

Epidemiology of Viral Hepatitis in Bulgaria

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Surveillance of VH: from case to analysis registration, notification, case definitions, data flow ...

- Registration of viral hepatitis in Bulgaria is introduced in 1952
- Since 1983 registration of VH is separated into: HAV, HBV and HV NANB
- Later, due to improvement of specific lab tests additional hepatitis markers were introduced and HDV and HCV surveillance is incorporated in the Surveillance system of VH .
- Since 2005 surveillance system is updated according to the requirements of the EU:
 - case definitions for acute HAV, HBV, HCV & chronic HBV, HCV were accepted;
 - cases are arranged in groups according to sex , age, category;
 - additionally annual data for new asymptomatic HBsAg careers is collected as well as data for chronic HBV and chronic HCV
 - VH surveillance covers acute cases of HAV, HBV, HCV, HDV, VH unspecified.

ORDINANCE № 21
of 18 July 2005

On the procedure for registration, notification and reporting of communicable diseases

Article 2. The communicable diseases specified in Annex 1 are subject to obligatory registration, notification and report.

(3. Viral hepatitis:

13.1. acute viral hepatitis A, B, C, D, unspecified

13.2. chronic viral hepatitis B, C, D

Article 8. The notification of the communicable diseases under article 6 and the positive laboratory results under article 7 is made with a rapid notification in the form stipulated in Appendix № 6, and via telephone, fax or e-mail. The rapid notification specifies the case category as per article 3, paragraph 1.

Article 12. (1) In case of a proven infection carrying, the carriers of the infection are reported with a rapid notification only upon detection.

(2) The chronic diseases (brucellosis, tuberculosis, chronic virus hepatitis) are reported once upon detection.

Article 17. Each case of an epidemic outbreak will be **immediately reported** to the Regional Inspectorate for Protection and Control of Public Health by the medical specialist who has detected it.

Article 18. Each case of hospital infection outbreak will be reported as provided for by the ordinance under article 60, paragraph 4 of the Health Act..

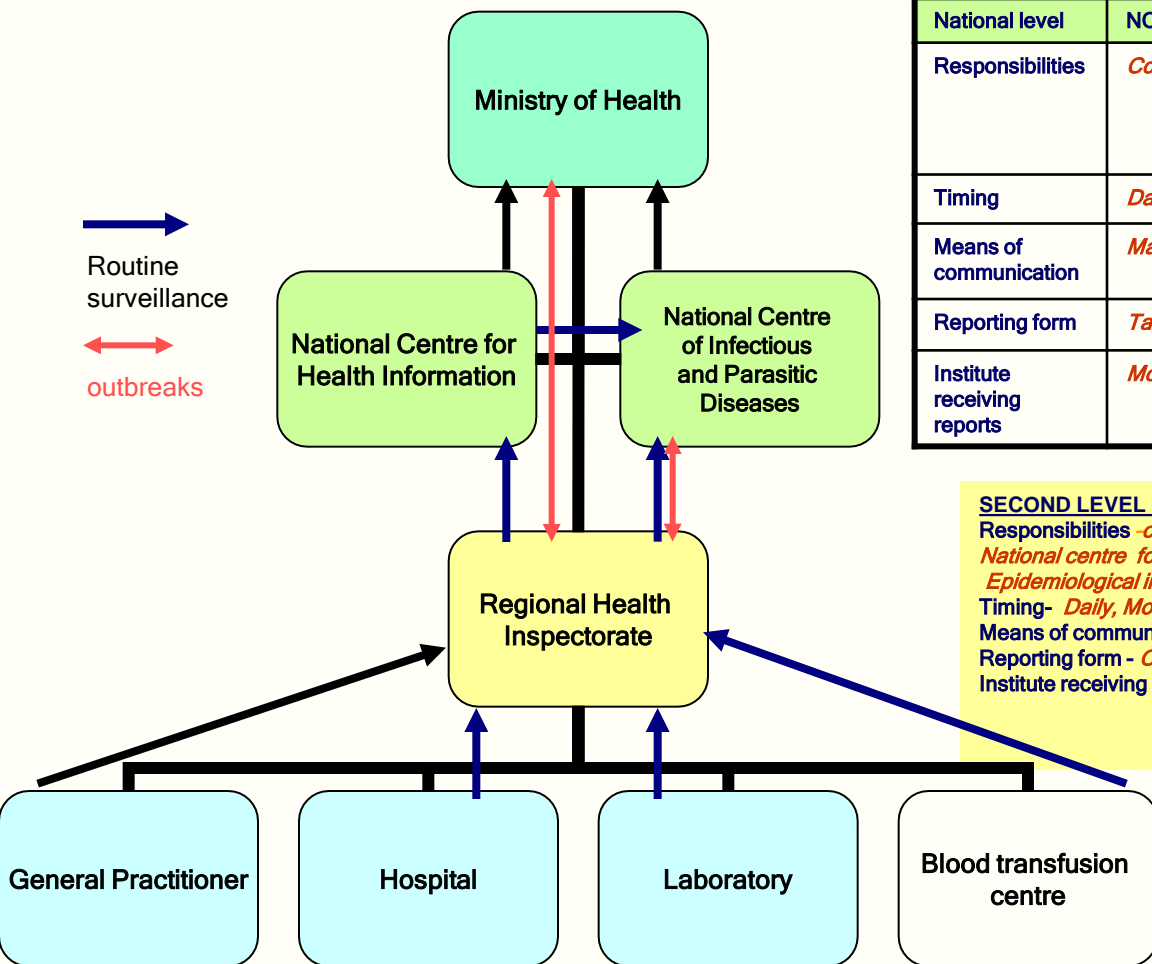
Case definitions for Acute Viral hepatitis

	Clinical Criteria	Laboratory criteria	Case Classification
Acute HAV	Symptomatic cases with typical clinical picture of hepatitis with gradually development of symptoms (fatigue, abdominal pain, loss of appetite etc.) and jaundice or elevated serum aminotransferase levels	Anti-HAV IgM + or HAV RNA positive or HAV in feces	Probable: Case with typical clinical picture and epidemic link Confirmed: Probable Case with typical clinical picture and lab confirmed
Acute HBV		Anti-HBc IgM + or HBV DNA positive	Probable: HBsAG + Case with typical clinical picture of acute VH Confirmed: Case is lab confirmed
Acute HCV		Anti-HCV + or HCV RNA in clinical specimen	Confirmed: Lab confirmed clinical case
Acute HDV		anti - HDV IgM/ IgG+ HBsAg+ HDAg in clinical samples HD NA in clinical sample	Probable: Case with typical clinical picture of acute VH, HBsAg+ , with complications Confirmed: Case with typical clinical picture and lab confirmed
Acute VH unspecified		negative for specific serology of HAV,HBV,HCV,HDV,HEV Negative for NA of HAV,HBV,HCV,HDV,HEV	Probable: Case with typical clinical picture of acute VH Confirmed: Case with typical clinical picture which is not confirmed through lab tests

