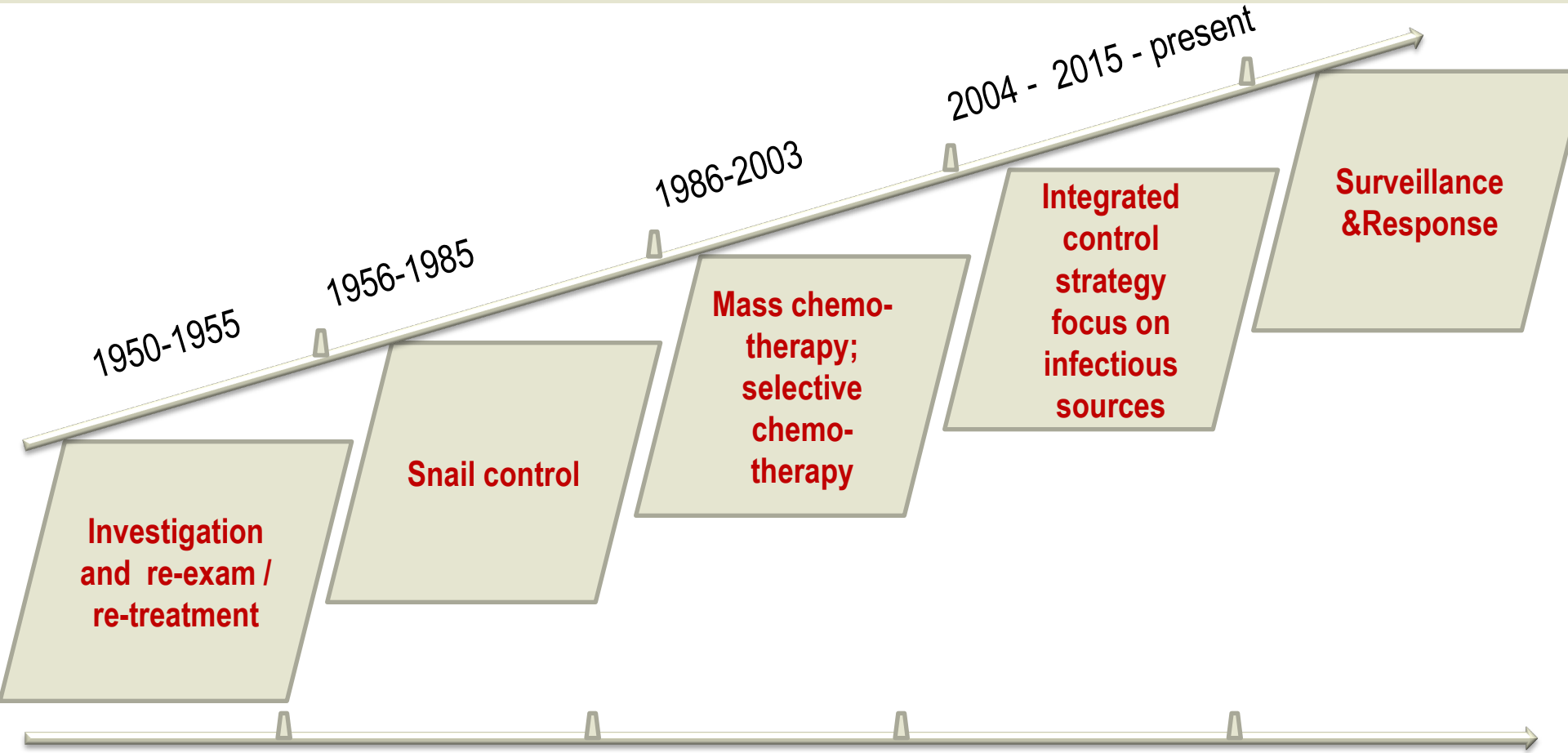
Stages of control efforts



Preparation stage:
1.setting up control infrastructure;
2. understanding the epidemiology

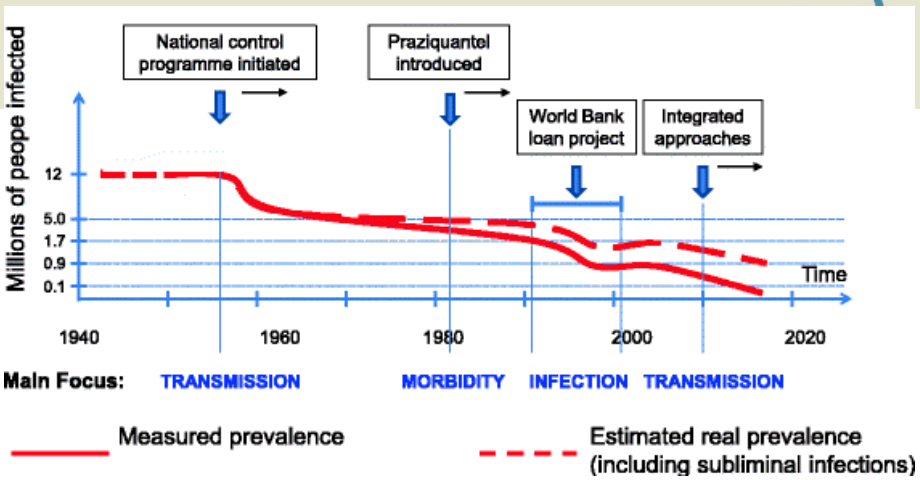
Mass campaign Stage:
1.understanding endemic status
2.strengthening control agencies
3.mass campaign with focus on snail control

