DIVERSITY OF HIV-1 IN BULGARIA PHYLOGENETIC ANALISIS

I. Alexiev[1], D. Beshkov[1], V. Georgieva[1], I. Elenkov[2], T. Varleva[3]

1. National HIV Confirmatory Laboratory, Sofia, Bulgaria
2. Hospital of Infectious Diseases, Sofia, Bulgaria
3. Ministry of Health, Program of "Prevention and Control of HIV/AIDS and Tuberculosis", Sofia, Bulgaria

SUMMARY

The distribution of HIV-1 subtypes and circulating recombinant forms (CRFs) among European countries is unequal. Western Europe is affected by subtype-B predominantly while some studies suggest that in Central and East European countries high diversity of many different subtypes and CRFs are present.

We investigated the HIV-1 genetic diversity in Bulgaria, by sequencing and phylogenetic characterization of 86 plasma samples from seropositive individuals diagnosed within 1986-2006. The analysis of pol gene sequences assigned 47,67% of the samples to HIV-1 subtype B and 18,6% to circulated recombinant form 01_AE. HIV-1 subtype A1, C, F, G, H and a few other recombinant forms were also found.

Phylogenetic analysis showed a high diversity of HIV-1 genetic forms circulating in Bulgaria.

Substantial genetic heterogeneity of HIV-1 in Bulgaria with multiple subtypes, and the significant dynamic in viral flow observed in the country highlight the importance of extensive and continuous monitoring of the HIV-1 epidemic in Bulgaria.

Key words: HIV-1

INTRODUCTION

Current epidemiological data indicate that the impact of the HIV-1 epidemic in Bulgaria, which is part of the East European region is still limited [1]. Up to the end of 2008, 929 cumulative cases of HIV infection, including 280 who had developed AIDS, have been reported. The annual number of HIV-1 diagnoses increased from 15-20 in the early 1990s to 123 diagnoses in 2008, following implementation of second generation surveillance systems. From the beginning of 1986 to the end of 2006 the period of our study 681 HIV/AIDS cases were registered, of them 428 (63%) male and 253 (37%) female. Most of the infections 431 (63,23%) were attributed by heterosexual contact, 155 (22,76%) have been attributed by injecting drug use, 78 (11,45%) by homosexual contact and in early 1930s 17 (2,50%) by blood transfusion. While in the last few years in particular 2008 the HIV epidemic has been changed and one of the most common roads of transmission were injecting drug use 41,46% and homosexual contacts 14,63%. In addition, most cases (about 75%) have been identified in the capital city of Sofia, followed by the sities of Plovdiv, Burgas, and Varna, [2] /Table 1/.

Given the specific geographic location of Bulgaria, at the crossing point between Western Europe, Eastern Europe and the Middle East, defining the diversity of HIV subtypes in Bulgaria has obvious epidemiological relevance. However, although basic information on the characteristics of HIV-1 infected individuals in Bulgaria is available, insufficient data is available about distribution of different circulating HIV variants. The information from other Balkan countries indicates that there is high genetic diversity in the region, with subtype B being predominant in Serbia, subtype A1 in Albania, subtype B in Slovenia, subtype F1 in Romania, subtype B in Greece and various subtypes and CRFs were found in Cyprus [3], [4], [5], [6], [7].

The objective of the present study was to investigate the molecular diversity and epidemiology of HIV-1 subtypes circulating in Bulgaria. To achieve this purpose, we sequenced a fragment of HIV-1 pol gene amplified from blood samples from different Bulgarian areas. By phylogenetic analysis, we obtained detailed information about the molecular epidemiology of HIV-1 infection in Bulgaria.

MATERIALS AND METHODS

Patient samples

Eighty-six (86) plasma samples were obtained from people who were diagnosed with HIV-1 infection between 1986 and 2006 in Bulgaria. The blood samples were genotyped and analyzed at the National HIV Confirmatory Laboratory in Sofia, Bulgaria. The samples were linked to demographic and clinical data through an anonymous numerical code, in accordance with the ethical standards of the country. We successfully performed HIV-1 genotyping on 86 (100%) of these samples (56 males, 30 females).

Pol gene sequencing

Sequencing and genotyping of the Protease (PR) and Reverse Transcriptase (RT) of HIV-1 pol gene was performed by commercially available diagnostic tests. PR and RT pol sequences were generated after RNA extraction, RT-PCR amplification, and then an automatic DNA sequencing was performed following the manufacturer's instructions with Applied Biosystems sequencer 310, Viroseq HIV-1 Genotyping Test, Abbott and/or TruGene DNA Sequencing System, OpenGene, Visible Genetics, Siemens.

Genetic subtyping and phylogenetic analysis

All 86 HIV-1 pol sequences were first analyzed using the Internet funded REGA HIV-1 & 2 Automated Subtyping Tool (Version 2.0) (http://jose.med.kuleuven.be/genotypetool/html/subtypinghiv.html) [8]. A separate (BLAST) search for every one of the sequences isolated in Bulgaria was performed, and the most similar GenBank sequences for each subtype and CRF were downloaded and alignments were developed (http://hivweb.lanl.gov/). The final data sets included HIV-1 pol Bulgarian strains, as well as subtype and CRF specific reference sequences (a set of 1250 of referent sequences) downloaded from the HIV Los Alamos database and the most similar sequences from the BLAST search. The sequences were aligned using Bioedit software followed by manual editing [9]. Phylogenetic analysis was made by MEGA-4 software with maximum likelihood (ML) algorithm using Neighbor-Joining (NJ) and Maximum Parsimony (MP) methods to construct phylogenetic tree and bootstrap of 1000 replicates, model: nucleotide: with Kimura 2-parameter [10], [11].

RESULTS

Diversity of HIV-1 subtypes circulating in Bulgaria

Of the 86 pol gene sequences, 41 (47,67%) were classified as subtype B, 9 (10,47%) as subtype A1, 5 (5,81%) as subtype C, 5 (5,81%) as subtype F1, 3 (3,49%) as subtype H, and 1 (1,16%) subtype G respectively. The phylogenetic analysis also classified 21 sequences as circulating recombinant forms and 1 cpx (complex) form: 16 (18,6%) as 01_AE, 2 (2,33%) as 02_AG, 2 (2,33%) as 05_DF, 1 (1,16%) as 42_BF, and 1 (1,16%) as 04_cpx.

ABBREVIATIONS USED IN THIS PAPER: HIV-1

ACCEPTED FOR PUBLICATION: 17.12.2009

CORRESPONDING AUTHOR:
I. Alexiev
National HIV Confirmatory Laboratory, NCIPD
44A Stoletov Blvd
1233 Sofia, Bulgaria

REPORT OF INTEGRATED BIO-BIHEVIORAL SURVEILLANCE OF HIV AMONG PEOPLE WHO INJECT DRUGS, 2004-2012, BULGARIA. ABSTRACT

Tonka Varleva, Tsveta Raicheva, Emilia Naseva, Tsvetana Yakimova, Vyara Georgieva, Mariya Zamfirova, Hristo Taskov, Bogdan Petrunov

Program "Prevention and control of HIV/AIDS", Ministry of Health, Bulgaria

The program "Prevention and Control of HIV/AIDS" is financed by the Global Fund to Fight AIDS, Tuberculosis and Malaria and is aimed at providing adequate and quality health and social services for the most vulnerable groups at different levels of intervention, raising the expert knowledge and skills and the institutional commitment, as well as implementation of significant positive changes in the community rules, risky sexual behavior and behavior associated with drug use in the prevention and control of HIV/AIDS in Bulgaria.

The main purpose in the implementation of the Program "Prevention and Control of HIV/AIDS" is to contribute to reducing new cases of infection with HIV. The activities are aimed at:

- Expanding the availability, scope and quality of services for voluntary counseling and testing as a basis for prevention, treatment and support with a special focus on groups at greatest risk;
- Reducing the specific vulnerability in the groups at greatest risk (injecting drug users – *IDUs, Roma communities, prostitutes, young people at risk, people living with HIV, men who have sex with men – MSM*), increasing coverage and ensuring access to comprehensive, high quality programs and services addressing the specific needs and priorities of these groups;

Under an agreement between the Global Fund to Fight AIDS, Tuberculosis and Malaria and the Ministry of Health, Bulgaria receives grant for the implementation of activities under the program "Prevention and Control of HIV/AIDS". With the launch of the program in 2004 several important new prerequisites were created for improving the supervision of the stage, type and dynamics of HIV infection.

These efforts made it possible to increase the detection of infected persons, especially through the services for voluntary counseling and testing.

