

# Surveillance and control of Crimean-Congo Haemorrhagic Fever in Bulgaria

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# Bulgaria - background information

- **Situated in Southeastern Europe**
- **Territory 110 912 km<sup>2</sup> ; 28 administrative regions**
- **Total population 7 718 750**
- **Urban areas population 70,2%**
- **Live birth 71 075**
- **Birth rate 9,2 / 1000**
- **Mortality rate 14,6 / 1000**
- **Natural growth - 5,4 / 1000**
- **Life expectancy 72,4 yrs. (2002 - 2004)**

*National Statistics Institute, demographic data for 2005*



# Overview

History

Organism

Transmission

Epidemiology

Geographic distribution

Surveillance and control

# History

*Bulgaria is an endemic area for CCHF*

- ⇒ Scientific history of Crimean-Congo haemorrhagic fever (CCHF) in Bulgaria after Second World War
- ⇒ Official registration of CCHF in Bulgaria since 1952
- ⇒ The biggest epidemic in Soumen region (north-eastern Bulgaria) in 1954-1955 with **about 300 cases of CCHF** (Figure 1)

# Incidence rate per 100 000 population and tendency in Bulgaria 1946 - 2005

Figure 1

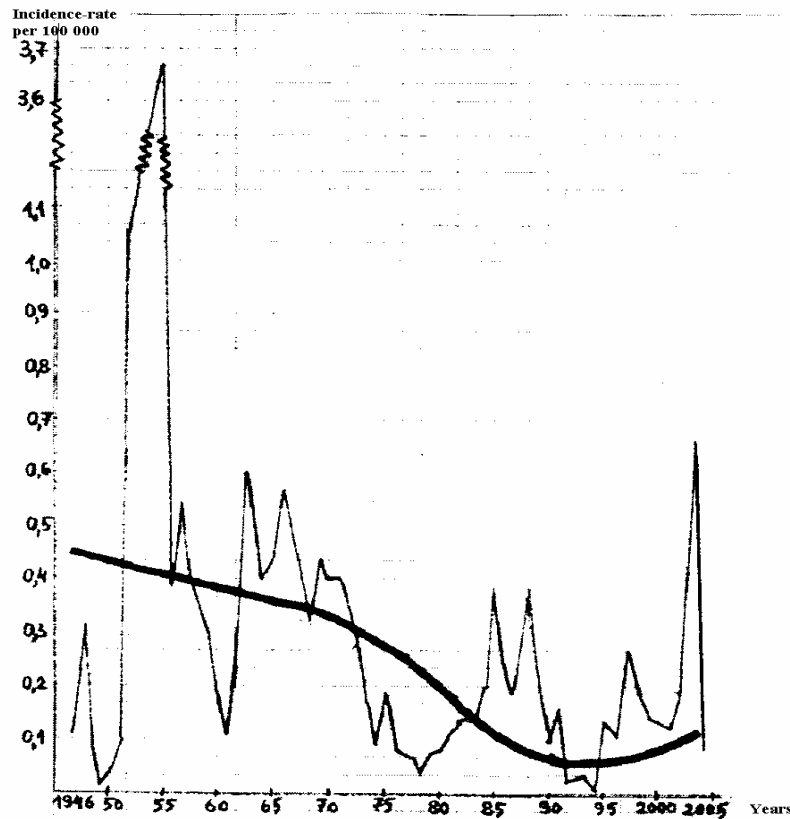


Fig. 1 Incidence-rate and its tendency

# Organism and transmission

**Nairovirus** genus

⇒ **Bunyaviridae** family

**Transmission** mainly by

⇒ *Ixodid* tick

**Data for Bulgaria**

⇒ *Hyalomma marginatum*, *Rhipicephalus sanguineus*,  
*Boophilus calcaratus*, *Ixodes ricinus*, *Rhipicephalus bursa*

# Epidemiology

**CCHF is found in most of the areas of:**

- ✓ Sub-Saharan Africa
- ✓ Eastern Europe including Bulgaria
- ✓ Asia and North-western China

**Reservoir and vector**

- ✓ **Ixodid ticks**, especially those of the genus *Hyalomma*
- ✓ Numerous wild and domestic animals - cattle, goats, sheep and hares, serve as amplifying hosts for the virus