Morbidity control Stage:
1.Morbidity control and pilot studies
2. World bank loan project:1992-2001

Transmission control and interruption stage:
1.Formulation of comprehensive strategy;
2.National control programme

Elimination/post-elimination stage

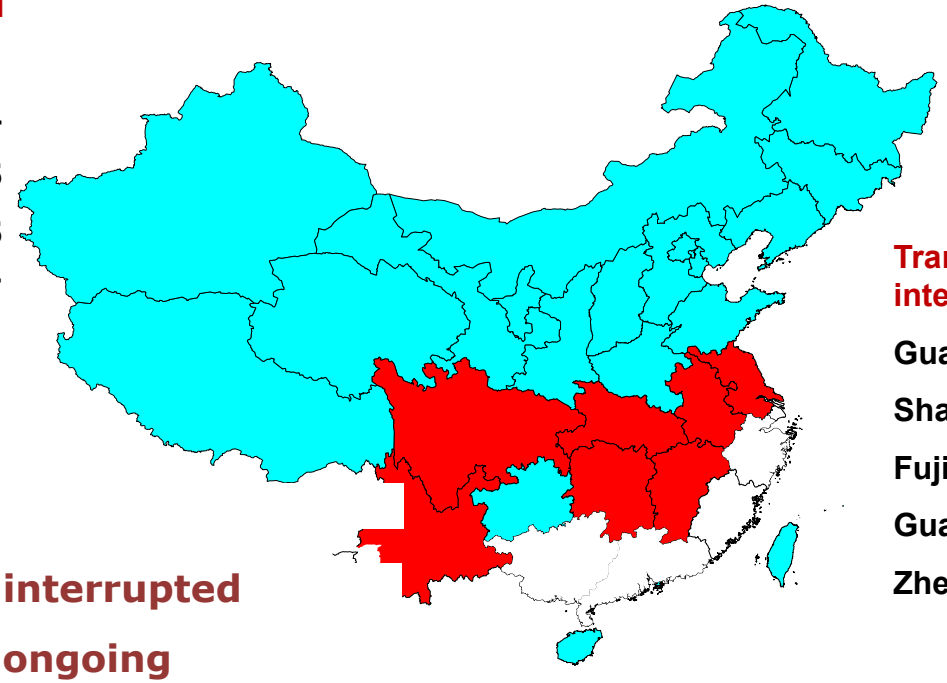
Milestone（By end of 2003）



Reduction of schistosome-endemic areas

Transmission Controlled

Guangxi	1972
Guangdong	1974
Shanghai	1975
Fujiang	1975
Zhejiang	1987



Transmission interrupted

Guangdong	1985
Shanghai	1985
Fujiang	1987
Guangxi	1989
Zhejiang	1995

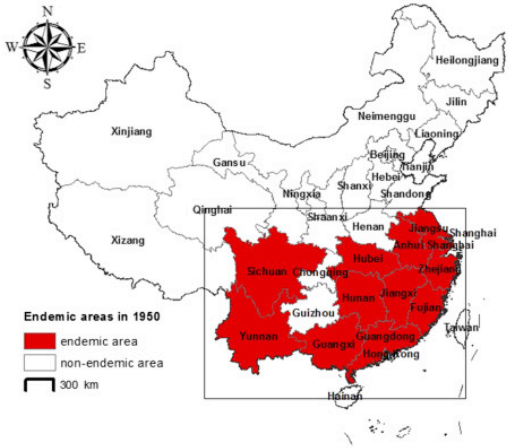
Non-endemic

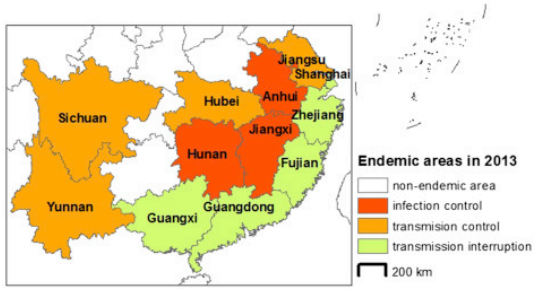
Transmission interrupted

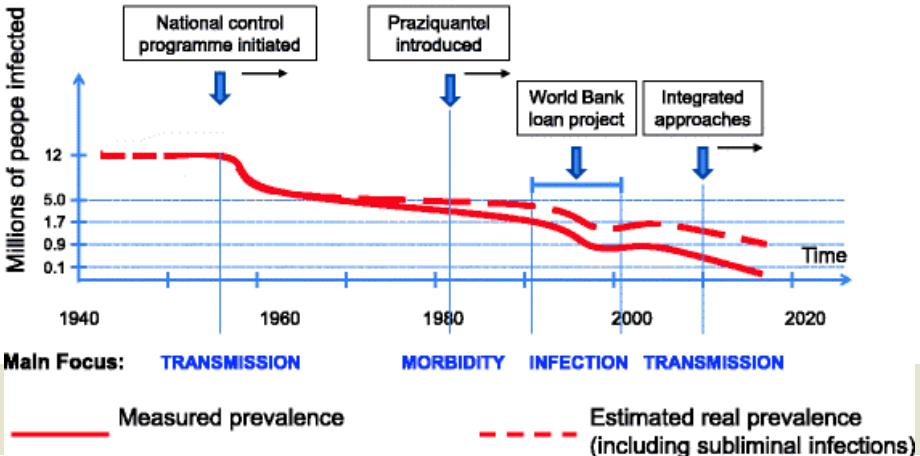
Transmission ongoing

Milestones（By end of 2014）

- The number of cases was decreased from 843 000 cases in 2004 to 115 000 in 2014, with its 86.4% of reduction rate；
- The infection rate of animals is reduced from 4.49%in 2004 to the 0.25% in 2015， with its reduction rate of 94.4%；
- In the 5 provinces zero cases has yet been found during last 20 years；