The main task of Objective 4 "Reducing vulnerability to HIV among injecting drug users (IDUs) by increasing the scope of the group with a full package of preventive interventions" is to keep low HIV prevalence among IDUs by providing various preventive interventions: effective interventions in training and promoting the practice of safe injection and safe sexual behavior; activities of voluntary, free, accessible and confidential counseling, testing and referral of persons with high-risk behavior to treatment. An important part of the work is to provide activities for comprehensive support for IDUs that are carried out in *drop-in*

Address for correspondence
Program "Prevention and control of HIV/AIDS"
Ministry of Health
26 Yanko Sakazov blvd
Sofia
Bulgaria
Tel. +359 2 946 14 82
E-mail: aidsprogram@hdp.bg

INJECTION RISK BEHAVIORS AND HIV/STI PREVALENCE AMONG PEOPLE WHO INJECT DRUGS IN BULGARIA IN YEARS 2012 AND 2016: DATA FROM A CROSS-SECTIONAL BIO-BEHAVIOR STUDY

T. Varleva[1], Ts. Raycheva[2], E. Naseva[3], V. Georgieva[1], H. Taskov[4], B. Petrunov[4]

1 – Ministry of Health, Sofia
2 – State psychiatric hospital for drug and alcohol users
3 – Medical University of Sofia, Faculty of Public Health
4 – National Center Infectious and Parasitic Diseases, Sofia

ABSTRACT

Introduction: The aim of this study was to assess injecting and sexual risk behaviors and measure HIV and STI prevalence among people who inject drugs (PWID) in Bulgaria in 2016.

Methods: We conducted a cross-sectional study from April to September 2016 in five major cities of Bulgaria. The time location sampling was used to recruit PWID. Behavioral data were collected by interviewer-administered questionnaires. HIV and STIs status was assess by ELISA blood test.

Results: A total 421 PWID were enrolled in this study. The most commonly used illicit drugs injected in the last month were heroin (75.9%) and amphetamines (51.5%), followed by methadone hydrochloride (46.8%) and heroin&amphetamines (39.8%). PWID were engaged in various high-risk injection practices in the last month including injection with used needle/syringe (50.9%), selling used needle (57.4%), using pre-filled syringes (34.0%) or common equipment for sharing/preparatio (46.3%). Casual sexual partner in last 12 month was declared by 64.0% of PWID and 57.6% ha used condoms in last sexual intercourse. Almo one fifth of participants (17.5%) had had sex f money or gift in past 12 months and 90.3% ha used condoms in this case. HIV prevalence rat for HIV, HVB, HCV and syphilis was respectivel 1.6%, 9.1%, 65.5% and 0.8%.

Conclusions: This study confirms the observe trend of reduction of new HIV diagnose among the PWID in Bulgaria started by 201 Nevertheless, PWID continue to be one of th main subpopulation for transmission of HI and HCV in Bulgaria because of persisten high risk of injection and sexual behaviours Developing innovative strategies that ca improve accessibility of current harm reductio services and incorporate prevention that is mor comprehensive are needed.

KEYWORDS:
HBV, HCV, syphilis, surveillance

ADDRESS FOR CORRESPONDENCE:
Prof. Dr. Hristo Taskov MD, DSc,
National Center Infectious and Parasitic Diseases,
Sofia 1504, Bul. Yanko Sakazov 26,
E-mail: hristotaskov@gmail.com

INTRODUCTION

Injecting drug use is considered as a international public health threat that can lea to serious health-related outcomes such as th transmission of blood-borne viruses resultin from risky behaviors among people who inje drugs (PWID). PWID are at increased risk of HI infection due to both high-risk injecting and sexua practices (1). This pattern of behavior allow HIV infection to spread within both injection an sexual networks (2, 3).

Bulgaria is a country with an HIV epidemi concentrated mainly among people who inje drugs (PWID) and men having sex with me (MSM) (4, 5). In Bulgaria, the estimated PWI population size decrease from 21,100 in 2009 t 12,520 in 2016 (6, 7). In 2006, HIV transmissio due to injection drug use was responsible fo 37.4% of all newly diagnosed HIV cases. Durin the last decade, Bulgaria has implemented a number of HIV prevention programs for PWID using an evidence-based harm reductio services.(8, 9) Since than there have bee significant falls of the PWID's share of newl diagnosed HIV cases from 43.3% % in 2009 t 12% in 2015. Although injection drug use is n longer the primary mode of HIV transmission i Bulgaria, PWIDs remain a group at high risk (5 At the end of 2012, of the 157 new HIV diagnosis

NATIONAL HIV BIOLOGICAL AND BEHAVIOURAL SURVEY AMONG HARD-TO-REACH POPULATIONS IN BULGARIA (2004 -2016). PART 2: METHODOLOGY OF THE SURVEY

Tonka Varleva[1], Hristo Taskov[2], Emilia Naseva[3], Vyara Georgieva[1], Elena Kabakchieva[4], P. Tsintsarski[5], Tsveta Raycheva[6], Stefka Boneva[7] and B. Petrunov[2]

1 – Ministry of Health, Sofia
2 – National Centre Infectious and Parasitic Diseases, Sofia
3 – Medical University of Sofia, Faculty of Public Health
4 – Health and Social Development Foundation
5 – Consultant at Ministry of Health
6 – State Psychiatric Hospital for Drug and Alcohol Users

ABSTRACT

Between 2004 and 2016, in Bulgaria 9 rounds of bio-behavioural surveillance were conducted within the framework of the National Programs for the Prevention and Control of HIV and STIs. Surveys were performed in the major cities among five key populations: men who have sex with men (MSM), people who inject drugs (PWID), sex workers (SW), prisoners and young Roma at higher risk (YRMHR). The surveys were cross-sectional with a two-step complex cluster design with a time location sampling (TLS). The total number of participants in the NBBS-04-16 was 27,210 disaggregated by studied groups as follows: MSM (4,725); PWID (8,626); SW (4,013); prisoners (4,557) and YRMHR (5,289). In this publication, we describe the survey methodology. The formative research and ethical issues are described in Part 1 and Part 3.

ADDRESS FOR CORRESPONDENCE:
Prof. Dr. Hristo Taskov MD, DSc,
National Center Infectious and Parasitic Diseases,
Sofia 1504, Bul. Yanko Sakazov 26,
E-mail: hristotaskov@gmail.com

KEYWORDS:
HBV, HCV, STI.

INTRODUCTION

Bulgarian HIV epidemic has been best described as concentrated epidemic. HIV infection is concentrated mainly among people who inject drugs (PWID) and men having sex with men (MSM) (1, 2). In 2006 HIV transmission due to injection drug use was responsible for 37.4% of all newly diagnosed HIV cases. In 2015, about 49.6% of the newly diagnosed HIV cases came from MSM population (3). In 2016, PWID and MCM contributed for 88% of new diagnoses. Three other subpopulations contributes to the spread of HIV in the country. In 2011, the HIV prevalence rate for female sex workers (FSW) was 0.82%, for YRMHR-2.06% and prisoners - 0.98% (4).The concentrated nature of the Bulgarian HIV epidemic necessitates strong surveillance among the key populations (KP) to understand their epidemic dynamics and facilitate an effective national response. In order to strengthen the surveillance activities among hard-to-reach populations (HTRP), the Ministry of Health (MoH) implemented National Biological and Behavioural Surveillance (NBBS) to generate evidence on risk behaviours among HTRP and to support planning and prioritization of prevention programmes interventions at the district and national levels. A key feature of NBBS was the inclusion of behavioral studies designed to provide a better understanding of the epidemic dynamics in low HIV prevalence and a concentrated type of epidemic.

In line with WHO guidelines (5) in 2004 Bulgaria started the implementation of NBBS among five KP (MSM, PWID, SW, YRMHR and prisoners) with a strategic focus to strengthen the HIV surveillance among them. NBBS is integral part of the comprehensive Bulgarian HIV Surveillance system (6) to obtain extensive data about the status, changing trends and progress of their HIV epidemic. Unlike conventional surveillance systems, NBBS helps identifying vulnerability to infection and ascertains the main determinants of the HIV epidemic. NBBS collects information on many key parameters of programmatic importance (7). It included knowledge indicators related to HIV prevention, STI, condoms, HIV/AIDS services, risk profile and practices, HIV testing, stigma and discrimination as

NATIONAL HIV BIOLOGICAL AND BEHAVIORAL SURVELLANCE IN HARD-TO-REACH POPULATIONS IN BULGARIA (2004 -2016). PART 1: FORMATIVE RESEARCH

Tonka Varleva[1], Hristo Taskov[2], Emilia Naseva[3], Vyara Georgieva[1], Elena Kabakchieva[4], P. Tsintsarski[5], Tsveta Raycheva[6], Stefka Boneva[5] and B. Petrunov[2]

1 – Ministry of Health, Sofia
2 – National Center Infectious and Parasitic Diseases, Sofia
3 – Medical University of Sofia, Faculty of Public Health
4 – Health and Social Development Foundation (HESED)
5 – Consultant at Ministry of Health
6 –State psychiatric hospital for drug and alcohol users

ABSTRACT

Between 2004 and 2016, in Bulgaria nine rounds of National bio-behavioural survey were conducted within the framework of the National programs for the prevention and control of HIV and STIs. Surveys were performed in five key populations: men who have sex with men (MSM), people who inject drugs (PWID), sex workers (SW), prisoners and young Roma at higher risk (YYRMHR). The total number of participant was 27,210.

