Transmission and control of *Clonorchis sinensis* in Guangdong, China

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Guangdong CDC
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- 1. About *Clonorchis sinensis*
- 2. Epidemic situation
- 3. **Transmission factors**
- **4. Intervention Strategies**
- **5.Recommendation**

About *Clonorchis sisnensis*

- ***Clonorchis sinensis(C.s)*** **was first described in**
- **1875(Cobbold), when many worms were**
- **found in the bile duct from a Chinese origin**
- **patient in India with enlarged liver and fibrosis.**
- **In 1994, archaeologists found a large**
- **number of *C. sinensis* eggs in the bowel content**
- **of a corpse buried at the middle stage of the**
- **Warring States Period (475–221 BC) in Hubei,**
- **China (Wu *et al.*, 1996), indicating that this**
- **parasite has been present in this province for**
- **more than 2300 years.**

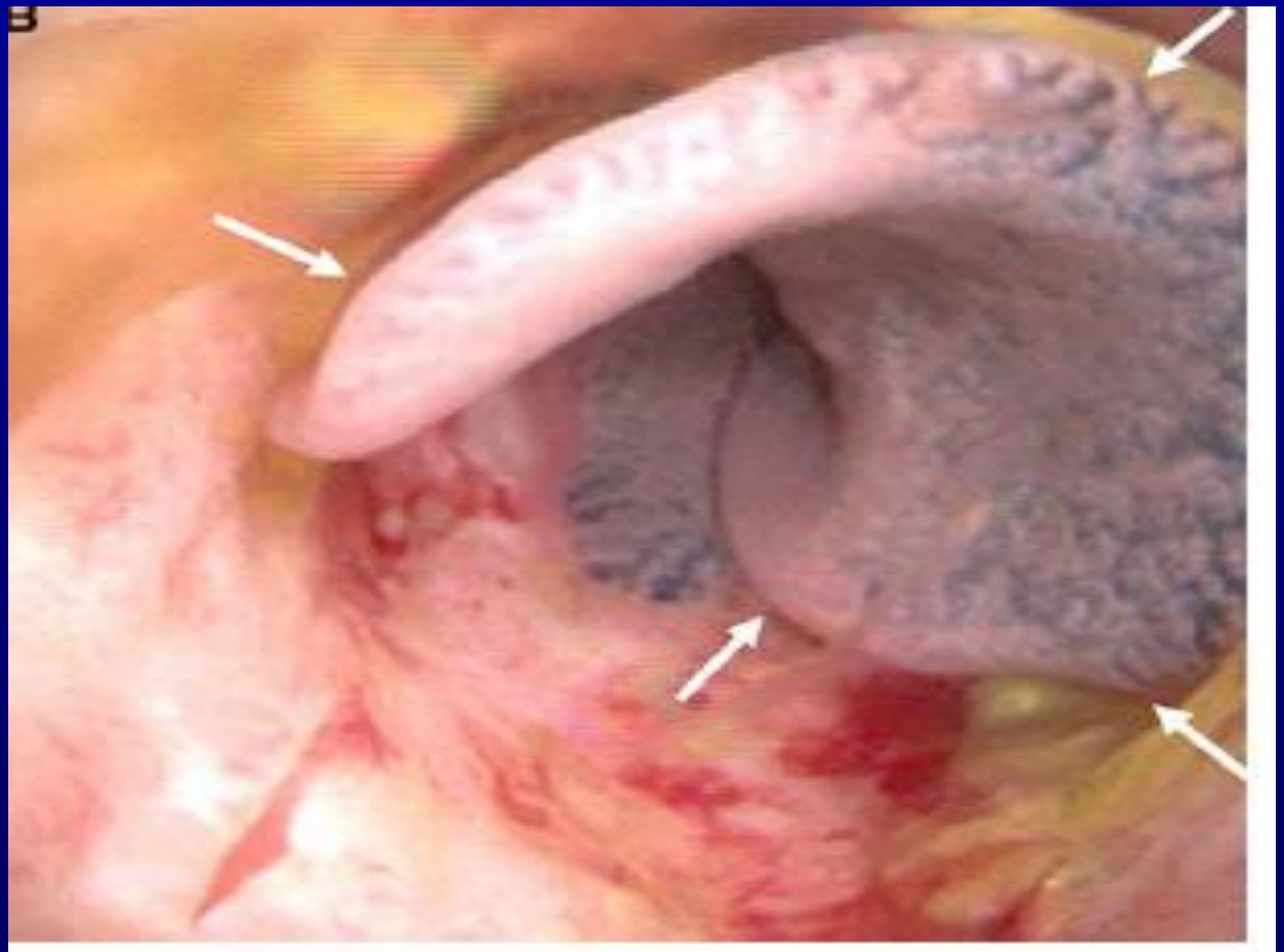