# Epidemiology

**CCHF is zoonosis with natural focus of infection**

**Characteristic of natural foci (NF) of infection in Bulgaria**

- ⇒ foothilly and hilly areas with pasture – ground
- ⇒ uncultivated land, overgrown with grasses, bushes and weeds
- ⇒ appropriate humidity with yearly rainfall under 650 mm/m<sup>2</sup>

The NF are situated between 300-600 m over sea level

*These conditions are favorable for epizootic process*

# Geographic distribution

The nosoareals of CCHF in Bulgaria are studied in deep

The NF are card – indexed and mapped (Figure 2)

The NF are distributed in Natural foci zones (NFZ)

The NFZ with highest **epidemic activity** are situated in south-eastern Bulgaria (Figures 2 and 3)

- ⇒ The region of Shoumen
- ⇒ The region of Burgas
- ⇒ East Sredna gora mountain
- ⇒ East Rodopy mountain

# Natural foci zones (NFZ), Bulgaria

Figure 2

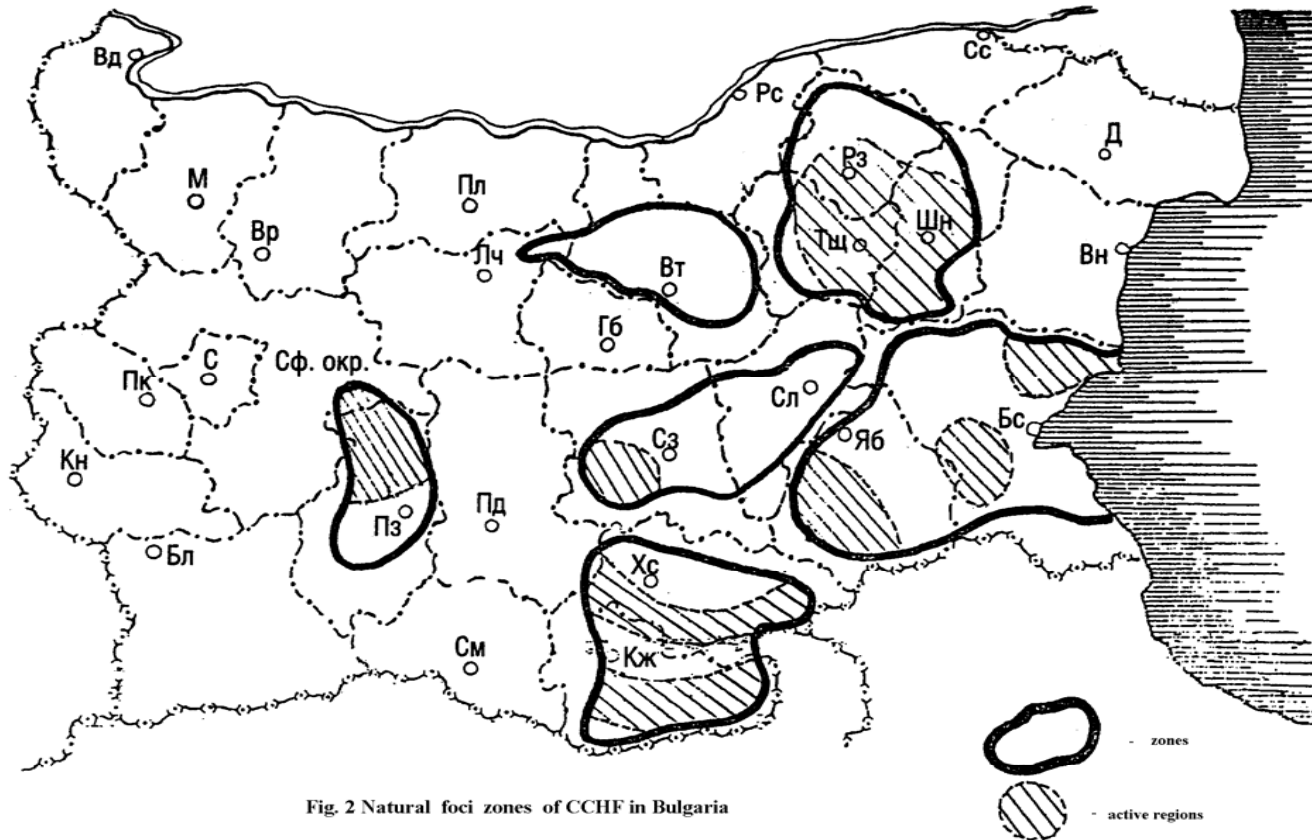
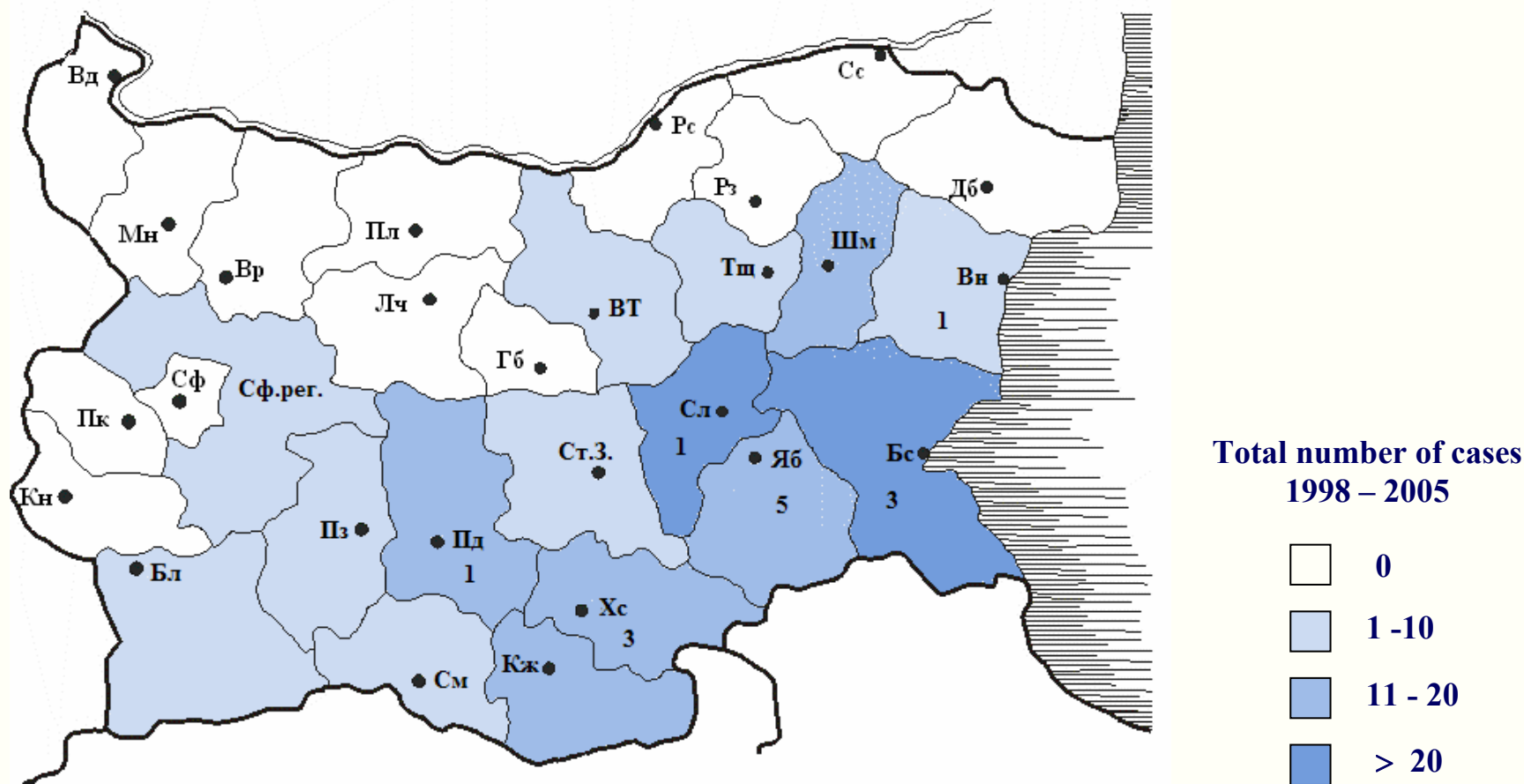