All municipalities were included in the pre-assessment cycle. Based on criteria for HIV risk ten municipalities were selected for the first two rounds of the survey. Thereafter four formative assessments were performed in 19 municipalities in the country. The venues frequented by target population were listed and their number estimated. Total 2,276 venues were identified: 812 venues for PWID; 540 - for MSM; 817 for FSW and 229 for MSW. In 747 of the venues, mixing of the groups was associated with an increased risk of HIV infection. Municipalities with at least 800 high-risk group members were selected for surveys.

In this article, we describe the outcomes of five formative research cycles. The methodology and ethical issues of the survey are described in Part 2 and 3 of the article.

KEYWORDS:

HIV surveillance, key populations, Bulgaria

ADDRESS FOR CORRESPONDENCE:

Prof. Dr. Hristo Taskov DSc,
National Center Infectious and Parasitic Diseases,
Sofia 1504, Bul. Yanko Sakazov 26,
Tel.: +359887304381;
E-mail: hristotaskov@gmail.com

INTRODUCTION

Bulgarian HIV epidemic has been best described as concentrated mainly in people who inject drugs (PWID) and men having sex with men (MSM) (1, 2). In 2006 HIV transmission due to injection drug use was responsible for 37.4% of all newly diagnosed HIV cases. In 2015 about 49.6% of newly diagnosed HIV cases came from MSM population (3). In 2016, PWID and MCM contributed for 88% of new HIV diagnoses. Three other subpopulations are also involved in the spread of HIV infection in the country. In 2011 the HIV prevalence rate in sex workers (FSW) was 0.82%, in young Roma men at higher risk (YRMHR) -2.06% and prisoners - 0.98% (4). The concentrated nature of the Bulgarian HIV epidemic necessitates a strong surveillance among key populations (KP) to understand HIV dynamics and facilitate an effective national response. With a view to strengthen the surveillance activities among hard-to-reach-populations (HTRP) Ministry of Health (MoH) has implemented National Biological and Behavioural Surveillance (NBBS) to generate evidence on risk behaviours among key populations to support planning and prioritization of prevention programmes interventions at the district and national levels.

In line with WHO guidelines (5) in 2004 Bulgaria started NBBS among five key populations (MSM, PWID, SW, YRMHR and prisoners) with strategic focus to strengthen the HIV surveillance within them. Having in mind the value of conducting formative research prior to implementing epidemiologic surveys (6, 7) in 2003, a comprehensive formative assessment was carried prior the first round of NBBS in the period 2004-2016 (NBBS_04-16). This coincided with the preparatory phase of the implementation of the Global Fund grant (8) co-financing the National Program for Prevention and Control of HIV and STI, 2001-2007 (NHP-01-07) (9). The data collected during this preparatory phase provided contextual information about HIV risk behaviors within the populations of interest and help the project sites to make decisions abou

PLOS ONE

RESEARCH ARTICLE

HIV-1 genetic diversity and demographic characteristics in Bulgaria

Erik Billings[1,2], Richard A. Heipertz[1,3¤a], Tonka Varleva[4], Eric Sanders-Buell[1,2], Anne Marie O'Sullivan[1,2], Meera Bose[1,2], Shana Howell[1,2], Gustavo H. Kijak[1,2¤b], Hristo Taskov[5], Ivailo Elenkov[6], Marina Nenova[7], Nedialka Popivanova[8], Aimee Bolen Valenzuela[1,2], Otha Myles[1,3], Christian T. Bautista[2,3], Merlin L. Robb[1,2], Nelson L. Michael[1,3], Jerome H. Kim[1¤c], Paul T. Scott[1,3], Sodsai Tovanabutra[1,2]*, Julie A. Ake[1,3]

1 United States Military HIV Research Program, Silver Spring, MD, United States of America, **2** The Henry M. Jackson Foundation for the Advancement of Military Medicine, Bethesda, MD, United States of America, **3** The Walter Reed Army Institute of Research, Silver Spring, MD, United States of America, **4** Ministry of Health, Department for Prevention and Control of AIDS, TB, and STIs, Sofia, Bulgaria, **5** National Center for Infectious and Parasitic Diseases, Sofia, Bulgaria, **6** Hospital of Infectious Diseases Prof. Iv. Kirov, Department for Patients with Acquired Immune Deficiencies, Sofia, Bulgaria, **7** Medical University Hospital, St. Marina, Infectious Diseases Clinic, Varna, Bulgaria, **8** Medical University Hospital St. Georg, Infectious Diseases Clinic, Plovdiv, Bulgaria

¤a Current address: Office of Regulated Activities, U.S. Army Medical Research and Materiel Command, Fort Detrick, MD, United States of America
¤b Current address: GSK Vaccines, Rockville, MD, United States of America
¤c Current address: International Vaccine Institute, Seoul, Korea
* stovanabutra@hivresearch.org

OPEN ACCESS

Citation: Billings E, Heipertz RA, Varleva T, Sanders-Buell E, O'Sullivan AM, Bose M, et al. (2019) HIV-1 genetic diversity and demographic characteristics in Bulgaria. PLoS ONE 14(5): e0217063. https://doi.org/10.1371/journal.pone.0217063

Editor: Xinli Lu, Hebei Provincial Center for Disease Control and Prevention, CHINA

Received: November 2, 2018

Accepted: May 3, 2019

Published: May 28, 2019

Data Availability Statement: The HIV-1 sequences produced during this study have been submitted to GenBank and will be available under accession numbers MH746230-MH746267.

Funding: Authors ESB, AOS, MB, SH, GHK, ABV, CTB, MLB, and ST received funding support in the form of money paid to the institution by cooperative agreement (W81XWH-07-2-0067) between the Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc., and the U. S. Department of Defense (DOD). Additionally,

Abstract

HIV-1 strain diversity in Bulgaria is extensive and includes contributions from nearly all major subtypes and the Circulating Recombinant Forms (CRF): 01_AE, 02_AG, and 05_DF. Prior to this study, HIV-1 sequence information from Bulgaria has been based solely on the *pro-RT* gene, which represent less than 15% of the viral genome. To further characterize HIV-1 in Bulgaria, assess participant risk behaviors, and strengthen knowledge of circulating strains in the region, the study "Genetic Subtypes of HIV-1 in Bulgaria (RV240)" was conducted. This study employed the real time-PCR based Multi-region Hybridization Assay (MHA) B/non-B and HIV-1 sequencing to survey 215 of the approximately 1100 known HIV-1 infected Bulgarian adults (2008–2009) and determine if they were infected with subtype B HIV-1. The results indicated a subtype B prevalence of 40% and demonstrate the application of the MHA B/non-B in an area containing broad HIV-1 strain diversity. Within the assessed risk behaviors, the proportion of subtype B infection was greatest in men who have sex with men and lowest among those with drug use risk factors. During this study, 15 near full-length genomes and 22 envelope sequences were isolated from study participants. Phylogenetic analysis shows the presence of subtypes A1, B, C, F1, and G, CRF01_AE, CRF02_AG, CRF05_DF, and one unique recombinant form (URF). These sequences also show the presence of two strain groups containing participants with similar risk factors. Previous studies in African and Asian cohorts have shown that co-circulation of multiple subtypes can lead to viral recombination within super-infected individuals and the emergence of new URFs. The low prevalence of URFs in the presence of high subtype diversity in this study, may be the result of successful infection prevention and control

Epidemiology and Infection

cambridge.org/hyg

Strategic investment in tuberculosis control in the Republic of Bulgaria

T. N. Doan[1,2], T. Varleva[3], M. Zamfirova[3], M. Tyufekchieva[3], A. Keshelava[3,4], K. Hristov[3,4], A. Yaneva[3,4], B. Gadzheva[3,4], S. Zhang[5], S. Irbe[5], R. Ragonnet[1,6,7], E. S. McBryde[1,2] and J. M. Trauer[7]