- Among 454 endemic counties, 98.9% of endemic counties has achieved the goal of transmission control or transmission interruption.

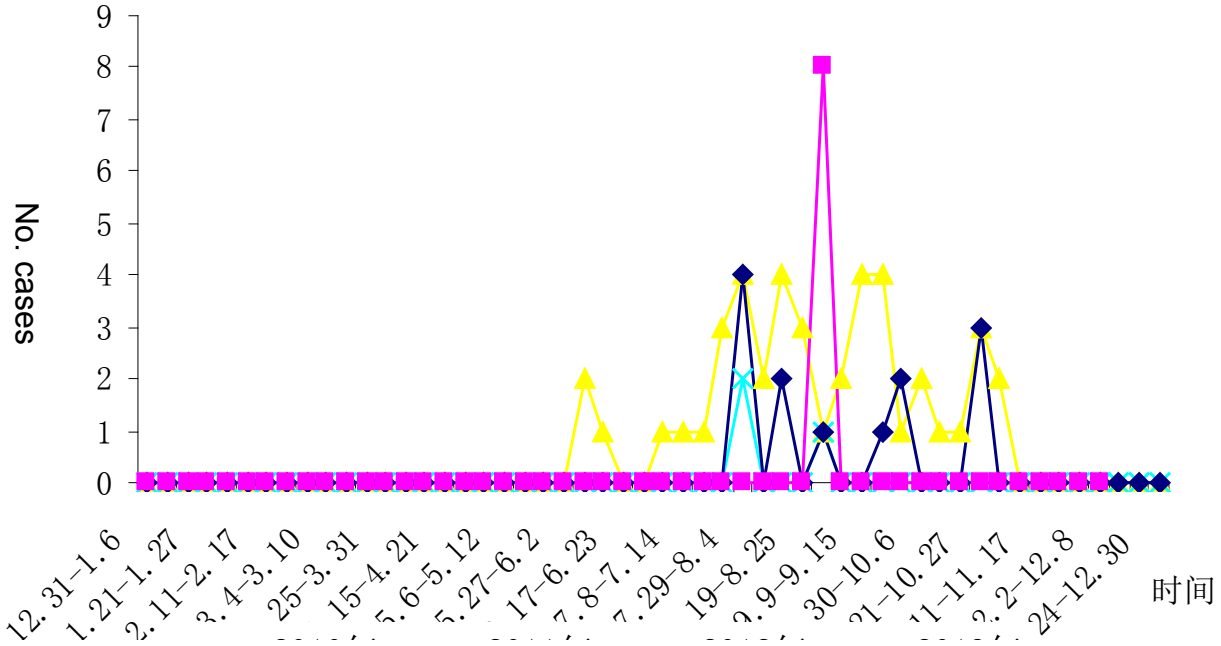






By the end of 2015:

1. zero report on acute schistosomiasis



2. all counties achieve the criteria for **elimination** as public health problem (Prevalence < 1%, at village level)

Outlines

- Burden of the disease
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Experiences and lessons

- Strong political will and government commitment
- Scientific control strategies keep the pace with the times
- Vertical control program and sufficient workforce
- Epidemiological survey and surveillance

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In 1955,Chairman Mao Zedong issued a slogan: "Schistosomiasis has to be eliminated"

FAREWELL TO THE GOD OF PLAGUE
--- two poems, July 1, 1958

When I read in the Renmin Ribao of June 30, 1958 that schistosomiasis had been wiped out in Yukiang County, thoughts thronged my mind and I could not sleep. In the warm morning breeze next day, as sunlight falls on my window, I look towards the distant southern sky and in my happiness pen the following lines.