Case definitions for chronic viral hepatitis

Clinical Criteria	Laboratory criteria	Case Classification
<p>Chronic HBV</p> <p>Clinical picture typical for chronic hepatitis and lab evidences</p>	<p>HBsAg+ for period > 6 mos</p> <p>HBV DNA+ for period > 6 mos</p>	<p>Probable: Case with typical clinical picture of chronic VH</p> <p>Confirmed: Probable Case with typical clinical picture of chronic VH and lab confirmed</p>
<p>Chronic HCV</p> <p>Clinical picture typical for chronic hepatitis and lab evidences</p>	<p>Anti-HCV + for years</p> <p>HCV RNA + for years</p>	<p>Confirmed: Lab confirmed clinical case, typical for chronic hepatitis</p>
<p>Chronic HDV</p> <p>Clinical picture typical for chronic hepatitis and lab evidences</p>	<p>HBsAg+</p> <p>Anti HDV</p>	<p>Probable: HBsAg + Case with typical clinical picture of chronic VH with complications</p> <p>Confirmed: Case with typical clinical picture for chronic hepatitis and lab confirmed</p>

Surveillance of Viral Hepatitis (VH)



National level	NCHI	NCIPD
Responsibilities	<i>Computerized data processing</i>	<i>Data analysis and interpretation Exchange of surveillance data Investigation of large-scale outbreaks and epidemics ; Feedback</i>
Timing	<i>Daily, Weekly, Monthly, Annually</i>	<i>Weekly, Annually</i>
Means of communication	<i>Mail</i>	<i>WEB bulletin</i>
Reporting form	<i>Tabular</i>	<i>Annual CD Report</i>
Institute receiving reports	<i>MoH, NCIPD, RHI</i>	National: MoH, RHI; International: WHO; ECDC

SECOND LEVEL - INTERMEDIATE *Regional Health Inspectorate (RHI)*
 Responsibilities - *collect reports, send aggregated data of suspected/ confirmed cases to National centre for health information (NCHI)
 Epidemiological investigation of cases/contacts and outbreaks*
 Timing- *Daily, Monthly, Annually*
 Means of communication- *Fax, mail, e-mail*
 Reporting form - *Case investigation form ; Tabular, CD Report form;*
 Institute receiving reports - *NCHI, MoH (reports for outbreaks),*

FIRST LEVEL – NOTIFIER: HEALTH CENTERS, GPS, HOSPITALS,
 Responsibilities - *identify cases, complete and send reporting form*
 Timing - *Within 24 hours*
 Means of communication - *Mail, telephone, e-mail, fax*
 Reporting form - *Rapid notification form*
 Institute receiving reports- *RHI*

Sources of epidemiologic information for viral hepatitis

Surveillance - *basic method in use in Bulgaria*

Reflects recent exposures

- **cases**- epidemiological investigation
- **contacts** -epidemiological investigation, medical observation incl. urine or blood lab tests ;

Seroprevalence data (Exposures over lifetime; Demonstrates underlying pattern of immunity in population)

HAV

- studies not performed within last 2 decades → no data

HBV

- studies before introduction of vaccination programme
- studies related to specific risk groups / HCWs
- studies of nosocomial outbreaks

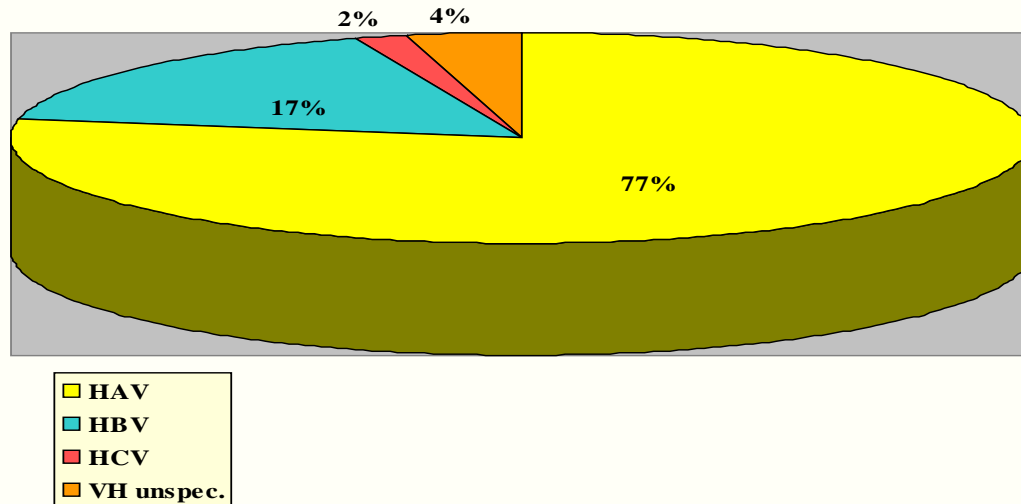
HCV

- studies of nosocomial outbreaks
- related to specific risk groups / HCWs

Endemicity of Viral Hepatitis in Bulgaria

	Usual Age of Patients (years)	Reported Disease Incidence (per 100,000/year)	Transmission Patterns
Viral hepatitis A (HAV) Endemicity: Intermediate	4-24	12-150	person to person; food and waterborne; periodic epidemics
Viral hepatitis B (HBV) Endemicity: Intermediate HBsAg carriers- 2-7%	15-29	35 (in 1984) -5 (in 2010)	sexual horizontal nosocomial infections
Viral hepatitis C (HCV) Endemicity: low Anti-HCV prevalence 1,3%	20- 34	0,5 - 1,8	sexual nosocomial infections IDUs