[1]Department of Medicine at The Royal Melbourne Hospital, University of Melbourne, Melbourne, Victoria, Australia; [2]Australian Institute of Tropical Health and Medicine, James Cook University, Townsville, Queensland, Australia; [3]Promotion and Prevention of Diseases and Addictions, Ministry of Health, Sofia, Bulgaria; [4]Programmes Management Unit, Ministry of Health, Sofia, Bulgaria; [5]The Global Fund to Fight AIDS, Tuberculosis and Malaria, Geneva, Switzerland; [6]The Burnet Institute, Melbourne, Victoria, Australia and [7]School of Public Health and Preventive Medicine, Monash University, Melbourne, Victoria, Australia

Original Paper

Cite this article: Doan TN *et al* (2019). Strategic investment in tuberculosis control in the Republic of Bulgaria. *Epidemiology and Infection* **147**, e304, 1–10. https://doi.org/10.1017/S0950268819001857

Received: 23 July 2019
Revised: 28 August 2019
Accepted: 14 October 2019

Key words:
End TB targets; mathematical modelling; transmission dynamics

Author for correspondence:
T. N. Doan, E-mail: tan.doan@uqconnect.edu.au

Abstract

As Bulgaria transitions away from Global Fund grant, robust estimates of the comparative impact of the various response strategies under consideration are needed to ensure sustained effectiveness of the tuberculosis (TB) programme. We tailored an established mathematical model for TB control to the epidemic in Bulgaria to project the likely outcomes of seven intervention scenarios. Under existing programmatic conditions projected forward, the country's targets for achieving TB elimination in the coming decades will not be achieved. No interventions under consideration were predicted to accelerate the baseline projected reduction in epidemiological indicators significantly. Discontinuation of the 'Open Doors' program and activities of non-governmental organisations would result in a marked exacerbation of the epidemic (increasing incidence in 2035 by 6–8% relative to baseline conditions projected forward). Changing to a short course regimen for multidrug-resistant TB (MDR-TB) would substantially decrease MDR-TB mortality (by 21.6% in 2035 relative to baseline conditions projected forward). Changing to ambulatory care for eligible patients would not affect TB burden but would be markedly cost-saving. In conclusion, Bulgaria faces important challenges in transitioning to a primarily domestically-financed TB programme. The country should consider maintaining currently effective programs and shifting towards ambulatory care to ensure program sustainability.

Introduction

Although the World Health Organisation (WHO) European Region contributes only 3% to the global tuberculosis (TB) burden, 85% of TB cases in the Region arise in Eastern European and Central Asian countries [1]. With an incidence rate of 23 cases per 100 000 population in 2016, Bulgaria is one of 18 'high priority' countries for TB control in the WHO European Region [2]. Multidrug-resistant TB (MDR-TB) remains a problem in the country and constituted 1.2% of new TB cases and 22.8% of re-treatment TB cases in 2016 [1]. Around 62% of all TB cases in Bulgaria are culture-confirmed, of which ~86% receive drug susceptibility testing (DST) [3].

The TB control program in Bulgaria is characterised by extensive involvement of non-governmental organisations (NGOs), which have been active since 2009. Their TB care activities include spatial mapping of high-risk groups, screening for active TB and latent TB infection (LTBI) in high-risk groups, awareness raising and providing support to patients under treatment. Since 2009, regular community campaigns have been carried out across the country to raise public awareness about TB, and to offer individuals with respiratory symptoms the opportunity to present themselves to public hospitals for free-of-charge TB diagnosis and treatment (the 'Open Doors' program).

Roma communities are among the most important TB risk groups in Bulgaria, accounting for around 5–10% of the total population, but contributing 30 and 50% respectively of all reported DS-TB and MDR-TB cases in the country [3]. Diabetes is also a major threat to TB control efforts in Bulgaria, with the prevalence of type II diabetes among adults in Bulgaria reaching 8.4% in 2015 [4, 5].

In line with the WHO Sustainable Development Goals (SDGs) and the End TB Strategy targets [6], Bulgaria aims to achieve TB elimination by 2050. Interim targets aim to reduce incidence and TB-related mortality by 40% in 2025, and by 90 and 95% respectively in 2035. However, a return to domestically-funded TB programs following the completion of the current Global Fund to Fight AIDS, Tuberculosis and Malaria (henceforward 'the Global Fund')

CAMBRIDGE UNIVERSITY PRESS

REPORT OF INTEGRATED BIO-BIHEVIORAL SURVEILLANCE OF HIV AMONG MALES AND FEMALES SEX WORKERS, 2004-2012, BULGARIA. ABSTRACT

Tonka Varleva, Stefka Boneva, Emilia Naseva, Tsvetana Yakimova, Vyara Georgieva, Mariya Zamfirova, Hristo Taskov, Bogdan Petrunov

Program "Prevention and control of HIV/AIDS", Ministry of Health, Bulgaria

Since launching the Program for Prevenq tion and Control of HIV/AIDS, financed by the Global Fund to Fight HIV, Tuberculosis and Malaria in 2004, Integrated Biological and Behavioral Surveillance (IBBC) among persons of different risk groups has been carried out within the Program and outreach workers have been providing preventive and health services amongst the groups mentioned. IBBC includes testing for HIV, hepatitis B, hepatitis C and syphilis and completing of a questionnaire related to the health and social status of the respondents.

The main goal of Objective 6 under the program PCHA is to improve the general health and the social status of the target group through the following: reducing the risk of HIV infection and preventive measures to reduce infection with sexually transmitted infections and poly-drug use; increasing the number of the persons tested for the HIV virus; increasing the motivation and supporting clients for easier access to specialized hospitals and general medical services; covering a large proportion of women and men with risky sexual behavior (services are reachable to partners of sex workers); encouraging clients to take independent decisions; involving public institutions and stimulating the local authorities to support programs aimed at the target group and effectively reducing the adverse repercussions on society.

The activities under Objective 6 have been planned and carried out since 2004. In the beginning, teams were selected in ten cities of the country – Sofia, Varna, Burgas, Ruse, Plovdiv, Stara Zagora, Haskovo, Sandanski (region of Blagoevgrad), Pazardjik and Pleven. Nine non-governmental organizations have been working on the territory of 22 regions in Bulgaria for the period 2009-2015. Each team consists of a coordinator, outreach workers, medical professionals – a doctor and a nurse, and a local expert. All sub-recipients have cars and mobile medical units, where clients of the Objective can be consulted and tested for HIV and STIs anonymously and free of charge.

When analyzing the results of the epidemiological control under Objective 6, it must be taken into consideration that data from Blagoevgrad, Pleven and Pazardjik have been collected through studies and interviews by teams of organizations working in the towns of Sandanski, Lovech and Plovdiv. The number of participants included in the study over the years is 3790. The study has been held among sex workers and carried out by specially trained outreach workers who made the trust contact with

Address for correspondence
Program "Prevention and control of HIV/AIDS"
Ministry of Health
26 Yanko Sakazov blvd
Sofia
Bulgaria
Tel. +359 2 946 14 82
E-mail: aidsprogram@hdp.bg

REPORT OF INTEGRATED BIO-BIHEVIORAL SURVEILLANCE OF HIV AMONG PRISONERS, 2006-2011, BULGARIA. ABSTRACT

Tonka Varleva, Vyara Georgieva, Emilia Naseva, Tsvetana Yakimova, Mariya Zamfirova, Hristo Taskov, Bogdan Petrunov

Program "Prevention and control of HIV/AIDS", Ministry of Health, Bulgaria

The program "Prevention and Control of HIV/AIDS" was launched in 2004 according to the agreement between the Global Fund to Fight AIDS, Tuberculosis and Malaria and the Ministry of Health. Thanks to financial support from the Global Fund a national system of second generation epidemiological surveillance was established ensuring the implementation of integrated biological and behavioural surveillance (IBBS), including those specified in the two national programs for prevention and control of HIV/AIDS (with a period of duration of 2004-2007 and following a period of operation from 2008 to 2015) for the most vulnerable groups of the population, namely:

- Injecting Drug Users (IDU);
- Men who have sex with men (MSM);
- Young Roma people exposed to the greatest risk (injecting drug users, men who have sex with men, sex workers, persons who have served a sentence of imprisonment and mobile people);
- Imprisoned persons;
- Sex workers;
- Young people at risk;
- People living with HIV/AIDS;
- Migrants and refugees seeking asylum in the country;

With the launch of the program in 2004 several important new prerequisites were created for improving the control of the distribution and the dynamics of the infection among the group of persons serving sentence of imprisonment:

- After 2007, when the first agreement for cooperation was signed between the Minister of Health and Minister of Justice, which enabled external to the system of justice medical professionals to provide services in voluntary counselling and testing for HIV, hepatitis B and C and syphilis, the activities on prevention of HIV, the sexually transmitted infections and blood-transmissible hepatitis B and C were extended by the holding of regular lectures on health education on the aforementioned topics.
- The healthcare professionals providing medical services for inmates, as well as inspectors carrying out social and educational activities in prisons have contributed to actively motivating and encouraging imprisoned persons to use the services for voluntary counselling and testing (VCT) for HIV and participate in ongoing health education lectures.