Infected rabbit's liver and Adult Worm





Adult Worm in the Bile duct



The Cholelithiasis and His Excluded Adult Worm





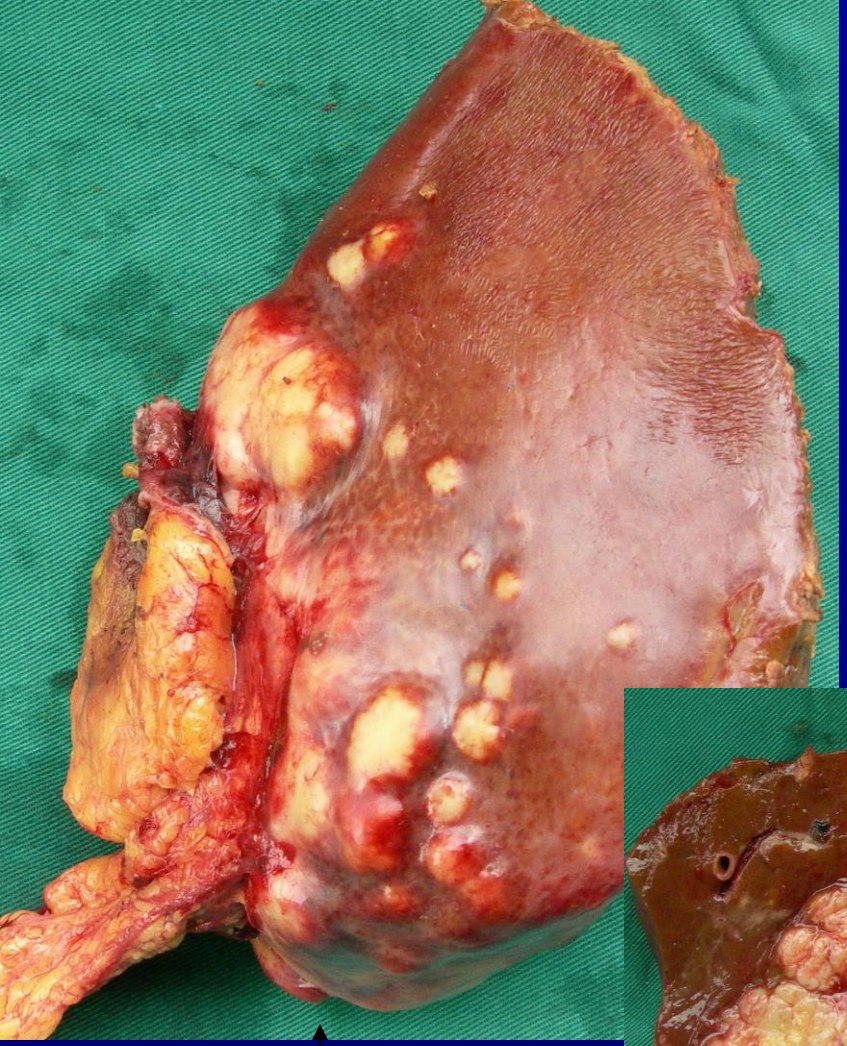


The Liver Cirrhosis and His Ultrasonic Picture





A Human's Liver Cancer and the *C.s* Adult Worm

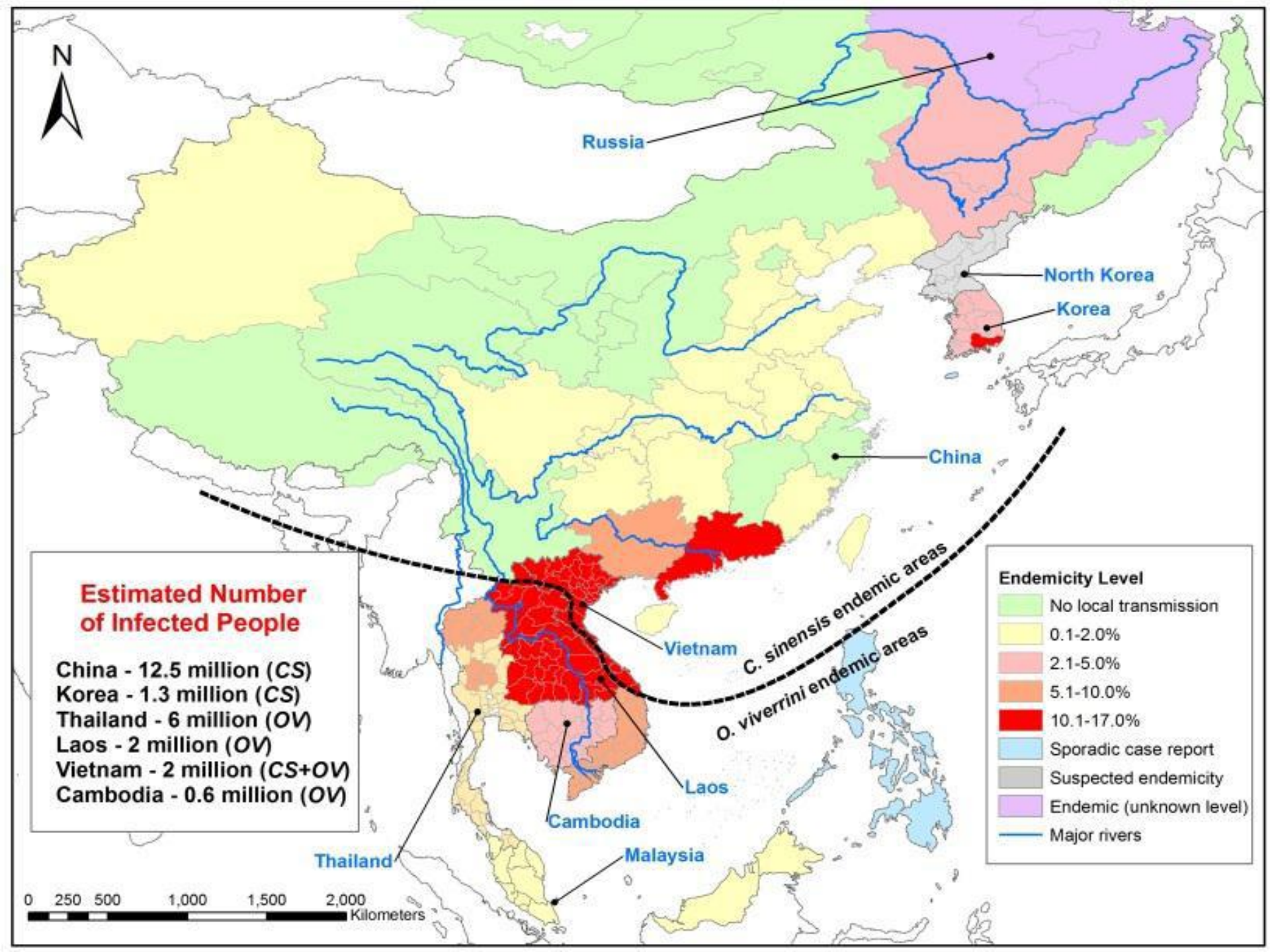




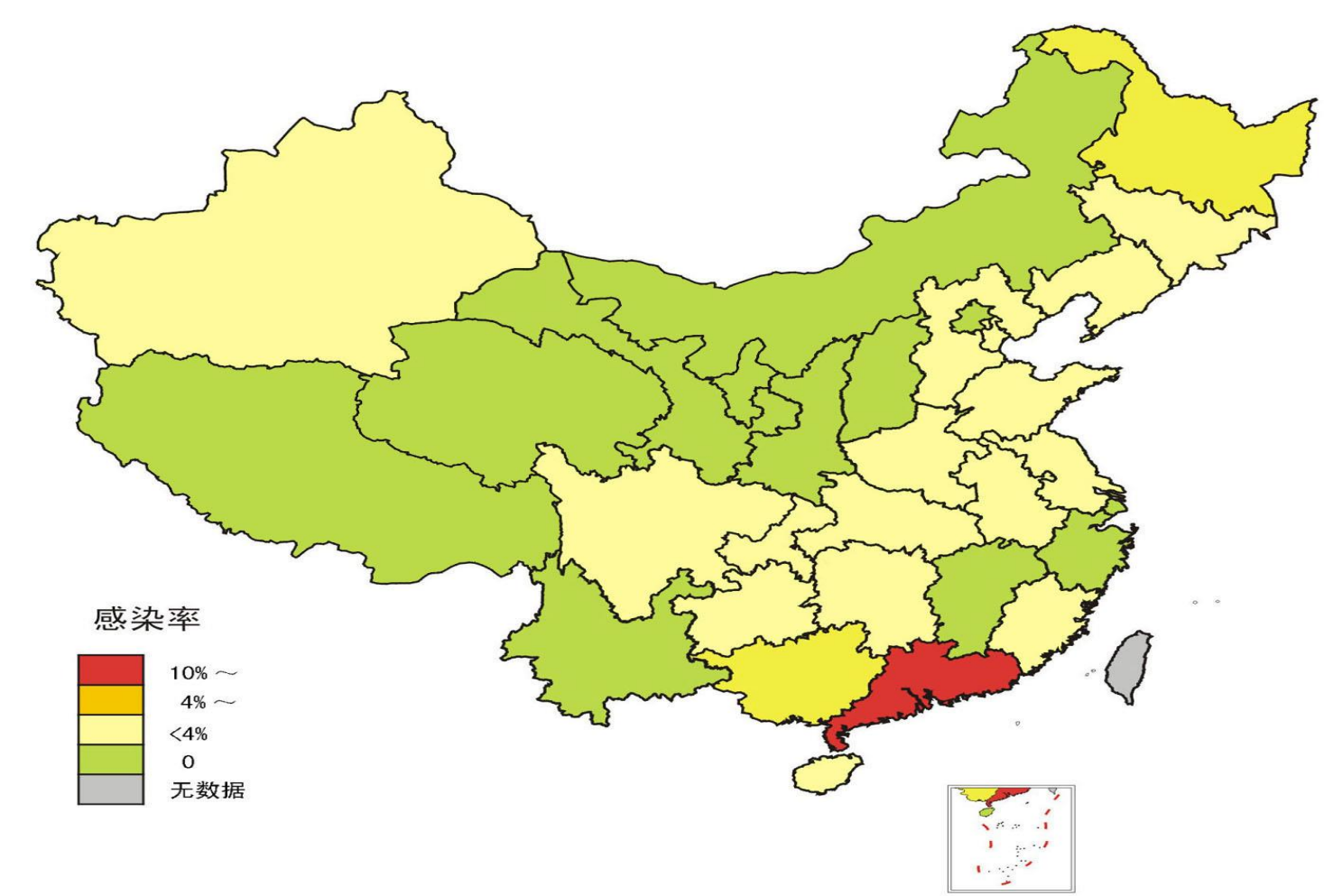
1.About *Clonorchis sinensis*

- 2009,WHO-IARC, concluded that a sufficient evidence between *C. sinensis* and Cholangiocarcinoma(CCA).