Fig. 2 Natural foci zones of CCHF in Bulgaria

# Geographic distribution of Crimean-Congo haemorrhagic fever cases and number of cases in Bulgaria 2005

Figure 3

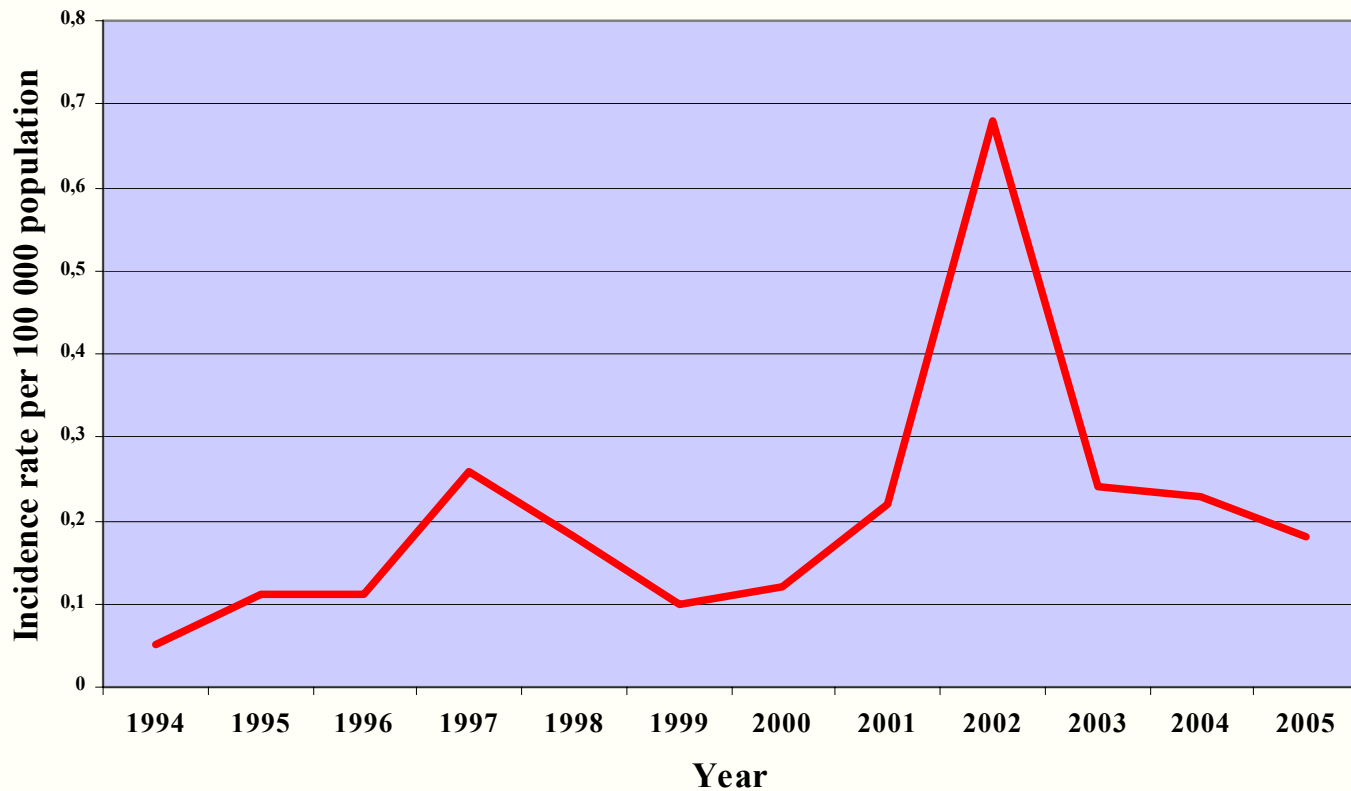


# Present situation

- ✓ **The number** of CCHF cases lately varying from 10 to 15 cases per year
- ✓ **The incidence rate and trends** of CCHF during the period 1994-2005 (Figure 4) - two picks
  - ⇒ 1997
  - ⇒ **2002**
- ✓ **Seasonal dynamic** of CCHF - cases mostly occurring during the spring and summer
  - ⇒ *pick in May – July*