I

So many green streams and blue hills, but to what avail ?
This tiny creature left even Hua To powerless!
Hundreds of villages choked with weeds, men wasted away;
Thousands of homes deserted, ghosts chanted mournfully.
Motionless, by earth I travel eighty thousand li a day,
Surveying the sky I see a myriad Milky Ways from afar.
Should the Cowherd ask tidings of the God of Plague
Say the same griefs flow down the stream of time

II

The spring wind blows
Six hundred millio
Crimson rain
Green m
Glea

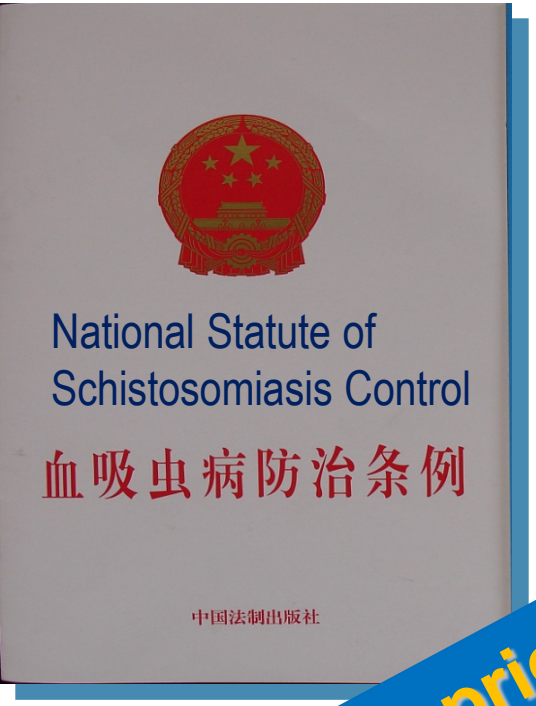
ands,
Yao and Shun.
our will,
s at our wish.
the Five Ridges heaven-high;
rock the earth round the Triple

od of Plague: "Where are you bound ?"
arges aflame and candle-light illuminate the sky.

Political will / Government commitment

In 19 resident Jiang Zemin, ordered to "take necessary steps to control schistosomiasis"

Surveillance system at different endemicity areas/ ecosystems



Beijing Plans Health Care For Everyone

The **Wall Street Journal** is reporting on China's ambiti… universal health care to all 1.3 billion Chinese citizens by 2020, covering 90 perc… within the next two years. Critics of the plan say it does not give detailed inform… ding and implementation.

China has unveiled an … achieve universal health care. The plan, released for public debate … in broad strokes plans to introduce greater health-care funding and … current system leaves out much of the population and forces the re… t-of-pocket expenses.

… proposal was crafted in a year-long … of consultations with groups such as the World Health Organization, the World Bank, management consultancy McKinsey & Co. and a few Chinese university-based public health experts.

BBC News: China Healthcare Under Spotlight

High priority in government agenda

Chinese Primary Health Care

"Healthy China 2020"

Experiences and lessons

- Strong political will and multi-sectoral collaboration
- Scientific control strategies keep the pace with the times
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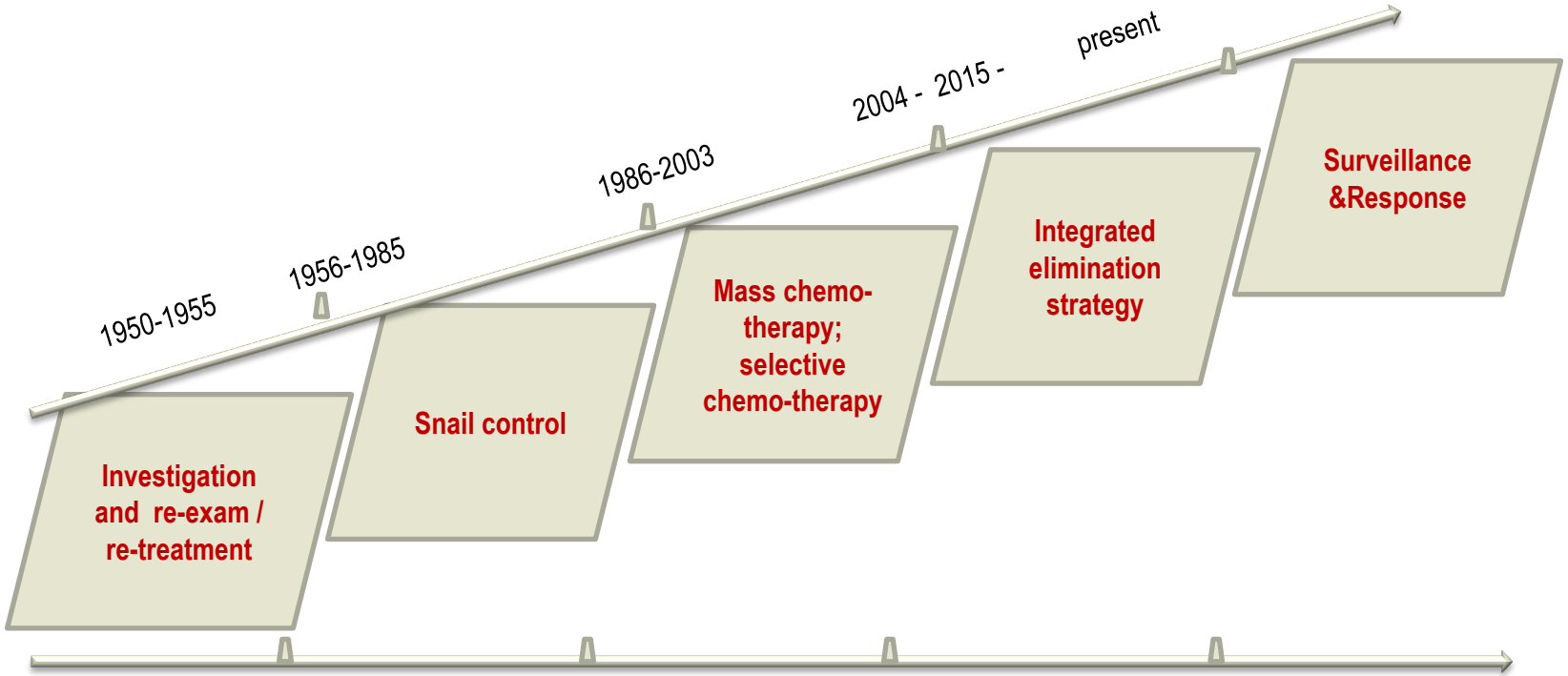
The control strategies were developed and adapted over time to remain aligned with **epidemiological insights, technological advances and the political environment**.