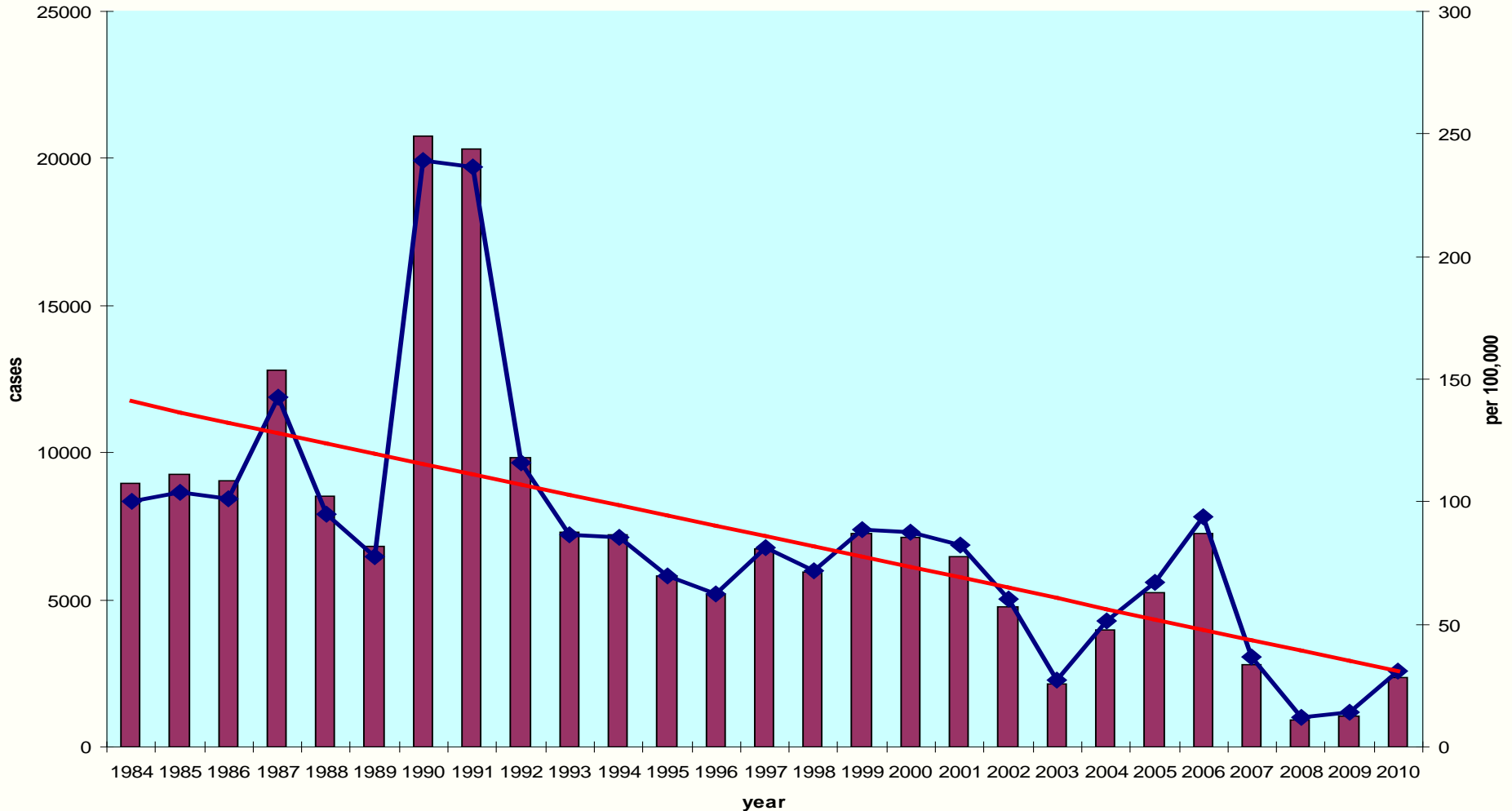
Viral hepatitis - general information for 1998-2010



- HAV represents the largest proportion of acute VH (average 77% for the period)
- Acute HBV - 17%
- Acute HCV -2%
- Acute HDV - 0,1% (2-8 cases per year)
- Death cases are mainly due to HBV(9-20 cases per year)
- isolated death cases of HCV or HAV

Acute Viral Hepatitis A

Annual incidence of Hepatitis A: 1984- 2010



Epidemiology of HAV

- 1990-1991 is the largest epidemic in the country, presented with total of 41 060 registered cases of HAV (IR 239 per 100,000 in 1990)
- Since this time a stable decrease of incidence is observed (the lowest IR 11,88 per 100,000 is registered in 2008 = 908 cases of acute HAV)
- incidence by age:
 - the most affected are children of age 1-14 y
 - cohorts of susceptible older children, adolescents and adults
- HAV outbreaks in schools, orphanages , centers for socio-medical care for children
- Variability in incidence within regions : the level of endemicity increases from west to east
 - **anti-HAVt seroprevalence 68.33%**. Vatev, N. T., M. V. Atanasova, et al. (2009). "Seroprevalence of hepatitis A viral infection in Plovdiv, Bulgaria." Folia Med (Plovdiv) 51(1): 70-3
- outbreaks in some regions (cities or villages) with large minority population of Roma people*
- People/ families with low socioeconomic status
- Prevalence of urban vs. rural spread of cases
- Cyclic dynamics (within period of 2- 6 years) of epidemic spread of HAV at national level
- Seasonal dynamics autumn/ winter

In 2005: 31 HAV epidemic outbreaks (> 600 cases) in 9 regions

Reasons: floods → change for worse of hygiene, living standards, drinking water supply, etc.

Transmission: person to person

Ineffective discovering of the sources

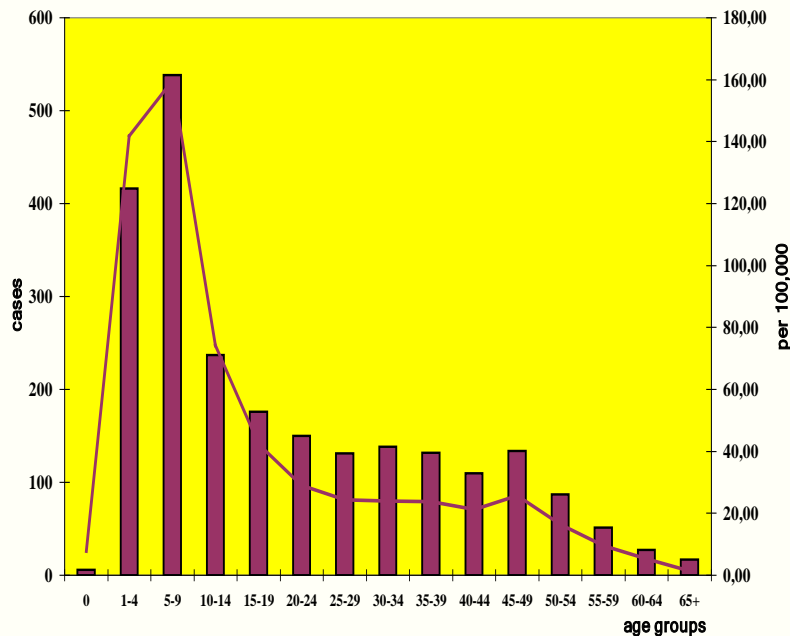
Contacts found and investigated

- 6 times more than cases;
- 20-25% of contacts developed HAV

- outbreaks in regions with large minority population of Roma people
- neighborhood in Plovdiv(2006):
affected ages - children and adolescents