These efforts made it possible to increase the detection of infected persons, especially through services for voluntary counselling and testing. A really indic-

Address for correspondence:
Program "Prevention and control of HIV/AIDS"
Ministry of Health
26 Yanko Sakazov blvd
Sofia
Bulgaria
Tel. +359 2 946 14 82
E-mail: aidsprogram@hdp.bg

ОСНОВНАТА ЕПИДЕМИОЛОГИЧНА ПАРАДИГМА В КОНТЕКСТА НА ВИРУСЕН ХЕПАТИТ С
ЧАСТ II. СОЦИАЛЕН КОМПОНЕНТ НА ЕПИДЕМИЧНИЯ ПРОЦЕС. МЕХАНИЗЪМ, ФАКТОРИ И ПЪТИЩА НА ПРЕДАВАНЕ НА ВИРУСА ПРИЧИНИТЕЛ

К. Терзиева[1], В. Дойчева[2], Т. Петкова[1], И. Попиванов[3], Хр. Хиткова[1], Т. Върлева[4], Д. Шаламанов[1]

[1]Медицински университет – Плевен, [2]Медицински университет – София
[3]Военномедицинска академия – София, [4]Министерство на здравеопазването

BASIC EPIDEMIOLOGICAL PARADIGM IN THE CONTEXT OF VIRUS HEPATITIS C
PART II. THE SOCIAL ASPECT OF THE EPIDEMIOLOGICAL PROCESS. MECHANISM, FACTORS AND ROUTES OF TRANSMISSION OF THE CAUSATIVE VIRALAGENT

K. Terzieva[1], V. Doicheva[2], T. Petkova[1], I. Popivanov[3], Hr. Hitkova[1], T. Varleva[4], D. Shalamanov[1]

[1]Medical University – Pleven, [2]Medical University – Sofia
[3]Military Medical Academy – Sofia, [4]Ministry of Health

Резюме. *Механизмът на предаване на вирусния хепатит С се обуславя предимно от социални фактори. Обзорът отразява натрупаните към момента знания за начините на предаване на причинителя на тази инфекция. Подбрана е литературна информация по проблема, която е интерпретирана в контекста на съвременната епидемиологична парадигма. Представени са исторически данни, отразяващи обособяването на заболяването като самостоятелна нозологична единица на базата на критерия механизъм на предаване. Подробно са разгледани парентералният, сексуалният и вертикалният механизъм на предаване и факторите, които реализират тези механизми. Направен е преглед на ефикасността на отделните пътища и са оценени рисковете за възможно заразяване при настъпил инцидент.*

Ключови думи: *вирусен хепатит С, механизъм на предаване, фактори на предаване, епидемиологична парадигма, инфекциозен риск, епидемичен риск*

Abstract. *The route of transmission of Virus Hepatitis C is determined mostly by social factors. The review presents the knowledge of the routes of transmission of the virus. Information from the literature on the problem has been selected and interpreted in the context of the current epidemiological paradigm. Historical data are presented on the process of establishing the disease as a separated disease entity, based on the route of transmission. The parenteral, sexual and vertical mechanisms of transmission and the factors that make the transmission possible are analysed in detail. The efficacy of the seroutes has been considered. The risks of a possible incidental infection are assessed.*

Key words: *hepatitis C virus infection, mechanism of transmission, factors of transmission, epidemiological paradigm, risk for infection, epidemiological risk*

ОСНОВНАТА ЕПИДЕМИОЛОГИЧНА ПАРАДИГМА В КОНТЕКСТА НА ВИРУСЕН ХЕПАТИТ С
ЧАСТ I. БИОЛОГИЧНА КОМПОНЕНТА НА ЕПИДЕМИЧНИЯ ПРОЦЕС. ПРИЧИНИТЕЛ, ИЗТОЧНИЦИ НА ИНФЕКЦИЯ И РЕЗЕРВОАР В ОБЩЕСТВОТО

К. Терзиева[1], В. Дойчева[2], Т. Петкова[1], М. Кунчев[3], Хр. Хиткова[4], Т. Върлева[4], Д. Шаламанов[1]

[1]Медицински университет – Плевен, [2]Медицински университет – София
[3]Военномедицинска академия – София, [4]Министерство на здравеопазването

BASIC EPIDEMIOLOGICAL PARADIGM IN THE CONTEXT OF VIRUS HEPATITIS C
PART I. BIOLOGICAL COMPONENT OF THE EPIDEMIC PROCESS. CAUSATIVE AGENT, SOURCES OF INFECTION AND RESERVOIR IN THE COMMUNITY

K. Terzieva[1], V. Doicheva[2], T. Petkova[1], M. Kunchev[3], Hr. Hitkova[1], T. Varleva[4], D. Shalamanov[1]

[1]Medical University – Pleven, [2]Medical University – Sofia
[3]Military Medical Academy – Sofia, [4]Ministry of Health

Резюме. *Вирусният хепатит С се явява глобален съвременен проблем. От епидемиологична гледна точка се откроява значението на молекулярнодиагностичните методи за изучаване пространствената епидемиология на заболяването. Обзорът отразява натрупаните до момента знания относно генетичната характеристика и екологичните отнасяния на вируса причинител, патогенезата от епидемиологична гледна точка, особеностите на източника на инфекция, рисковите групи и актуалния човешки резервоар. Разгледани и оценени са рисковете от инфектиране. Направен е критичен анализ на информацията в литературата, публикувана от водещите изследователи по проблема. Представени са и резултати от собствени проучвания на колектива върху генотипизиране и определяне на вирусния товар на хепатитен вирус С.*

Ключови думи: *епидемиологична парадигма, вирусен хепатит С, източници, генотипизиране, екология, рискови групи*

Abstract. *Virus hepatitis C is a global problem today. The importance of molecular diagnostic methods for studying the spatial epidemiological aspect of the disease is highlighted. The review presents the knowledge accumulated so far on the genetic characteristics and the ecological aspects of the virus, the pathogens is in its epidemiological aspect, the features of the source of infection, risk groups and the relevant human reservoir. Risks for infection are presented and estimated. The information published by leading researchers in the literature is presented and analyzed in detail. Data are presented from studies carried out by the team on genotyping and defining the viral load in cases of hepatitis C virus.*

Key words: *epidemiological paradigm, viral hepatitis C, viral load, sources, genotyping, risk groups*

Въведение

Втората половина на XX век е период на забележителни постижения в изучаването на вирусните хепатити. Приложението на интегриран подход в различните направления на инфектологията с включване на методики от молекулярната биология предостави добри възможности за изясняване на важни страни от етиологията, пато-

ЕТИЧНИ АСПЕКТИ НА БИО-ПОВЕДЕНЧЕСКИТЕ ПРОУЧВАНИЯ СРЕД УЯЗВИМИ НА HIV ПОПУЛАЦИИ, ПРОВЕЖДАНИ В БЪЛГАРИЯ

Е. Насева[1], Ц. Райчева[2], П. Цинцарски[2], В. Георгиева[2], Т. Върлева[2] и Х. Тасков[2]

[1]Факултет по обществено здраве, Медицински университет – София

[2]Програма „Превенция и контрол на HIV/СПИН", Министерство на здравеопазването

ETHICAL ASPECTS OF THE BIO-BEHAVIORAL SURVEYS AMONG HIV-VULNERABLE POPULATIONS CONDUCTED IN BULGARIA

E. Naseva[1], Ts. Raycheva[2], P. Tsintsarski[2], V. Georgieva[2], T. Varleva[2] and H. Taskov[2]

[1]Faculty of Public Health, Medical University – Sofia

[2]Program "Prevention and Control of HIV/AIDS", Ministry of Health

Резюме. *През периода 2004-2016 г. са проведени девет фази на проучване Интегриран биологичен и поведенчески надзор на HIV сред най-уязвимите на инфекцията групи. Това е епидемиологично проучване за набиране на биологична и поведенческа информация. Етичните проблеми при провеждане на проучването са свързани със запазване анонимността на респондентите, прилагане на информирано съгласие, осигуряване конфиденциалност на събраните данни, вземането на кръвна проба и съответните рискове при такъв тип медицинска манипулация, провеждане на пред- и следтестово консултиране и връщане на резултата. Най-важният критерий за включване в проучването е получаване на информирано съгласие. Ангажираните в проучването специалисти на всички нива са преминали обучение по етични аспекти на провеждане на проучвания сред хора. Анонимността на респондентите и конфиденциалността на данните е запазена, а рисковете при вземане на кръвни проби са минимизирани. На всички участници е осигурено предтестово консултиране, а при върнат резултат от кръвния тест – и следтестово консултиране.*