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Elimination/post-elimination stage

Criteria of schistosomiasis control and elimination

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Morbidity Control: lowered incidence/prevalence of disease (both overt or subtle)

1. Among surveillance population, infection rate <5%

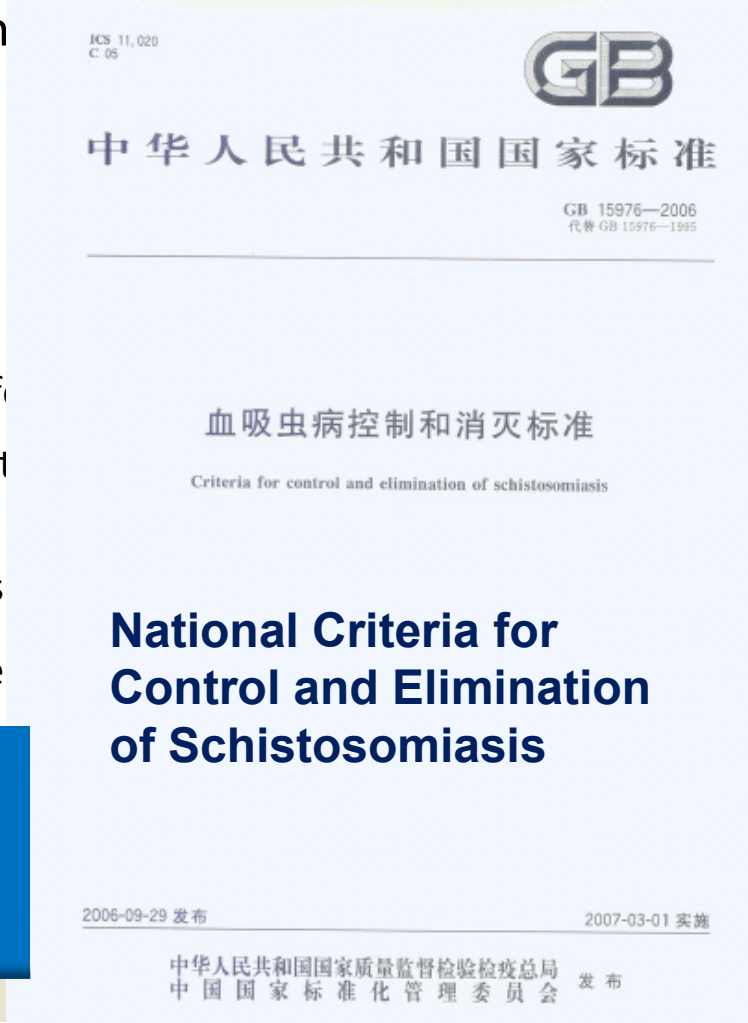
Transmission Control: significantly reduced prevalen
disease, possibly with low level transmission

1. Among surveillance population, infection rate <1%

Transmission interruption : zero incidence of infection
geographical area

1. No human schistosomiasis case with local infection should be f
2. No any schistosomiasis case in domestic animal with local infect
years;
3. No infected Oncomelania snails should be found after careful s
4. The effective, sensitive surveillance system should be available

Criteria for schistosomiasis control and elimination were formulated and modified 6 times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GB