Acute Viral hepatitis A, 2010

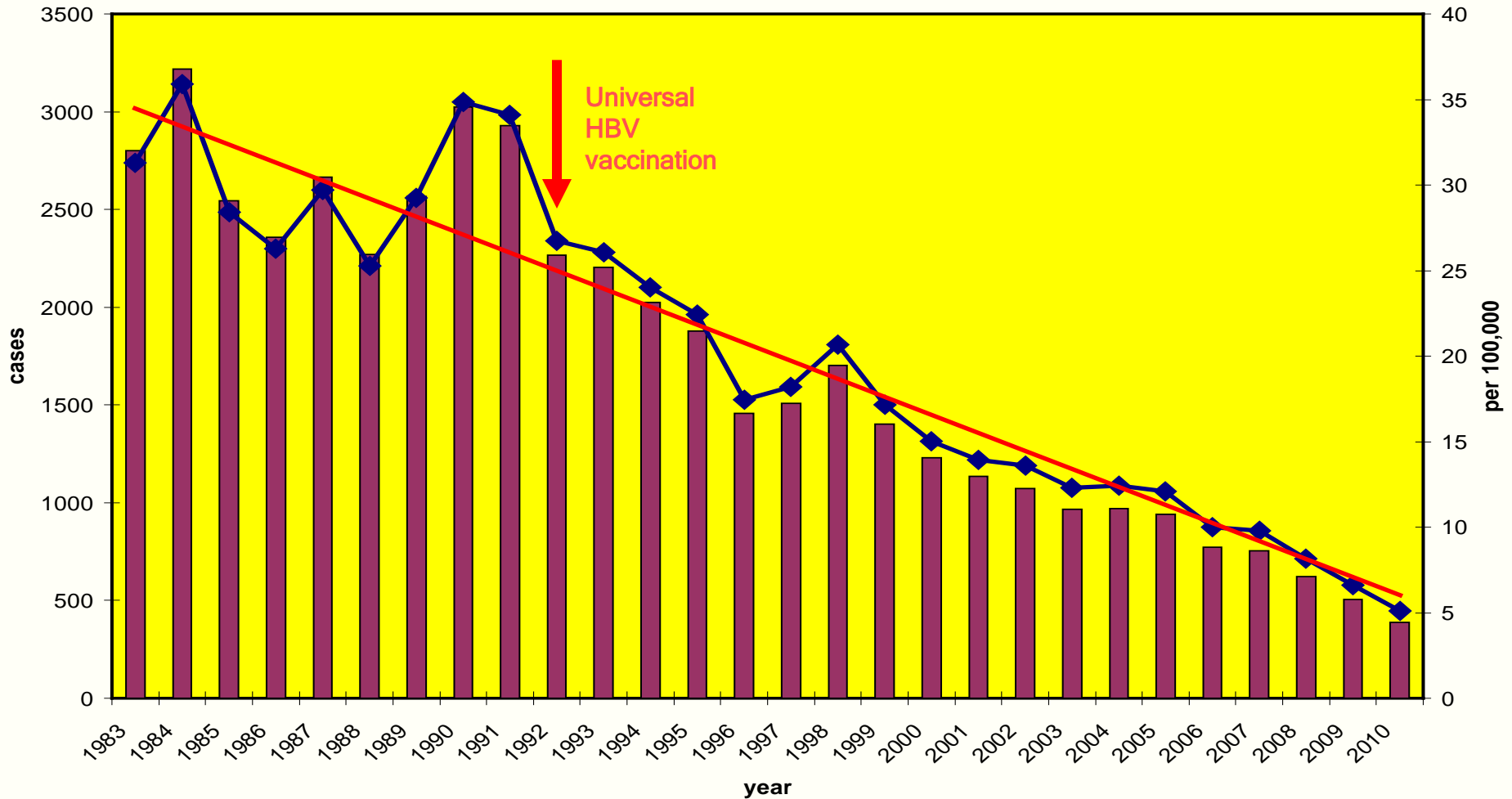
Acute Viral Hepatitis A in Bulgaria , 2010



- 2350 acute cases of VHA(31,07 per 100,000)
- All cases are confirmed- anti HAV IgM positive
- Most affected age groups: 5-9 y(538 cases;159,77 per 100,000); 1-4y (416 cases;141,74 per 100,000);
- Since September 2010, 6 regions(4 in south-east part of the country+ 2 in the west) registered the new epidemic increase of VHA :
 - Kustendil region: 132 cases (90,67 per 100,000); 100 cases were registered in the Roma minority quarter(833,33 per 100,000).All cases were hospitalised.
 - Plovdiv region: 283 cases(168 cases in 4 Roma minority quarters and villages). Affected ages - mainly children.
 - Stara Zagora region: 540 cases (153,88 per 100,000; 47% of cases were children 1-14y of age;

Acute Viral Hepatitis B

Acute viral hepatitis B: Annual incidence, 1983-2010



Factors of influence on the current epidemiology of acute viral hepatitis B

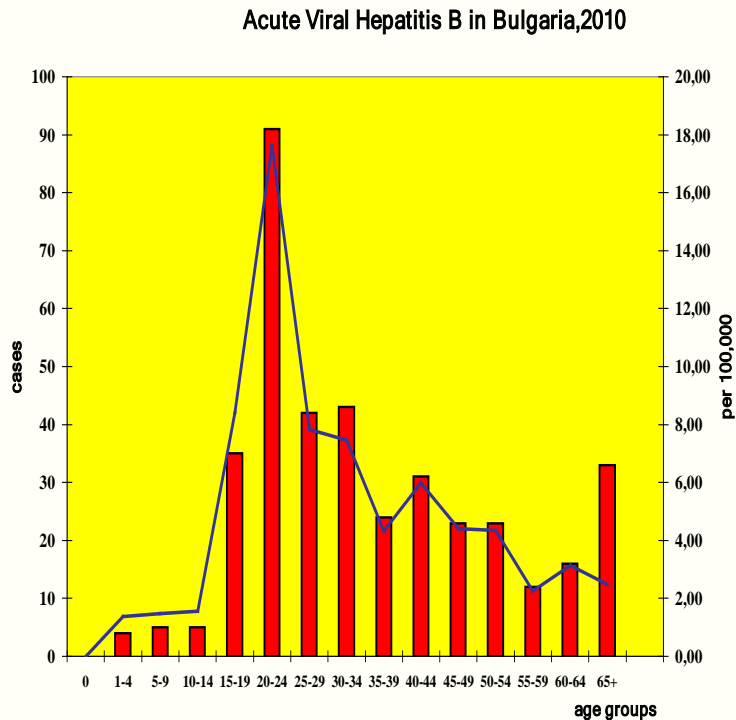
- 1992 - introduction of universal immunization of newborns
- 1992 - introduction of immunization of HCWs and medical students
- Improvement of specific lab diagnosis: quality and quantitative tests
- Screening of blood and blood products; donated tissues & organs
- Universal precautions applied in hospitals, BTC, labs, dentistry
- Use of disposable equipments (syringe+ needle and etc.)
- Training of medical personnel
- Introduction of medical standards