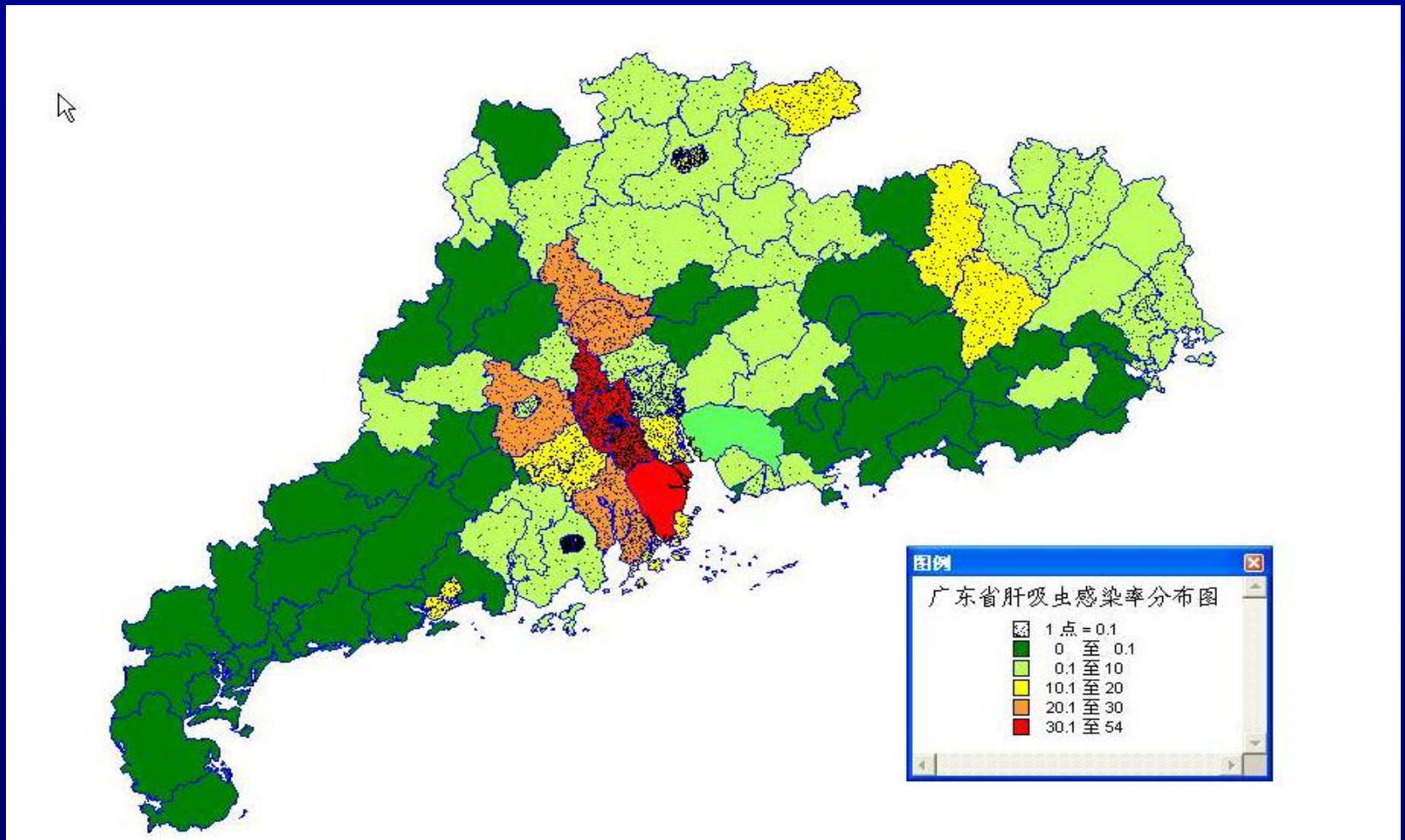

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans
Volume 100B: Biological Agents, Lyon, France, 24 February-3 March 2009