中华人民共和国国家标准

GB 15976—2006
代替 GB 15976—1995

血吸虫病控制和消灭标准

Criteria for control and elimination of schistosomiasis

2006-09-29 发布　　2007-03-01 实施

中华人民共和国国家质量监督检验检疫总局
中国国家标准化管理委员会　发布

National Criteria for Control and Elimination of Schistosomiasis

Experiences and lessons

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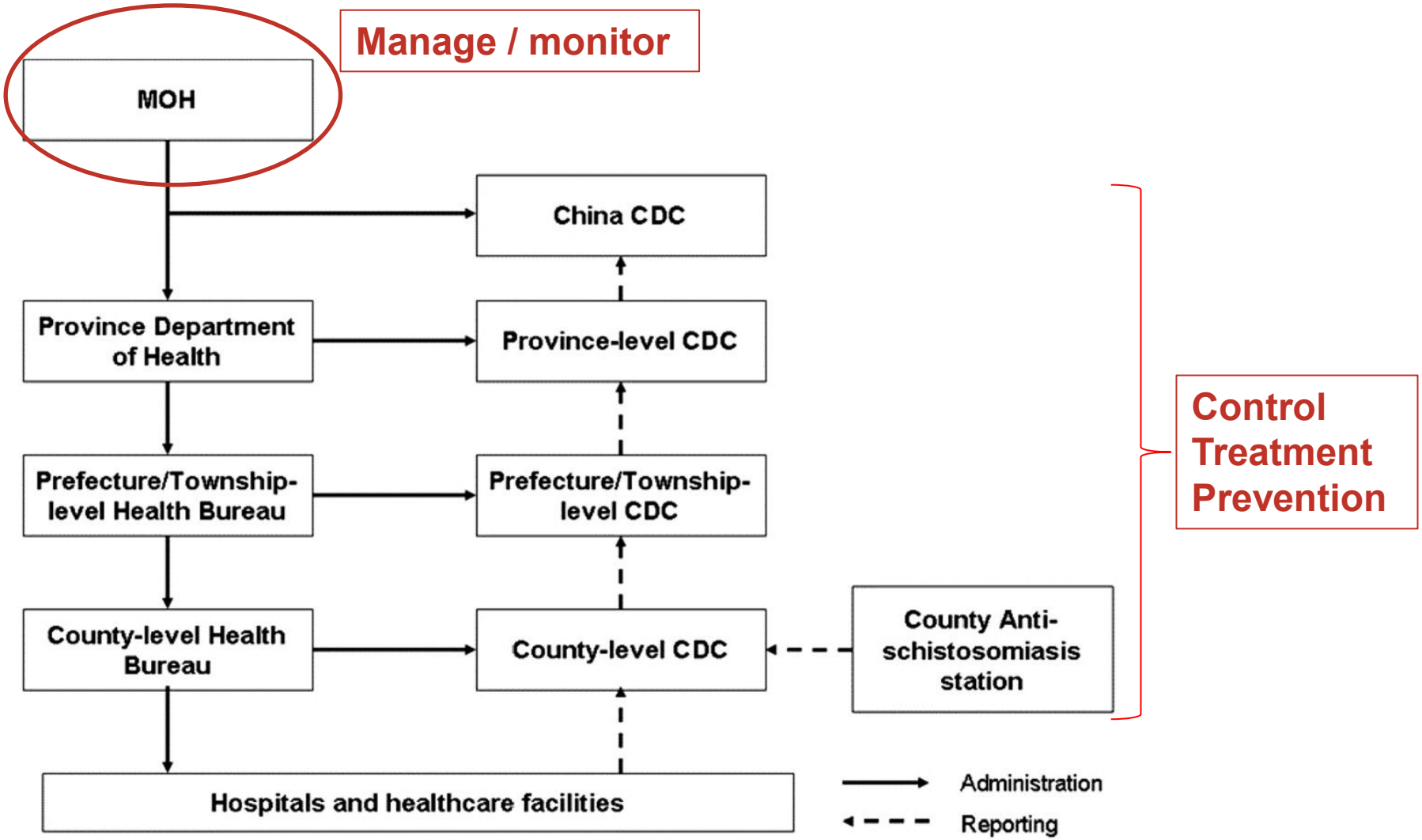

By 2011, 365 agencies for schistosomiasis control existed in 7 provinces.