# Crimean-Congo haemorrhagic fever Incidence rate per 100 000 population in Bulgaria 1994 – 2005

Figure 4



# Risk groups

## Professional risk groups:

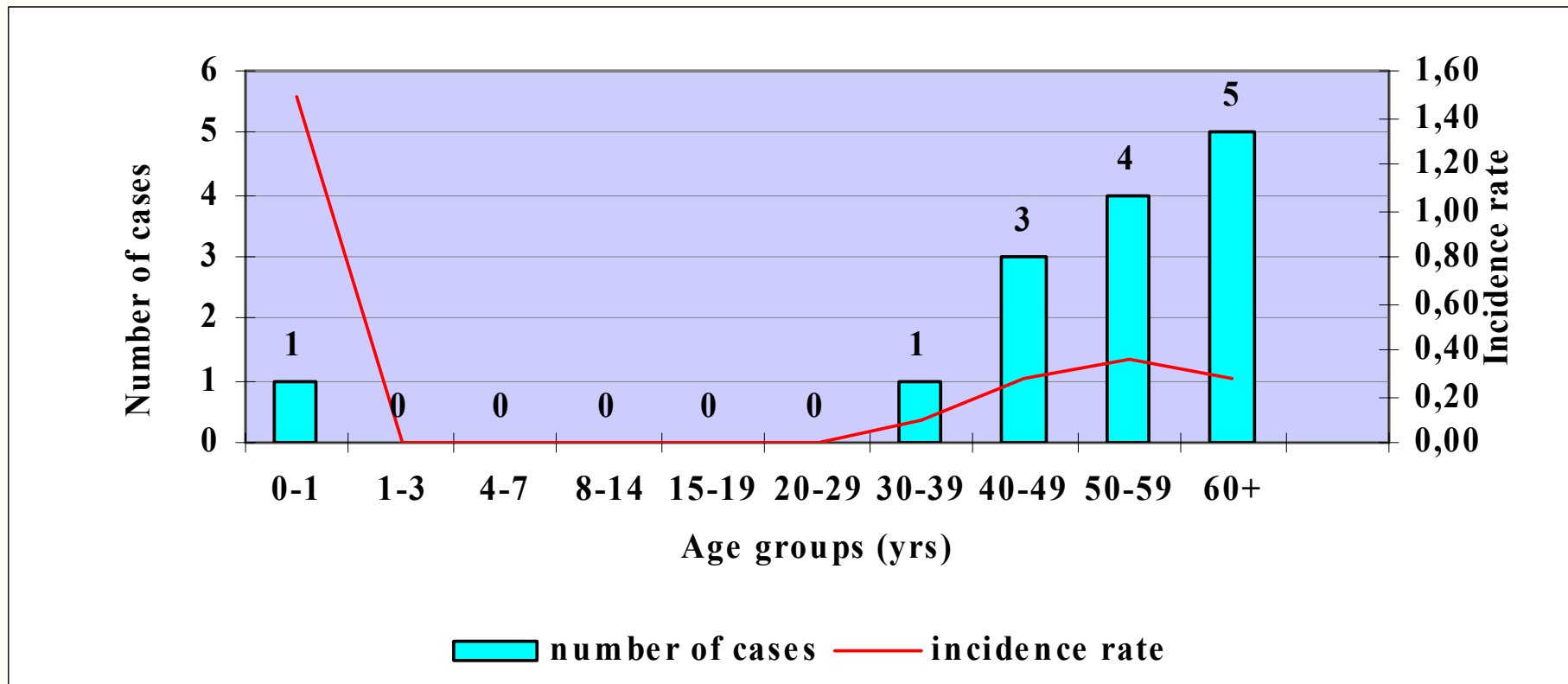
- ⇒ farmers
- ⇒ stock-breeders
- ⇒ farming pensioners
- ⇒ health-care workers