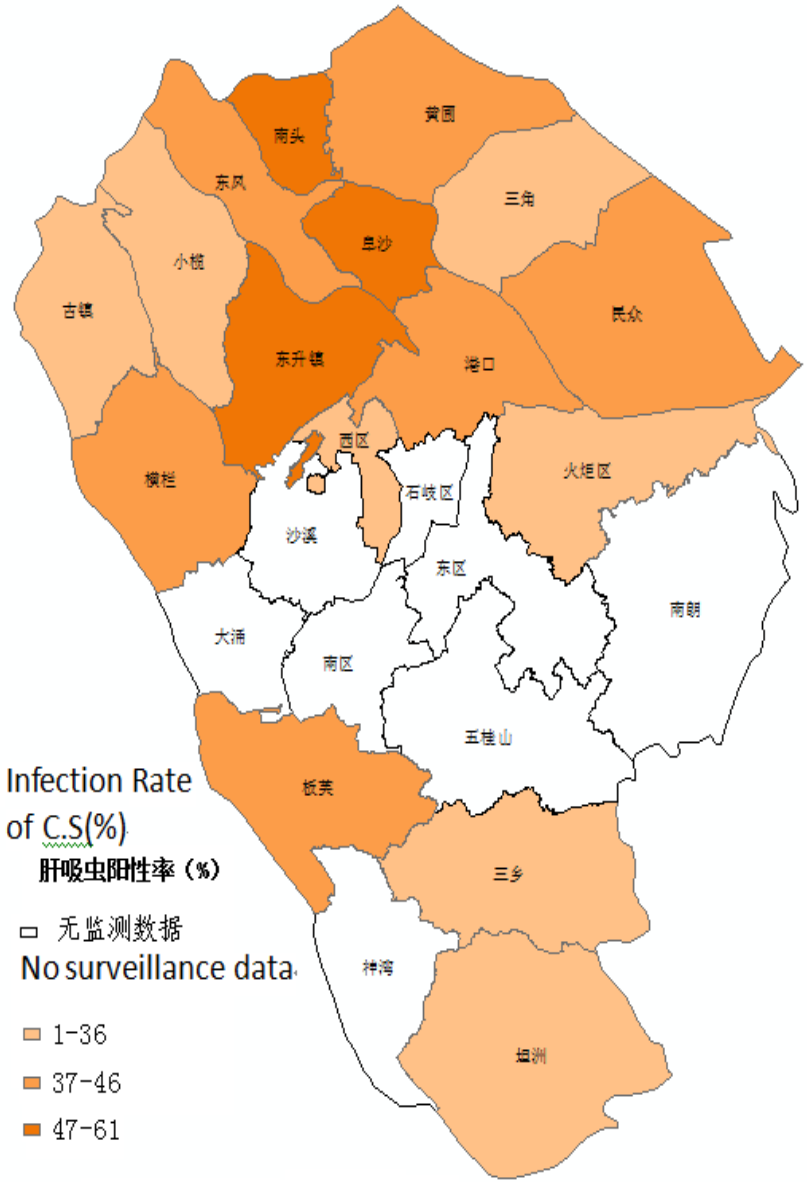

N
Russia
North Korea
Korea
China
Vietnam
C. sinensis endemic areas
O. viverrini endemic areas
Laos
Cambodia
Thailand
Malaysia
Estimated Number of Infected People
China - 12.5 million (CS)
Korea - 1.3 million (CS)
Thailand - 6 million (OV)
Laos - 2 million (OV)
Vietnam - 2 million (CS+OV)
Cambodia - 0.6 million (OV)
Endemicity Level
No local transmission
0.1-2.0%
2.1-5.0%
5.1-10.0%
10.1-17.0%
Sporadic case report
Suspected endemicity
Endemic (unknown level)
Major rivers
0 250 500 1,000 1,500 2,000
Kilometers

The Map of Distribution of *C.s* in China
(2002-2004 national survey)



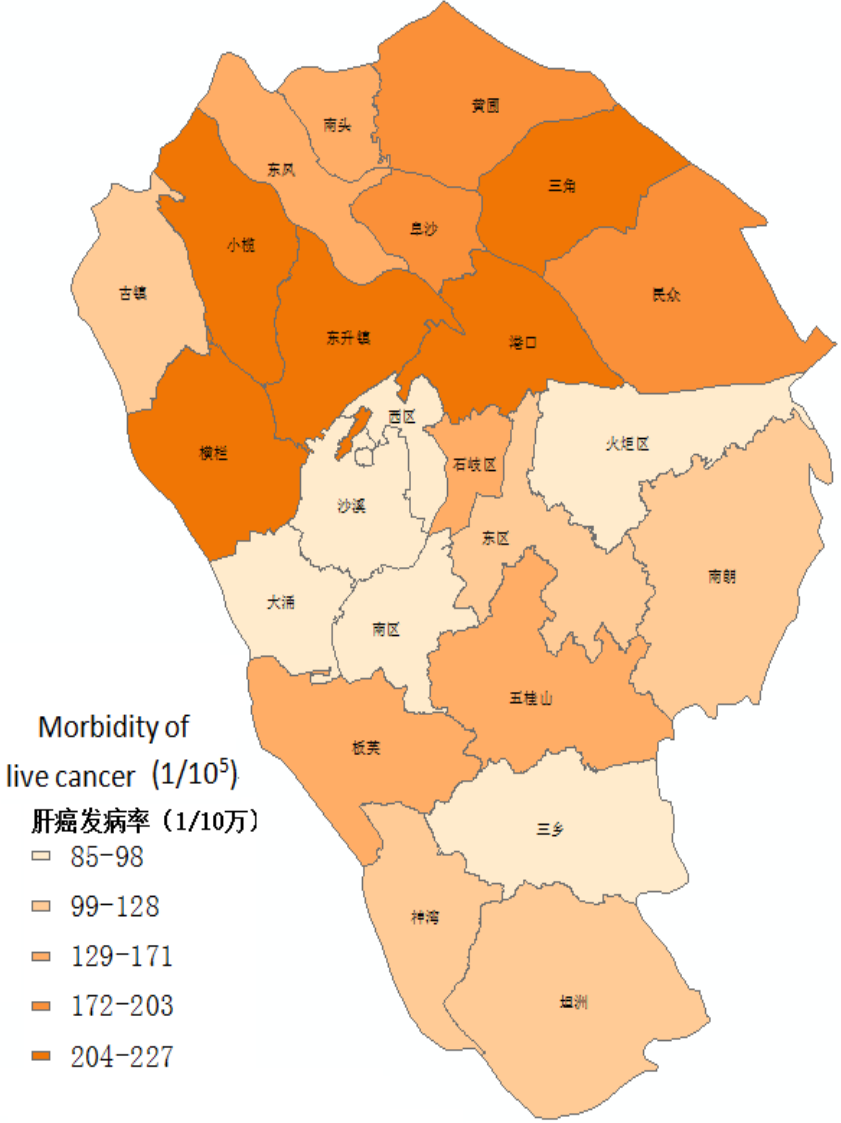
The Map of Distribution of *C.s* in Guangdong Province





广东省中山市肝吸虫感染分布地图

The Map of Distribution of C.S in Zhongshan city in Guangdong province, China



广东省中山市肝癌发病分布地图（2006-2010）

The Map of Distribution of the Morbidity of Liver Cancer in Zhongshan city, Guangdong, China, 2006-2010

3. Transmission factors

1. Source of infection: infected human and animals.
2. First and second intermediate hosts (fresh water snail and fish)
3. Water contamination

- Water contamination by human and animal feces
- Simple “lavatory” and animal sheds by ponds or ditches; during the raining season feces is easily washed into water way.