Experiences and lessons

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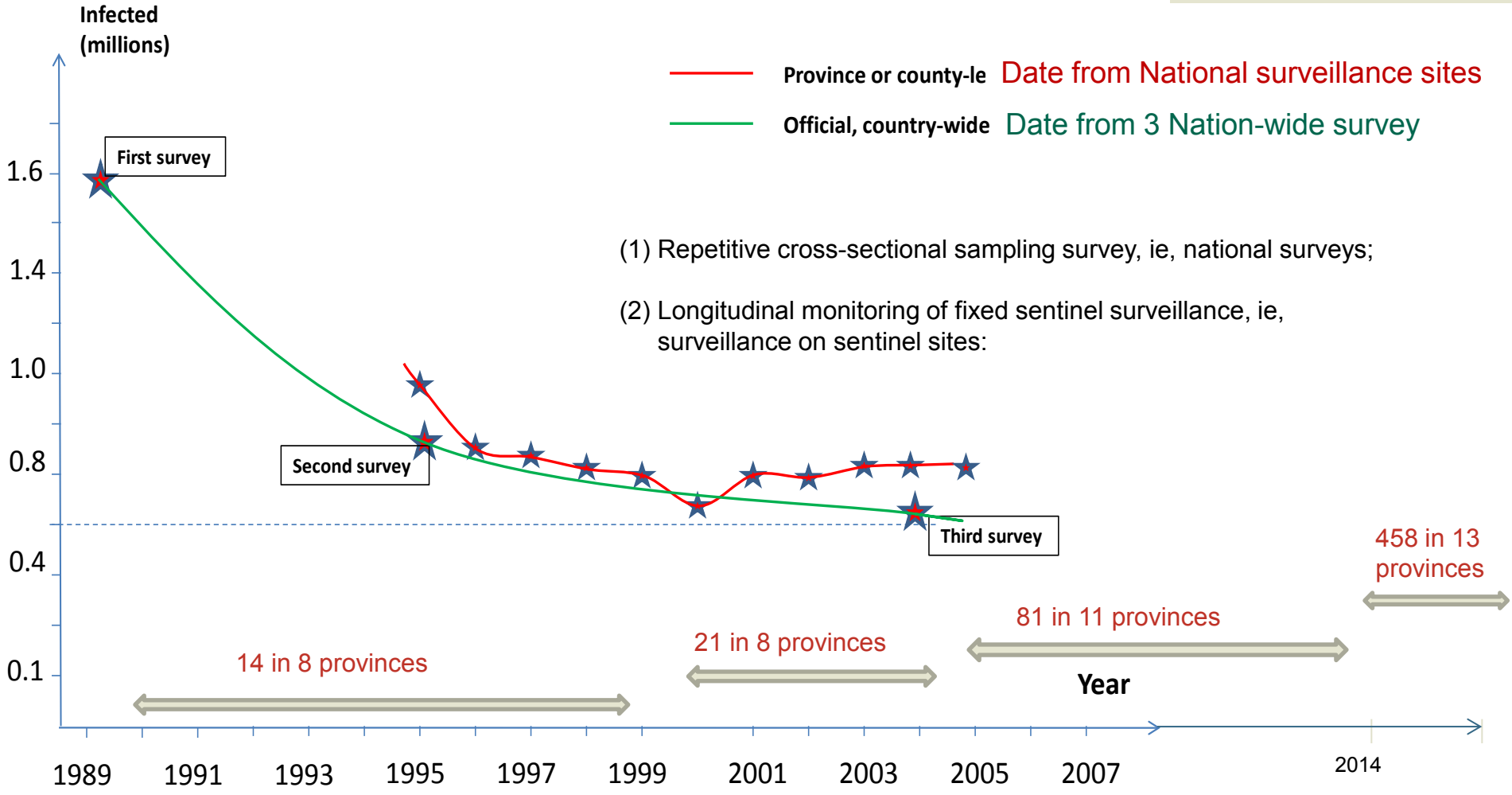
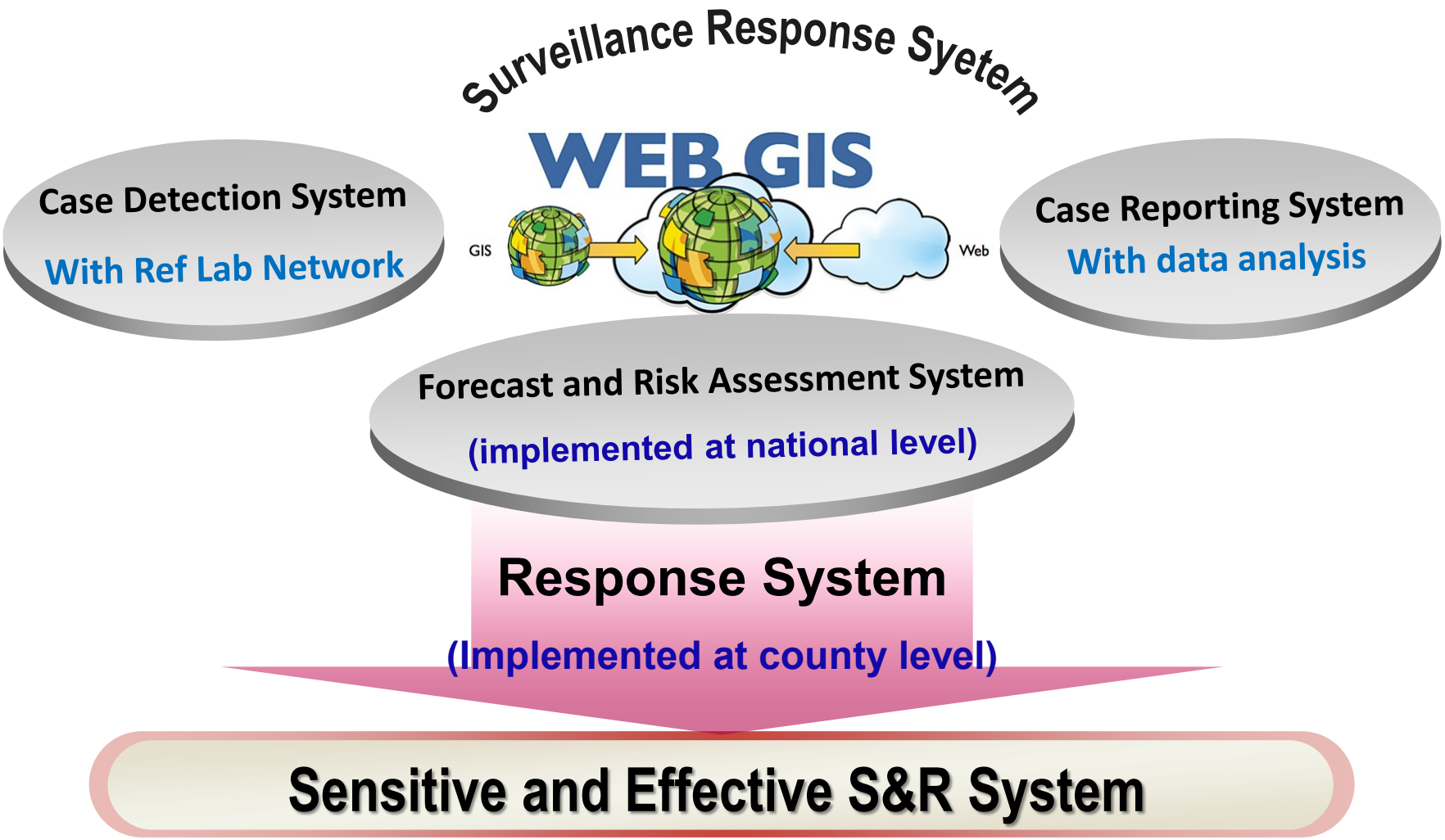
Number of people infected with *S. japonicum* in PR China