Additional contribution of:

- patient associations
 - pharmaceutical business
- } Informative campaigns & advertising activities

} Decrease of acute HBV incidence

Steady decrease of HBV incidence in age groups subject to vaccination



year	1992	2010	
Age group	incidence per 100,000	incidence per 100,000	Change (%)
0-1	7,99	0	-100
1-3	23,80	1,36	-94
15-19	58,68	8,40	-86

WHO JRF, Bulgaria 2010

specific incidence acute viral hepatitis B, confirmed cases

Microsoft Excel - JRF2010_BGR_Section1_ENG

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U_VA_com All cases of AVHB reported here as immunised(15 cases), received 3 doses of hep B vaccine. The age group 15-19y consists of two parts: children who have to be immunized obligatory(15-18 y) plus cases of 19 years old ,which were not immunized (by regulation in the country). Within the age group 15-19 y a total of 35 cases of AVHB were reported. Only 2 cases are under 19 y of age and are completely vaccinated with 3 doses Hep B vaccine. 2 cases are 18 y of age and do not have a proof for immunization. The rest of 31cases are nonimmunised.

1B. Disease incidence by vaccination status and age groups

Disease	Vaccination status	Age Group (Years)							Comments	
		<1	1 - 4	5 - 9	10 - 14	15 - 19	20 - 29	>30		unknown
Mumps	0 doses									
	1 dose									
	2 doses									
	Unknown									
Rubella	Not immunized									
	Immunized									
	Status Unknown									
HepB (Acute)	0 doses	0	0	0	0	31	133	205	0	
	1 dose	0	0	0	0	0	0	0	0	
	2 doses	0	4	5	4	2	0	0	0	
	Unknown	0	0	0	1	2	0	0	0	on in the country). Within the ac
Pertussis	0 doses									
	1 dose									
	2 doses									
	3+ doses									
Total Hib disease (meningitis and others)	Unknown									
	0 doses									
	1 dose									
	2 doses									
Meningitis C	3+ doses									
	Unknown									
	0 doses									
	1 dose									
	2 doses									
	3 doses									
	Unknown									

1B. Specific incidence / 2. Schedule-Source / 3.School_and_Add_Imm_delivery_ / 4A. Routine Coverage / 4B. Coverage Surveys / 4C. Subnational Coverage / 5. Official Estimates / 6A.

Ready

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Epidemiological investigation form of acute VHB case

126 (77)

МЗ
Регионална инспекция за опазване
и контрол на общественото здраве
Гр. Пловдив

КАРТА
ЗА ЕПИДЕМИОЛОГИЧНО ПРОУЧВАНЕ
НА ЗАРАЗНО БОЛЕМ

№ 95 X 2010 G

УТОЧНЕНА ДИАГНОЗА: Вирусен хепатит тип В

Име: Таня Николаевна Танчева Пол: Ж Възраст: 18.8.11 мес.

Гр./село: Пловдив ул. №: 13 с. С. Раковски

Къде работи, учи: ДМД 2, к-м 3, отд. епидем. 4, ул. 5, к-м 6, к-м 7, к-м 8

адрес: 1. ДМД 2, к-м 3, отд. епидем. 4, ул. 5, к-м 6, к-м 7, к-м 8

Професия: 15 16

Заразен в гр./село: 17

Забелян в гр./село: 18

Презледан за 1-ви път по повод заболяването: 19

Извънначална диагноза: Вирусна хепатита микробен

Диагноза потвърдена: 20

Болезиня открита: 21

Изолиран /хоспитализиран в: 22

Имунизиран срещу заболяването: 23

Имунизация: 24

Имунизиран срещу заболяването: 25

Важни данни за заболяването и епид. проучване:

А. Заболяна на: 21.09.2010 презледан: 21.09.2010 В. А. 27.09.2010 Е. Б. 29.09.2010

диагностично потвърждение: 21.09.2010 хоспитализиран: 21.09.2010 Г. А. 31.09.2010 Б. В. 33.09.2010

реимунизиран: 25.09.2010 Е. анд. проуч. датум: 25.09.2010 Д. А. 37.09.2010

Издиг от: 25.09.2010

Изолиран /хоспитализиран: 26

Вероятен източник на заразяване: 27

Фактори, участвували в механизма на предаване: 28

Контактни лица: В дома: 29 В колектива: 30 общ брой: 31 от тях заболели: 32

Вид на околното: 33 Сан. хиг. оценка: 34

Проверена дезинфекция: 35

Установени пропуски спрямо: 36

Епидемиолог. проучване е извършено от: 37

Собствено, бащино и фамилично име на контактните лица	Възраст	Професия	Адрес	Резултат от изследв.	Пробирка (сериен) №	Изход (сериен) №
1. <u>Мирюслав Танчев</u>	<u>18</u>	<u>д-р</u>	<u>постоянна в ДМД 2</u>	<u>#BstAg (+) neg</u>		
2. <u>Николина Танчева</u>	<u>6</u>	<u>блес. сестра</u>	<u>постоянна в ДМД 2</u>	<u>#BstAg (+) neg</u>		
3. <u>Надя Танчева</u>	<u>10</u>	<u>майка</u>	<u>постоянна в ДМД 2</u>	<u>#BstAg (+) neg</u>		

Допълнителни данни от епидемиологичното проучване:

Девето е било хоспитализирано в селск. к-ка на КМЗАН "Св. Георги" с вирусна хепатита микробен на 21.09.2010г. Микробен е с Дг. ВХВ. Девето е хоспитализирано в ДМД 2 Пловдив ул. "С. Раковски" № 13 на 25.09.2010г. #BstAg (+) neg окислен е на 05.10.2010г. Девето е при приема на HB ваксината; I 28.02.2009г. II 25.03.2009г. III 25.08.2009г. Микробната е извад. в к-м 6 на ул. 5, к-м 7 на разширен работ. кабинет - к-м 6: ДМД 2 на 21.09.2010г. #BstAg (+) neg; Anti-HBc IgG (+) neg; #BstAg (+) neg.

дата на започване на проучването: 21.09.2010г.

дата на завършване на проучването: 10.12.2010г.