Ключови думи: *био-поведенческо проучване, HIV, СПИН, епидемиологичен надзор, етични аспекти*

Abstract. *During the period 2004-2016, nine phases of Integrated Biological and Behavioral Surveillance of HIV among the most vulnerable groups were conducted. This is an epidemiological study for collection of biological and behavioral information. The ethical issues in conducting the study are related to preserving the anonymity of respondents, applying informed consent, ensuring confidentiality of collected data, taking a blood sample and the risks involved in such medical manipulation, conducting pre- and post-test counseling and returning the result. The most important inclusion criterion for the study is obtaining informed consent. The specialists involved to the study at all levels have been trained on ethical issues of conducting research among humans. The anonymity of respondents and the confidentiality of the data are preserved, and the risks of taking blood samples are minimized. Pre-study counseling is provided to all participants, and post-study counseling in the case of returning the results of the blood sample.*

Key words: *bio-behavioral survey, HIV, AIDS, epidemiological surveillance, ethical aspects*

Въведение

България, като държава в Източна Европа, е на границата между две HIV епидемии – тази сред инжекционно употребяващите наркотици в Източна Европа и Централна Азия и тази сред мъжете, които правят секс с мъже в Западна и Централна Европа. Страната ни е с ниско разпространение на инфекцията, концентрирана сред уязвимите групи. Осъществяването на епидемиологичен надзор на HIV гарантира монито-

(8)

International Journal of Mycobacteriology xxx (2015) xxx–xxx

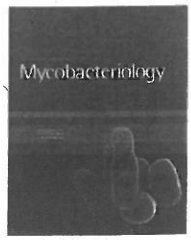
HOSTED BY

ELSEVIER

Available at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/IJMYCO



Factors associated with treatment success and death in cases with multidrug-resistant tuberculosis in Bulgaria, 2009–2010

Vladimir Milanov [a,*], *Dennis Falzon* [b], *Mariya Zamfirova* [c], *Tonka Varleva* [c], *Elizabeta Bachiyska* [d], *Antoniya Koleva* [e], *Masoud Dara* [f]

[a] *University Hospital for Respiratory Diseases "St. Sofia", Sofia, Bulgaria*
[b] *Global TB Programme, World Health Organization, Geneva, Switzerland*
[c] *Public Health Directorate, Ministry of Health, Sofia, Bulgaria*
[d] *National Tuberculosis Reference Laboratory (NRL-TB), National Centre of Infectious and Parasitic Diseases (NCIPD), Sofia, Bulgaria*
[e] *Specialized Hospital for Active Treatment of Lung Diseases, Gabrovo, Bulgaria*
[f] *World Health Organization Regional Office for Europe, Copenhagen, Denmark*

ARTICLE INFO

Article history:
Received 22 February 2015
Received in revised form
22 March 2015
Accepted 23 March 2015
Available online xxxx

Keywords:
Bulgaria
Tuberculosis (TB)
Multidrug-resistant tuberculosis (MDR-TB)
Extensively drug resistant tuberculosis (XDR-TB)
Treatment outcome

ABSTRACT

Objective: To analyze determinants of success and death in multidrug-resistant tuberculosis patients (MDR-TB; resistance to, at least, isoniazid and rifampicin) placed on treatment in Bulgaria during the period September 2009 to March 2010 using logistic regression.
Results: Fifty MDR-TB patients started treatment. Male:Female ratio was 2.3:1; mean age 43 years (range: 18–77); 19 patients (38%) were new; median duration of disease before treatment was 5 years (range: 1–13). All patients tested negative for HIV. Eight cases had XDR-TB (MDR-TB plus resistance to any fluoroquinolone and any second-line injectable). Twenty-four months after starting treatment, 24 patients (48%) had a successful outcome, in 6 (12%) treatment failed, 19 (38%) died, and one (2%) interrupted treatment. XDR-TB cases experienced higher mortality than others (75% vs. 30.9%, respectively, $P < 0.05$). Sputum smear positivity at start of treatment and weight loss or no weight gain were positively associated with death (adjusted Odds ratio: 5.16; 95% confidence interval: 1.16–22.84 and 5.61; 1.48–21.20, respectively) and negatively with success (0.13; 0.02–0.94 and 0.02; 0.00–0.19). No previous TB treatment increased likelihood of success (7.82; 1.09–56.15).
Discussion and conclusions: Most MDR-TB patients in this first treatment cohort using WHO-recommended norms had advanced disease explaining the high mortality and low success. Early, adequate treatment of MDR-TB patients can improve outcomes and avert transmission.

* Corresponding author at: Tuberculosis Clinic, University Hospital for Respiratory Diseases "St. Sofia", 19, "Acad. Ivan Geshov" Blvd., 1431 Sofia, Bulgaria. Tel.: +359 2 80 54 287, mobile: +359 887796321.
E-mail address: vlmilanov@yahoo.com (V. Milanov).

Peer review under responsibility of Asian African Society for Mycobacteriology.
http://dx.doi.org/10.1016/j.ijmyco.2015.03.005
2212-5531/

Please cite this article in press as: V Milanov et al. Factors associated with treatment success and death in cases with multidrug-resistant tuberculosis in Bulgaria, 2009–2010. Int. J. Mycobacteriol. (2015), http://dx.doi.org/10.1016/j.ijmyco.2015.03.005

Infection, Genetics and Evolution 46 (2016) 269–278

Contents lists available at ScienceDirect

Infection, Genetics and Evolution

journal homepage: www.elsevier.com/locate/meegid

Origin and spread of HIV-1 in persons who inject drugs in Bulgaria

Ivailo Alexiev [a,*], Anupama Shankar [b], Reneta Dimitrova [a], Anna Gancheva [a], Asia Kostadinova [a], Pavel Teoharov [c], Elitsa Golkocheva [c], Maria Nikolova [d], Mariya Muhtarova [d], Ivaylo Elenkov [e], Mariyana Stoycheva [f], Daniela Nikolova [g], Tonka Varleva [h], William M. Switzer [b]

[a] National Reference Laboratory of HIV, National Center of Infectious and Parasitic Diseases, Sofia, Bulgaria
[b] Laboratory Branch, Division of HIV/AIDS Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Centers for Disease Control and Prevention, Atlanta, GA, USA
[c] National Reference Laboratory of Hepatitis, National Center of Infectious and Parasitic Diseases, Sofia, Bulgaria
[d] National Reference Laboratory of Immunology, National Center of Infectious and Parasitic Diseases, Sofia, Bulgaria
[e] Hospital for Infectious and Parasitic Diseases, Sofia, Bulgaria
[f] Department of Infectious Diseases, Medical University, Plovdiv, Bulgaria
[g] Clinic of Infectious Diseases, Medical University, Varna, Bulgaria
[h] Program Prevention and Control of HIV/AIDS, Ministry of Health, Sofia, Bulgaria

ARTICLE INFO

Article history:
Received 20 March 2016
Received in revised form 18 May 2016
Accepted 20 May 2016
Available online 21 May 2016

Keywords:
HIV
Molecular epidemiology
Injection drug use
Subtype
Drug resistance
Hepatitis

ABSTRACT

Increased HIV transmission in persons who inject drugs (PWIDs) has led to subepidemics and outbreaks in several countries in Europe, including Bulgaria. In this study in Bulgaria, we investigate the origin and spatiotemporal evolutionary history of HIV-1 infections in PWIDs and the distribution of antiretroviral resistance mutations and hepatitis co-infections in these populations. We analyzed HIV-1 polymerase sequences available from 117 of 359 PWIDs diagnosed with HIV/AIDS from 1999 to 2011. Of these, 50 (42.7%) were classified as CRF02_AG, 41 (35.0%) CRF01_AE, 12 (10.3%) URFs, ten (8.5%) subtype B, two (1.7%) subtype F1 and two (1.7%) CRF14_BG. Most recent common ancestor dating suggests that CRF01_AE was likely first introduced from Southeast Asia into persons reporting heterosexual infection in Bulgaria in 1992 and spread subsequently to PWIDs in the capital city of Sofia around 2003. Conversely, CRF02_AG in Bulgaria was likely first introduced into PWID from Germany in 2000 and later entered heterosexual populations around 2009. The overall prevalence of resistance mutations was 6.8% (8/117), of which 5.1% (5/117) was observed in patients on antiretroviral therapy and 1.7% (2/117) was from transmitted drug resistance mutations in drug-naïve individuals. 189/204 (92.6%) PWIDs were also co-infected with hepatitis C (HCV) and 31/183 (16.9%) were co-infected with hepatitis B (HBV). Our study provides valuable molecular epidemiological information on the introduction and distribution of the main HIV-1 subtypes, resistance mutations and hepatitis co-infections among PWIDs with HIV-1 in Bulgaria which can be used to target prevention efforts.