## Age risk groups:

- ⇒ Figure 5

# Number of cases of CCHF and incidence rate per 100 000 population by age groups in Bulgaria 2005

Figure 5



# Achievements

## Good understanding on:

- ⇒ epidemiology, clinic, diagnostic, immunology of CCHF
- ⇒ reservoirs and vectors of the disease
- ⇒ mechanisms of transmission
- ⇒ risk groups of the population

and

*Principles of surveillance and control*

# Surveillance and Control

## Legal framework for Communicable disease surveillance

- ✓ Law on Health
- ✓ Regulation № 21 of the MoH of 18 July 2005 for registration, notification and reporting of communicable diseases (CD)

including

- ✓ List of CD subject to compulsory reporting
- ✓ Case definitions

# List of communicable diseases subject to compulsory reporting

Amoebiasis  
Anthrax  
Ascariidosis  
Bacterial Meningitis and Meningoencephalitis  
    *specified*  
    Pneumococcal  
    Streptococcal  
    H. influenzae t. B  
    Other bacteria  
    *unspecified*  
Botulism  
Brucellosis  
Campylobacter infection  
Chlamydia trachomatis, genital infection  
Cholera  
Cryptosporidiosis  
Diphtheria  
Echinococcosis  
Escherichiosis (Colienteritis)  
Infection with entero-haemorrhagic  
Escherichia coli (EHEC)  
Gastroenteritis, enterocolitis  
Giardiasis  
Gonorrhoea  
Haemophilus influenzae type b, invasive infection  
HIV / AIDS  
Hymenolepidosis  
Influenza and ARD  
Legionellosis  
Leishmaniasis  
Leptospirosis  
Listeriosis  
Lyme Disease  
Malaria  
Measles  
Mediterranean Spotted Fever  
Meningococcal infection (meningococcal meningitis and sepsis)

Mumps  
Pertussis  
Plague  
Poliomyelitis  
    Acute Flaccid Paralysis  
Psittacosis (Ornithosis)  
Q-Fever  
Rabies  
Rubella  
    Congenital Rubella  
Salmonellosis  
Scarlet Fever  
Severe Acute Respiratory Syndrome (SARS)  
Shigellosis  
Smallpox  
Streptococcus pneumoniae, invasive infection  
Syphilis  
Tetanus  
Teniarinchosis  
Toxoplasmosis  
Trichinellosis  
Trihocephalosis  
Tuberculosis  
Tularemia  
Typhoid / Paratyphoid Fever  
Typhus exanthematicus (Epidemic louseborne typhus fever)  
Variant Creutzfeldt-Jakob's disease  
Varicella  
Viral Haemorrhagic fevers:  
    Ebola/Marburg fever  
    Lassa fever  
    **Crimean-Congo Hemorrhagic Fever**  
    Hemorrhagic Fever with Renal Syndrome  
Viral Meningitis and Meningoencephalitis  
Yellow Fever  
Yersiniosis

# Crimean-Congo haemorrhagic fever

## Case definition

### *Clinical description*

An illness of gradual onset with acute high fever, chills, myalgia, nausea, anorexia, vomiting, headache and backache

### *Laboratory criteria for diagnosis*

- ⇒ Virus isolation
- ⇒ Detection of CCHF virus nucleic acid
- ⇒ Positive serology, which may appear late in the course of the disease