Извършил проучването: Д-р Д. Велков

субствено, бащино и фамилично име: Д-р Д. Велков

Acute VHB in children, 2008-2010

Presentation by age and according to patients' vaccination status

age	<1y			1-4y			5-9y			10-14y			15-19y		
	2008	2009	2010	2008	2009	2010	2008	2009	2010	2008	2009	2010	2008	2009	2010
0d	0	0	0	0	0	0	0	2	0	0	4	0	0	83	31
1d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2d	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3d	1	0	0	6	1	4	3	4	5	1	3	4	2	2	2
Unknown	0	0	0	0	0	0	0	1	0	7	3	1	98	0	2
Total cases	3	0	0	6	1	4	3	7	5	8	10	5	100	85	35

Total number of cases: 272

114 / 272 not vaccinated - born before introduction of universal immunization

38 / 158 completely immunized (24%)

Chronic hepatitis B

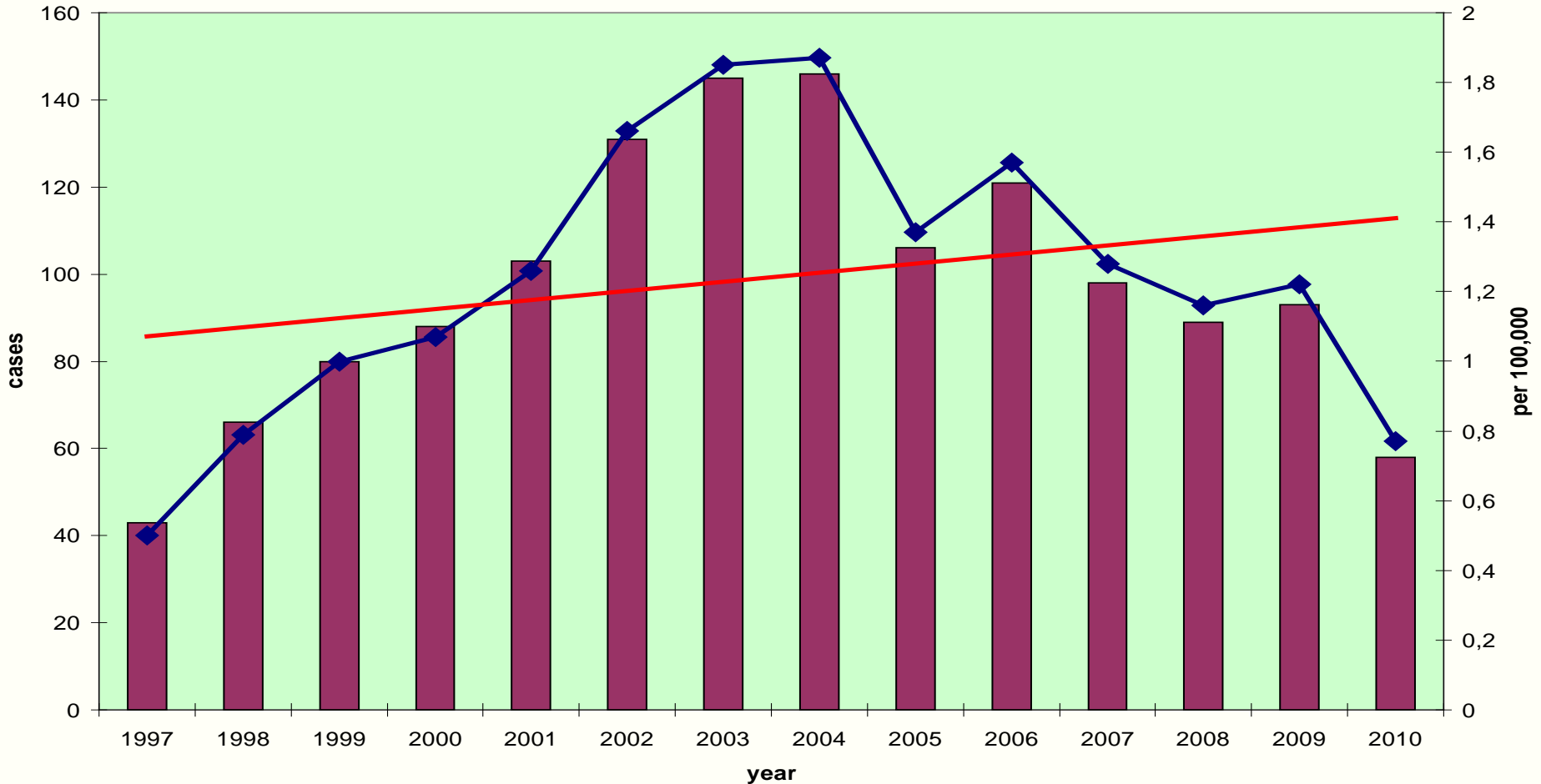
year	2006	2007	2008	2009	2010	For the period
cases	16	8	3	100	81 22F 59M	208

HBsAg carrier state (no clinical symptoms)– new registered cases annually

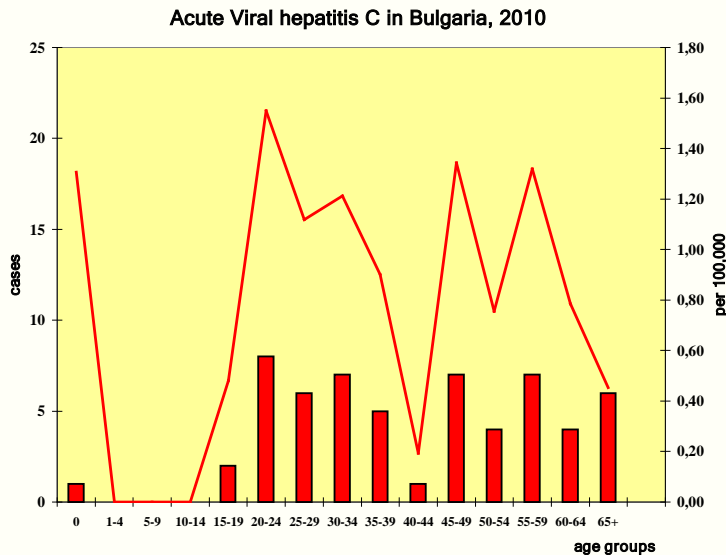
year	2006	2007	2008	2009	2010	For the period
cases	2346	215	122	3176	2666 760F 1906M	8525

Acute Viral Hepatitis C

Viral hepatitis C: Annual incidence, 1997-2010



Acute HCV, 2010



- 21/28 regions reported acute HCV in 2010 with total of 58 cases;
- Affected risk groups:
 - 11/58 are IDUs
 - 1/58 is HCW
 - 1/58 haemodialysed patient
 - 4/58 with multiple medical and dental interventions
 - 29% of patients belong to high risk groups for blood-borne diseases
- possible source of infection /mode of transmission is unknown for 71% of cases

Chronic hepatitis C

year	2006	2007	2008	2009	2010	For the period
cases	22	8	8	113	108*	259
Sex			3F 5M	49F 64M	41F 67M	

* Source: regional reports and NCHI annual aggregated data report. Official registration data was collected from 15 regions as a result of regular screening of blood donors and screening in Haemodialysis units.