1. Introduction

In Europe the main HIV-1 transmission routes vary by geographic region with transmission by heterosexual (HET) contact and in men who have sex with men (MSM) predominating in Eastern and West-Central Europe, respectively (Bozicevic et al. 2013). While this trend has remained relatively stable over time, transmission from and within PWIDs is rapidly expanding in some East European countries, including Ukraine and Russia, and a number of outbreaks among PWIDs have been reported in Greece and Romania, both of which border Bulgaria (Paraskevis et al. 2015).

Since the early 1990s, drug abuse and drug trafficking have emerged as visible and serious socioeconomic and public health problems in Bulgaria (EMCDDA, 2015a,b). Injecting drug use or the regular use of opioids, cocaine and/or amphetamines was estimated to affect 6 per 1000 citizens (EMCDDA, 2015a,b). Thus, between 2003 and 2011 a significant spike in HIV-1 incidence among PWIDs was observed (Alexiev et al. 2013). As of 2013, 359/1446 (24.8%) registered HIV/AIDS cases in Bulgaria were PWIDs (Hedrich et al. 2013). Concomitantly, a high prevalence of other blood-borne infections, including HCV and to a lesser extent HBV, were also seen in this population (Vassilev et al. 2006). This finding contrasts with the early epidemic in Bulgaria that predominated in heterosexual groups (Alexiev et al. 2013). Nonetheless, little is known about how and where HIV-1 originated in PWIDs or if those groups will be bridges for resurgence of the epidemic in other risk groups as has been reported in Eastern Europe (Bozicevic et al. 2013). We performed molecular epidemiological and phylogeographic analyses using

* Corresponding author at: National Reference Laboratory of HIV, National Center of Infectious and Parasitic Diseases, 44a Gen. N. Stoletov Blvd, 1233 Sofia, Bulgaria.
E-mail address: ivoalexiev@yahoo.com (I. Alexiev).

http://dx.doi.org/10.1016/j.meegid.2016.05.029
1567-1348/

Vries et al. BMC Public Health (2017) 17:334
DOI 10.1186/s12889-017-4216-9

BMC Public Health

RESEARCH ARTICLE Open Access

Health system factors influencing management of multidrug-resistant tuberculosis in four European Union countries - learning from country experiences

Gerard de Vries[1], Svetla Tsolova[2*], Laura F. Anderson[3], Agnes C. Gebhard[1], Einar Heldal[1], Vahur Hollo[2], Laura Sánchez-Cambronero Cejudo[4], Daniela Schmid[5], Bert Schreuder[1], Tonka Varleva[6] and Marieke J. van der Werf[2]

Abstract

Background: In the European Union and European Economic Area only 38% of multidrug-resistant tuberculosis patients notified in 2011 completed treatment successfully at 24 months' evaluation. Socio-economic factors and patient factors such as demographic characteristics, behaviour and attitudes are associated with treatment outcomes. Characteristics of healthcare systems also affect health outcomes. This study was conducted to identify and better understand the contribution of health system components to successful treatment of multidrug-resistant tuberculosis.

Methods: We selected four European Union countries to provide for a broad range of geographical locations and levels of treatment success rates of the multidrug-resistant tuberculosis cohort in 2009. We conducted semi-structured interviews following a conceptual framework with representatives from policy and planning authorities, healthcare providers and civil society organisations. Responses were organised according to the six building blocks of the World Health Organization health systems framework.

Results: In the four included countries, Austria, Bulgaria, Spain, and the United Kingdom, the following healthcare system factors were perceived as key to achieving good treatment results for patients with multidrug-resistant tuberculosis: timely diagnosis of drug-resistant tuberculosis; financial systems that ensure access to a full course of treatment and support for multidrug-resistant tuberculosis patients; patient-centred approaches with strong intersectoral collaboration that address patients' emotional and social needs; motivated and dedicated healthcare workers with sufficient mandate and means to support patients; and cross-border management of multidrug-resistant tuberculosis to secure continuum of care between countries.

Conclusion: We suggest that the following actions may improve the success of treatment for multidrug-resistant tuberculosis patients: deployment of rapid molecular diagnostic tests; development of context-specific treatment guidance and criteria for hospital admission and discharge in the European context; strengthening patient-centred approaches; development of collaborative mechanisms to ensure cross-border care, and development of long-term sustainable financing strategies.

Keywords: European Union, Healthcare systems, Multidrug-resistance, Treatment outcome, Tuberculosis

* Correspondence: Svetla.Tsolova@ecdc.europa.eu
[2]European Centre for Disease Prevention and Control, Tomtebodavagen 11A, S-171 83 Stockholm, Sweden
Full list of author information is available at the end of the article

REPORT OF INTEGRATED BIO-BIHEVIORAL SURVEILLANCE OF HIV AMONG 18-25 YEARS OLD MALES IN ROMA COMMUNITY, 2005-2012, BULGARIA. ABSTRACT

Tonka Varleva, Elena Kabakchieva, Emilia Naseva, Tsvetana Yakimova, Vyara Georgieva, Mariya Zamfirova, Hristo Taskov, Bogdan Petrunov

Program "Prevention and control of HIV/AIDS", Ministry of Health, Bulgaria

The Roma community represents a significant part of the total population and is considered the most vulnerable to HIV infection among the ethnic minorities. This is the result of numerous overlaping factors associated with the traditional way of life in the community and socio-economic characteristics: rapid onset of de-socialization, social isolation, low general and health education, high unemployment rates - up to 90%, lower general and economic culture in the group, lack of social skills and motivation for socialization which facts determine the increasing rate of prostitution, drug use, crime, mobility. These problems can be added to the insufficient coverage of health services, especially the prevention program; condom use is still culturally unacceptable in many Roma communities; there are persistent taboos on sex; there is a double moral standard - strong control over the sexual behavior of women and "complete freedom" with regard to men. The vulnerability to HIV / AIDS infections is further enhanced by culturally accepted anal sex as part of the repertoire of sexual practices. A great part of the Roma community is affected by the STIs, which represents an open door for HIV. The prevailing negative image created by the media defines a certain attitude of mistrust towards the messages addressed to the community.
All these implies strategic planning of specific complementary activities and interventions directly targeted at Roma communities. Sustainable reduction of the vulnerability in Roma communities can only be successful by applying interdisciplinary policies for development and integration.

Activity in Objective 5 and territorial coverage

The main aim: Limiting the spread of HIV and AIDS by reducing the vulnerability to HIV and STIs among the Roma community. The interventions include outreach and counseling for HIV and STIs, distribution of free condoms and culturally-tailored health educational materials, voluntary counseling and testing for HIV and STIs, free medical examinations for STIs, training of youth leaders in peer education, case management for those at highest risk, guidance and accompanying to other existing services, conducting AIDS campaigns within the community.
Major target groups of these interventions are the young Roma population aged 12-25 years, and specific groups at particularly high risk of spreading HIV - sex workers who have sex with men; intravenous drug users already infected with HIV and their sexual partners.
The activities under Component 5 of the Program have taken place with different

Address for correspondence
Program "Prevention and control of HIV/AIDS"
Ministry of Health
26 Yanko Sakazov blvd
Sofia
Bulgaria
Tel. +359 2 946 14 82
E-mail: aidsprogram@hdp.bg

REPORT OF INTEGRATED BIO-BIHEVIORAL SURVEILLANCE OF HIV AMONG MEN WHO HAVE SEX WITH MEN, 2006-2012, BULGARIA. ABSTRACT

Tonka Varleva, Petar Tsintsarski, Emilia Naseva, Tsvetana Yakimova, Vyara Georgieva, Mariya Zamfirova, Hristo Taskov, Bogdan Petrunov

Program "Prevention and control of HIV/AIDS", Ministry of Health, Bulgaria

The program „Prevention and Control of HIV/AIDS" is financed by the Global Fund to Fight AIDS, Tuberculosis and Malaria and it aims at providing adequate and quality health and social services to the most vulnerable groups at different levels of intervention, improving experts' knowledge and skills and the institutional commitment and implementing significant positive changes in the community standards, the risky sexual behavior as well as behavior associated with drug use with regard to the prevention and control of HIV/AIDS in Bulgaria.

The main goal in implementing the program „Prevention and Control of HIV/AIDS" is to contribute to reducing the number of new cases of infection with HIV. The activities are aimed at:

- Expanding the access, scope and quality of services for voluntary counseling and testing as a basis for prevention, treatment and support with a special focus on groups being most at risk;
- Reducing specific vulnerability in the groups at greatest risk (injecting drug users – *IDUs, Roma communities, prostitutes, young people at risk, people living with HIV, men who have sex with men – MSM*), increasing coverage and ensuring access to comprehensive, high quality programs and services addressing the specific needs and priorities of these groups;

The proportion of infected men and women compared to the total number of registered cases in the period 1986-2006 was 2:1, which suggests that a significant proportion of men might fall into the homo/bisexual transmissible category. In the recent years, the period within 2009-2014 this ratio increases to 4:1 in favor of men. In 2005, 30% of the men receiving ARV therapy are MSM. Data from the national register of HIV in 2006 show that 78% of people infected with HIV are men, suggesting of the possibility of a hidden epidemic in the MSM group.