Mode of infection (1)

Eating raw fish or congee with raw fish;

In southern China and among the Cantonese population in the Hong Kong Special Administrative Region, raw fish is traditionally eaten after being dipped in rice congee. Alternatively, large fish are sliced and eaten with ginger and garlic known as "*yushen*." This mode of transmission tends to increase with age (Fang *et al.*, 2008).

Mode of infection (2)

Eating under-cooked small fish

—— Children

In the upper stream area of the Pearl River and Hanjiang River, children and teenagers frequently catch small fish in rivers and ponds, eating them after baking or roasting, or eating sun-dried and dry salted fish. This mode of transmission tends to decline with age (Fang *et al.*, 2008)

Mode of infection (3)

Infection due to using metacercaria-contaminated utensils or hands:

- **Knives, cutting board,bowls, tray for raw fish dishes**
- **Contaminated cooked food through these unwashed utensils in or after cooking**

- **Those people who frequently catch fish, housewives and cookers take food with their unwashed hands after handling raw fish**

New epidemiological characteristics of *C.s*

Living standard improved

Infection rate tends to increase gradually

- **Remarkable family clustering**
- **Some typical local dishes become more popular**
- **Raw fish dishes are on the restaurant and family menu**
- **In New Year celebration or special occasions, raw fish dish is a hospitable sign.**

4. Intervention Strategies

- 1.Chemotherapy
- 2.Feces management
- 3.Education and Health Promotion

Chemotherapy(1)

- **Target treatment:** In the community clinic, the special clinic for clonorchiasis should be set up for rapid diagnosis and treatment.



Chemotherapy(2)

- **Select treatment: In the endemic area, the patients should be treated by batch in different periods.**



Chemotherapy(3)

- **Mass treatment: In the high epidemic areas, such as in Pearl River Delta, if the infection rate of *C.s* is over 40%, the mass chemotherapy should be carried out in order to reduce the cost for each person's stool examination and treatment, and prevent the missing of examination and treatment.**



Feces management(1)

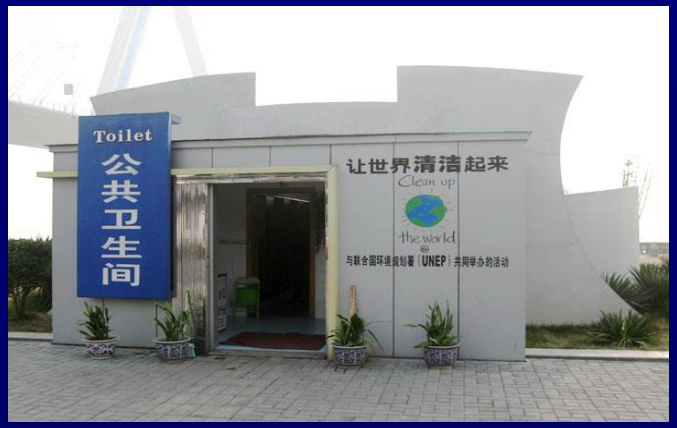
- **breaking down the lavatories which built over the fish-ponds**





Feces management(2)

- **setting up sanitary lavatories**





Feces management(3)

- **effectively managing the feces, feeding the fishes without the human or animal feces.**
- **The goal of all these methods is to prevent eggs of *C.s* from entering fish-ponds**

Education and Health Promotion(1)

- **1.Provide some videos about the biology, control and prevention of *C.sinensis* to the public.**
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Education and Health Promotion(2)

- **2. given lectures to the students and villagers about the control and prevention of this disease.**





Education and Health Promotion(3)