Nosocomial HCV outbreaks

HCV outbreaks				
year	region	Hospital ward	cases	Possible cause
2001*	Stara Zagora	Internal	31	<ul style="list-style-type: none"> •patient-to-patient transmission attributed to unsafe injection practices •Failure in organization and implementation of infection control measures
2002	Silistra	Internal	7	
2009	Lovech	GE Pulmology	18	
2009	Sofia oblast	hemodialysis	6	
<p>•Viral hepatitis in: Acute infectious diseases in Bulgaria 2001, N.Gatcheva,M. Kojouharova, N. Vladimirova et al, NCIPD Information journal,5,2002</p> <p>•Outbreak of nosocomial hepatitis B and hepatitis C in a hemodialysis unit, N. Vladimirova, Nosocomial infections,vol 6, No1-2,2009,78-85</p>				

Prevalence of HCV among risk groups and medical personnel

population	year	Nr screened	Anti-HCV+	author
Blood donors	1995-1997	67053	1,3%	B. Iliev et al ¹
hemodialysis	1993-2006	161	45,3%	O.Boykinova et al, ²
hemophiliacs		120	96,6%	
IDUs		230	70%	
hemodialysis	2008	80	40%	Y.Stoilova et al ³
Medical staff (hemodialysis unit)	1993-2008	31	12%	Y.Stoilova et al ³
Medical staff	2007-2008	324	0%	N.Gatcheva et al ⁴

Source: 1. The carrier state prevalence of hepatitis B and C markers in blood donors in population of some regions in Bulgaria, B. Iliev et al , Infectology, XXXVII,2,2000,10-11

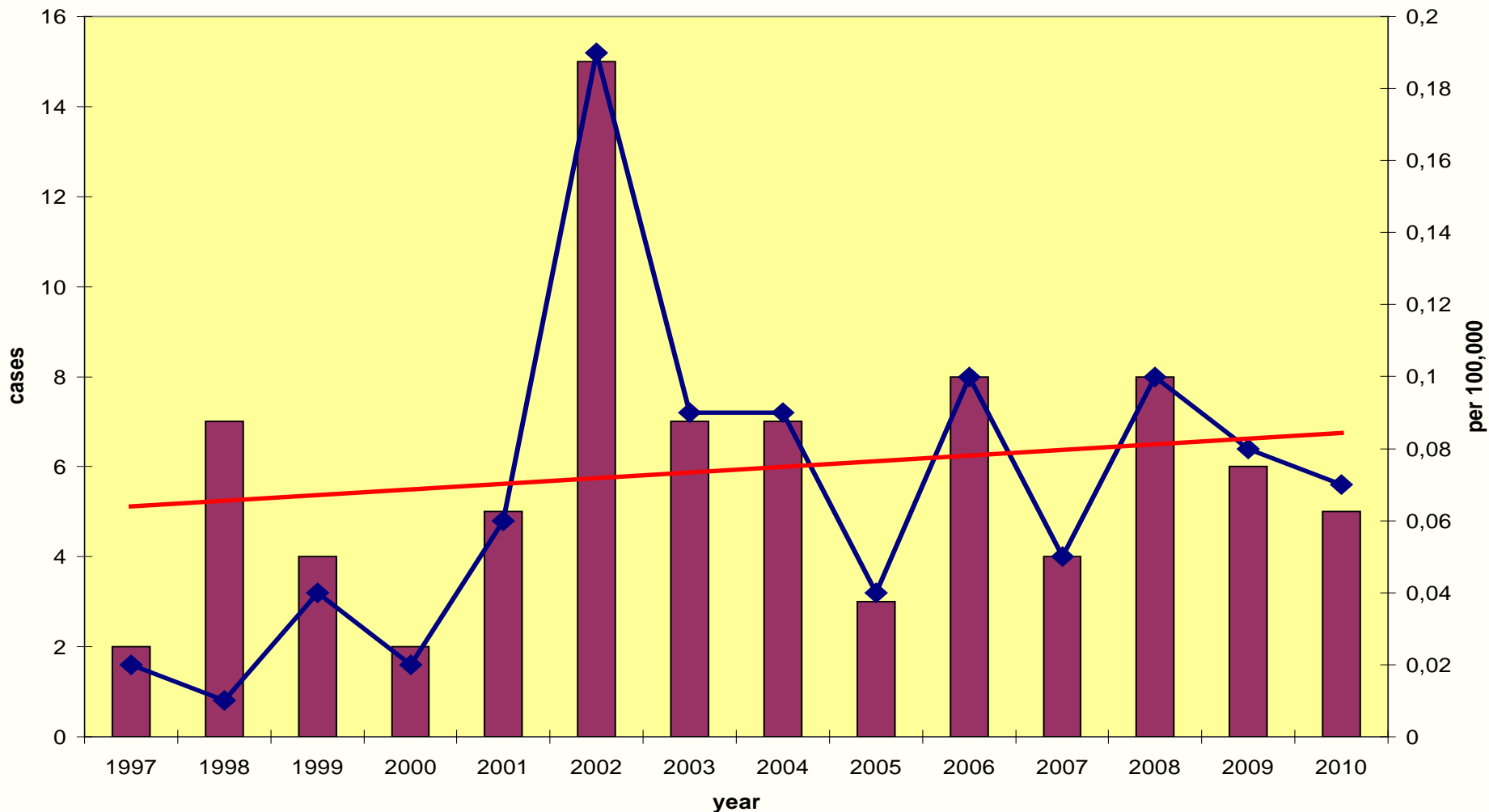
2. Prevalence and clinical forms of HCV infection among risk groups. O.Boykinova et al, Infectology,XLV,3,2008,30-32

3. Hepatitis C virus infection in healthcare settings, Y.Stoilova et al, Nosocomial infections, vol 5, No1-2, 2008,63-68

4. Prevalence of HBV and HCV infection among medical personnel in Bulgaria: results of a multi-centre serosurvey, 2007-2008, N.Gatcheva et al, Nosocomial infections, vol 5, No1-2, 2008,69-74