Data extracted from surveillance sites

Role of the Surveillance in Schistosomiasis Elimination



Outlines

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The way forward

Challenges

- Extensive and complicated snail habitats: 3.6-3.8 billion m2; >96% marshland and lake regions;
- Management of different sources of infection: migrate population, >40 mammals bovine/goat/rodents…;
- Unbalanced implementation of integrated strategy: large funds are not available in poor areas (centrally planned, locally implemented);
- Unavailability of sensitive diagnostic tools: under-estimated the real infection rate using traditional way；
- Weak surveillance and response system: simple monitored contents, insensitive indicators, obsolete technologies…

- **Chinese government top agenda**
- **One of 6 most important diseases targeted for control or elimination for the next decade.**

Strategic Working Plan (new milestones)

All counties will achieve the criteria of the transmission interruption by 2020

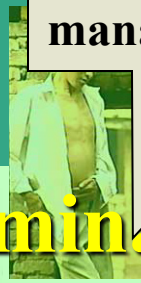
All counties will achieve the certification of schistosomiasis elimination by 2025

Opportunities

Better management Tools : Surveillance and Forecasting, mobile case management etc.

Monitoring and Evaluation (M&E)

Elimination of infectious sources



New Diagnostics : Products and equipment for parasite detection both in human & animals (incl. snail) sensitive enough and standardized

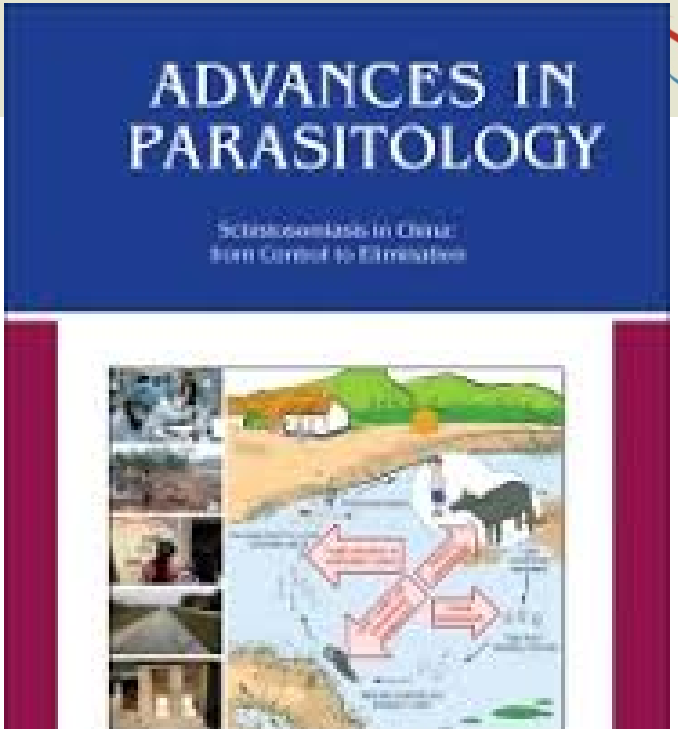
Modeling, to provide evidence to the decision makers

X

New Drugs//vaccine : Anti-schistosome targets and biology of parasitism

Platform : building information platform with various databases

Schistosomiasis in The People's Republic of China: from Control to Elimination, Volume 92



Preface

Elimination of Schistosomiasis Japonica in The People's Republic of China: The Last Leg

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Towards the Elimination of Schistosomiasis japonica through Control of the Disease in Domestic Animals in The People's Republic of China: A Tale of over 60 Years

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Evolution of the National Schistosomiasis Control Programmes in The People's Republic of China

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