### *Case classification*

**Possible:** N.A.

**Probable:** A clinically compatible case with an epidemiological link

**Confirmed:** A clinically compatible case that is laboratory confirmed

# Surveillance and Control

**Three levels compose the surveillance structure**

- ⇒ central
- ⇒ intermediate
- ⇒ peripheral

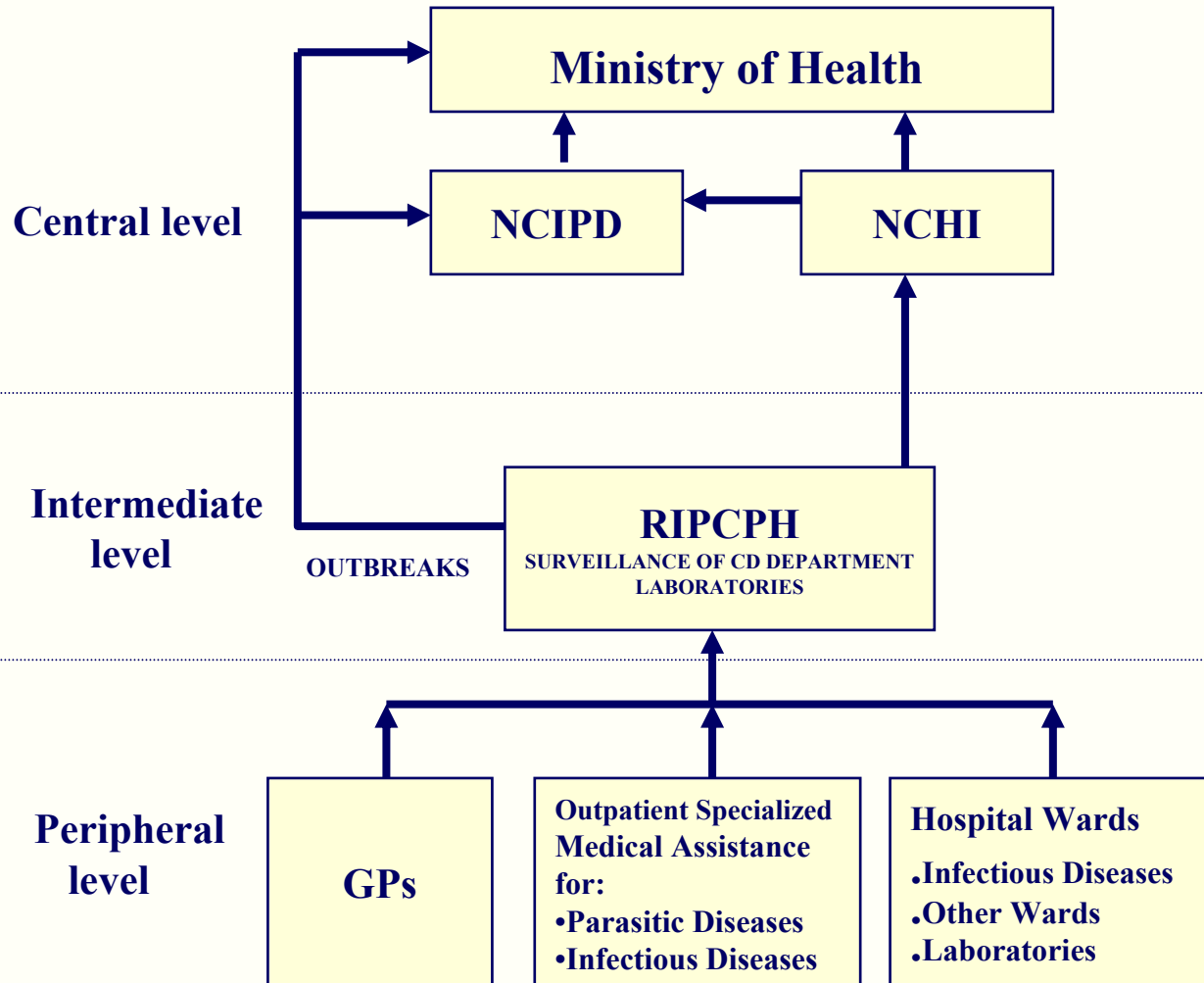
**Laboratory network assist the surveillance structure**

**Structure of CD surveillance**

- ⇒ based on a vertical exhaustive compulsory notification
- ⇒ flow of information is simple and direct

**Case notification from peripheral to intermediate level within 24 hours**

# General flow of information, Bulgaria



RIPCPH – Regional Inspectorate of Prevention and Control of Public Health; NCIPD – National Centre of Infectious and Parasitic Diseases;

NCHI – National Center of Health Information

# Control

## **Well-managed livestock production facilities**

⇒ tick vectors control with acaricides

## **Management of NFZ**

⇒ melioration of bushes and weeds

⇒ tick vectors control with acaricides in parks and inhabited places

## **Personal protective measures for persons in endemic areas**

⇒ avoidance of areas where tick vectors are abundant

⇒ regular examination of clothing and skin for ticks

⇒ use of repellents

# Control

## Immunoprophylaxis

⇒ since 1970<sup>th</sup>

⇒ inactivated (produced from local viruses) vaccine against CCHF

with

⇒ high immunogenicity

⇒ low reactogenicity

## Vaccine is recommended for risk group of population

⇒ farmers

⇒ stock-breeders

⇒ farming pensioners

⇒ health-care workers

*Thank you!*