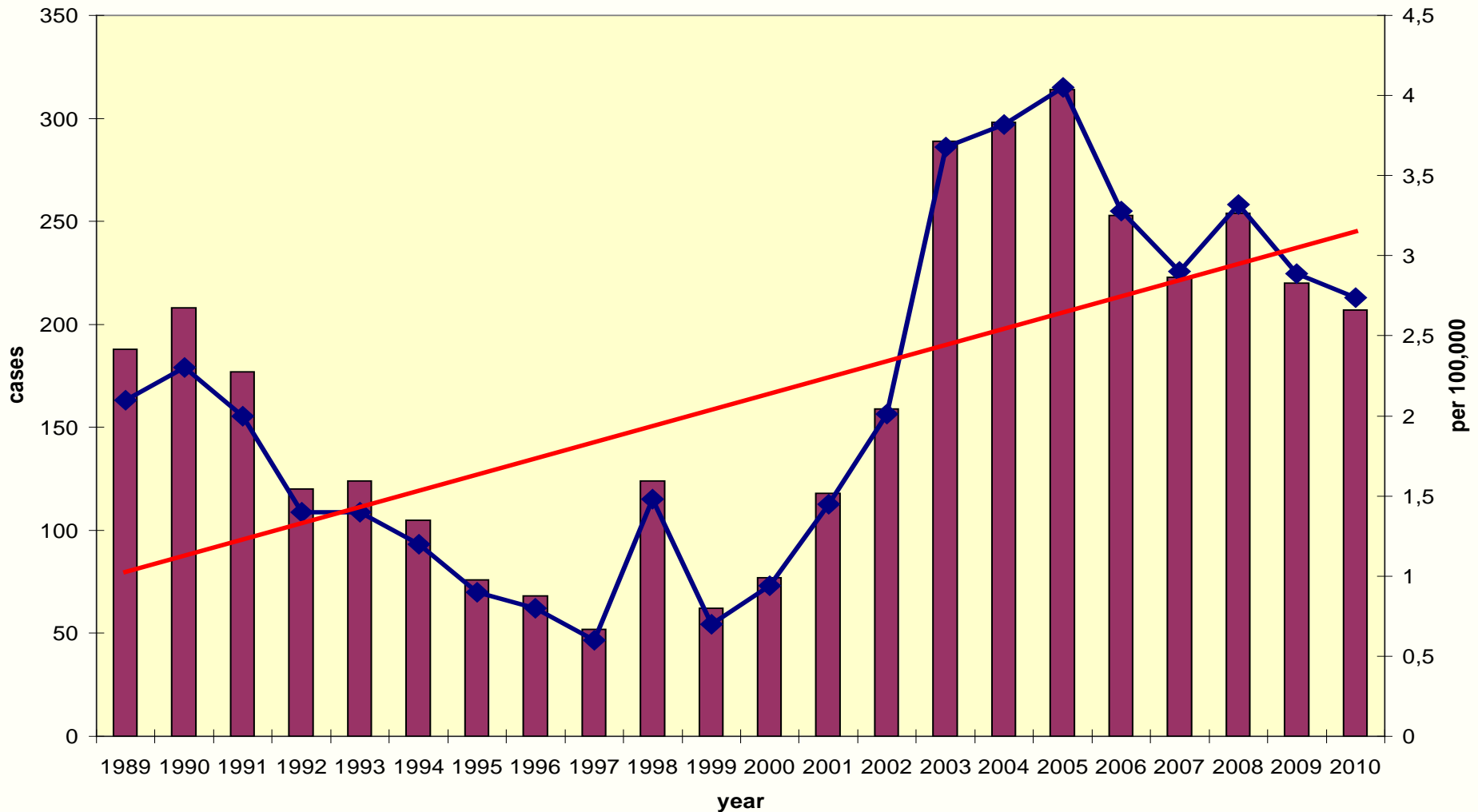
Acute Viral Hepatitis D

Acute Viral hepatitis D: Annual incidence, 1997 - 2010

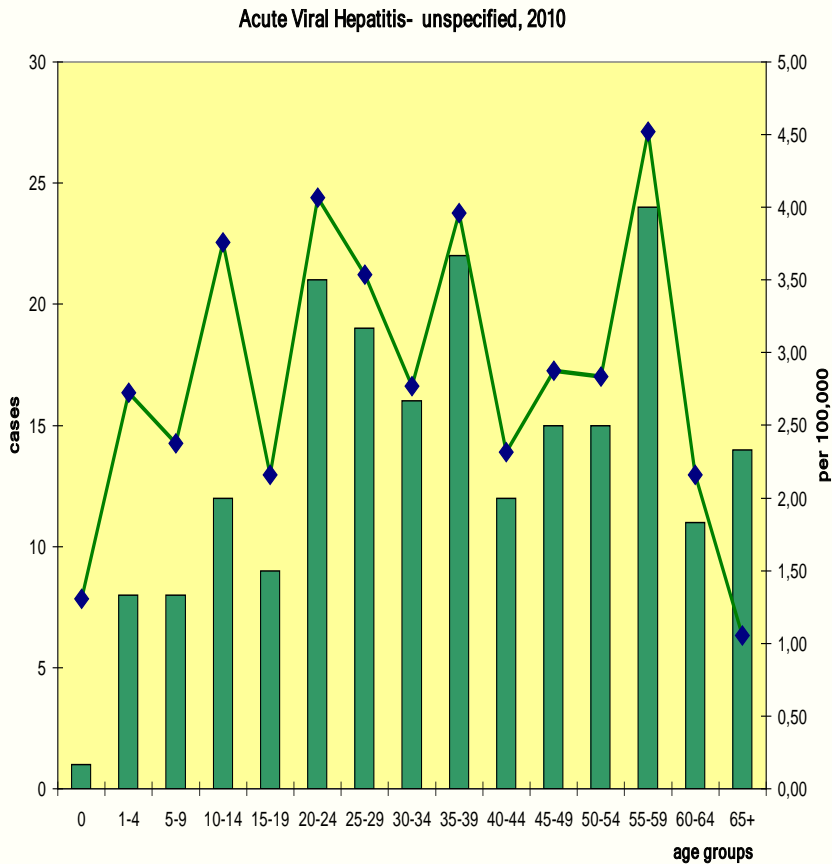


Acute Viral hepatitis Unspecified

Acute Viral hepatitis unspecified: Annual incidence, 1989 - 2010



Acute Viral hepatitis Unspecified



- 207 cases(2,74 per 100,000)
- All age groups are affected
- All cases are tested with negative results for anti- HAV, HBsAg, anti-HCV
- 3 death cases (0,04 per 100,000)

Example: Epidemiological data for 15 cases (5,16 per 100,000) from the region of Pleven:

- 5women; 10 men (1:2)
- 6 with history for surgical interventions(incl.1renal transplantation)
- 2 with history of dental treatment
- 7 with negative information about possible risk factors