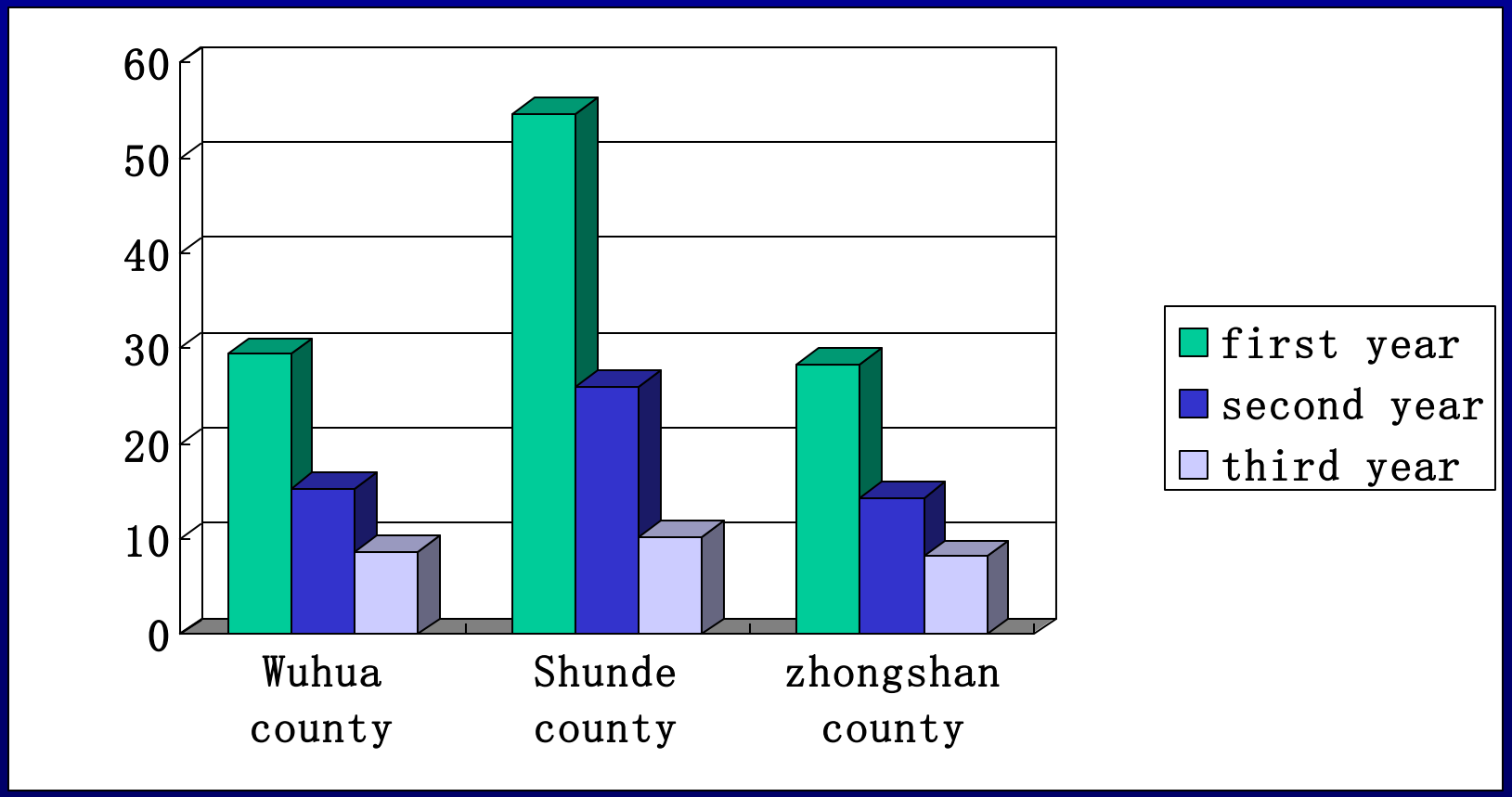
- **3. Posters and booklets for the public are also encouraged.**



Effect of intervention strategies on prevalence of C.s in Yangshan county

year	No. of new sanitary lavatories	No. of Educated persons	No. of treated persons	Infection rate %
2006	7760	33016	—	14.01
2007	3289	57524	29250	9.05
2008	2812	41725	13469	5.30

Effect of intervention of C.s infection of three pilot sites



5. Recommendation

- 1.Culture safe fish
  2.Eat fish safely
  3.Prevention &Control

Culture safe fish(1)

- Use the lime to clean the fish pond by killing snail before fish culture .
- Prevent the human and animal feces entering the fish pond



Culture safe fish(2)

- **Strengthen the monitoring of fish**







Eat fish safely(1)

- Advise people not to eat raw fish
- Eat the fresh water fish cooked thoroughly

Eat fish safely(2)

- Use the cutting board separately for raw fish and for cooked food





Prevention and control

- Strengthen health education and promotion to the public
- Strengthen the training of technical staff in order to diagnose and treat more patients
- Control: more treatment in the endemic area

More education



Strengthen training









More treatment




Thank You !