Considering the high risk in the group of men who have sex with men, the program „Prevention and Control of HIV/AIDS" was extended in 2009 by another objective: **Objective 9: „Reducing the vulnerability to HIV among men who have sex with men (MSM) by expanding the coverage of the group with a full package of preventive interventions.**

Men who have sex with men are a group difficult to be reached, and data regarding it is insufficient. Based on various studies in Eastern Europe, the expert assessment of the size of the group in Bulgaria is 3% of the male population in the country (aged between 15 and 49 years), or approximately 60 000 persons.

The term men who have sex with men (MSM), is mainly used in studying the spread of HIV and refers to men who engage in sexual activity with other men, whether they identify themselves as gay, bisexual, heterosexual or do not use terms to describe their sexual orientation. MSM is

Address for correspondence
Program "Prevention and control of HIV/AIDS"
Ministry of Health
26 Yanko Sakazov blvd
Sofia
Bulgaria
Tel. +359 2 946 14 82
E-mail: aidsprogram@hdp.bg

OPEN ACCESS Freely available online

PLOS | ONE

Detailed Molecular Epidemiologic Characterization of HIV-1 Infection in Bulgaria Reveals Broad Diversity and Evolving Phylodynamics

Ivailo Alexiev Ivanov[1]*, Danail Beshkov[1], Anupama Shankar[2], Debra L. Hanson[2], Dimitrios Paraskevis[3], Viara Georgieva[1], Lyudmila Karamacheva[1], Hristo Taskov[1], Tonka Varleva[4], Ivaylo Elenkov[5], Mariana Stoicheva[6], Daniela Nikolova[7], William M. Switzer[2]

1 National Reference Laboratory of HIV, National Center of Infectious and Parasitic Diseases, Sofia, Bulgaria, **2** Division of HIV/AIDS Prevention, National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention, Centers for Disease Control and Prevention, Atlanta, Georgia, United States of America, **3** National Retrovirus Reference Center, Department of Hygiene Epidemiology and Medical Statistics, Medical School, University of Athens, Athens, Greece, **4** Program "Prevention and Control of HIV/AIDS", Ministry of Health, Sofia, Bulgaria, **5** Hospital for Infectious and Parasitic Diseases, Sofia, Bulgaria, **6** Medical University, Plovdiv, Bulgaria, **7** Medical University, Clinic of Infectious Diseases, Varna, Bulgaria

Abstract

Limited information is available to describe the molecular epidemiology of HIV-1 in Bulgaria. To better understand the genetic diversity and the epidemiologic dynamics of HIV-1 we analyzed 125 new polymerase (*pol*) sequences from Bulgarians diagnosed through 2009 and 77 *pol* sequences available from our previous study from persons infected prior to 2007. Epidemiologic and demographic information was obtained from each participant and phylogenetic analysis was used to infer HIV-1 evolutionary histories. 120 (59.5%) persons were infected with one of five different HIV-1 subtypes (A1, B, C, F1 and H) and 63 (31.2%) persons were infected with one of six different circulating recombinant forms (CRFs; 01_AE, 02_AG, 04_cpx, 05_DF, 14_BG, and 36_cpx). We also for the first time identified infection with two different clusters of unique A-like and F-like sub-subtype variants in 12 persons (5.9%) and seven unique recombinant forms (3.5%), including a novel J/C recombinant. While subtype B was the major genotype identified and was more prevalent in MSM and increased between 2000–2005, most non-B subtypes were present in persons ≥45 years old. CRF01_AE was the most common non-B subtype and was higher in women and IDUs relative to other risk groups combined. Our results show that HIV-1 infection in Bulgaria reflects the shifting distribution of genotypes coincident with the changing epidemiology of the HIV-1 epidemic among different risk groups. Our data support increased public health interventions targeting IDUs and MSM. Furthermore, the substantial and increasing HIV-1 genetic heterogeneity, combined with fluctuating infection dynamics, highlights the importance of sustained and expanded surveillance to prevent and control HIV-1 infection in Bulgaria.

Citation: Ivanov IA, Beshkov D, Shankar A, Hanson DL, Paraskevis D, et al. (2013) Detailed Molecular Epidemiologic Characterization of HIV-1 Infection in Bulgaria Reveals Broad Diversity and Evolving Phylodynamics. PLoS ONE 8(3): e59666. doi:10.1371/journal.pone.0059666

Editor: Chiyu Zhang, Institut Pasteur of Shanghai, Chinese Academy of Sciences, China

Received July 16, 2012; **Accepted** February 20, 2013; **Published** March 19, 2013

Funding: This study was funded in part by the Bulgarian Ministry of Health Directorate "Management of Specialized Donor-funded Programs" and by the European Commission sixth framework supported programs EuropeHIVResistance, grant LSHPCT-2006-518211. The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Competing Interests: The authors have declared that no competing interests exist.

* E-mail: Ivoalexiev@yahoo.com

Introduction

The rapidly evolving human immunodeficiency virus type 1 (HIV-1) is characterized by enormous genetic heterogeneity and is divided phylogenetically into four major groups: M (major), N (new), O (outlier), and the recently identified group P from a cross-species transmission from an SIV-infected gorilla [1]. Nine subtypes of HIV-1 group M (A–D, F–H, J and K) and few sub-subtypes, e.g. F1, F2, and A1 – A4 are currently recognized. In addition, a great variety of circulating recombinant forms (CRFs) and unique recombinant forms (URFs) have been identified adding to the growing genetic complexity of HIV-1 [2]. The unequal worldwide distribution of the different HIV-1 genotypes results from the global transmission and spread of certain variants or the limited spread of local endemic strains [2]. Subtype B is predominant in the Americas, Western Europe, and Australia [3,4], subtype A prevails in Russia and the former Soviet Union (FSU) countries, and is also prevalent in Africa. Subtype C is the most abundant genetic form in South and Eastern Africa, South East Asia, and worldwide followed by subtypes A and B. CRFs and URFs are widely distributed in countries where different subtypes co-circulate [5,6]. In Eastern Europe, Russia, Ukraine, Belarus and Moldova the HIV-1 epidemic is dominated by subtype A, followed by subtype B and CRF03_AB [7–10]. In the Baltic countries, subtype B predominates in Lithuania, subtype A1 is more common in Latvia, and the rare genetic form CRF06_cpx prevails in Estonia [11–13].

The HIV-1 epidemic in the Balkan region has been affected by various historic and socio-economic factors. Recently, several studies of HIV-1 molecular epidemiology in this region have reported a wide variety of introduced and prevalent HIV-1 genotypes with specific subtypes predominating in each country.

Sperle et al. BMC Res Notes (2020) 13:326
https://doi.org/10.1186/s13104-020-05158-3

BMC Research Notes

RESEARCH NOTE Open Access

Prevalence of hepatitis C in the adult population of Bulgaria: a pilot study

Ida Sperle[1,2*], Stine Nielsen[3], Martyna Gassowski[1], Zlatina Naneva[4], Tanya Perchemlieva[4], Andrew Amato-Gauci[5], Matthias an der Heiden[1], Viviane Bremer[1], Elitsa Golkocheva-Markova[6], Kristiyan Hristov[7], Elena Kaneva[4], Yanita Simeonova[1], Tencho Tenev[6], Tonka Varleva[7], Erika Duffell[5] and Ruth Zimmermann[1]

Abstract

Objective: This study piloted a European technical protocol for conducting chronic hepatitis C prevalence surveys in the general population. The pilot study took place in the Bulgarian city of Stara Zagora in 2018, and results of setting up, conducting and evaluating the survey are presented.

Results: A probability-based sample of the general adult population was drawn from the local population registry, stratified by age and sex. A sample size of 999 was calculated, and accounting for 50% non-response, 1998 registered invitation letters were sent. Venous blood samples and questionnaire data were collected by the Regional Health Inspectorate in Stara Zagora. Blood samples were tested for anti-HCV, and if reactive for RNA. 252 (21.6%) of the participants were included in the study. Mean age and sex distribution differed between the participants (55.9 years, 60.3% females) and the total sample (48.9 years, 53.4%). The weighted chronic HCV prevalence among participants was 0.9% [95% CI 0.2–4.2%]. The approach of only sending registered letters contributed to a low response rate, and more efforts are needed to reduce non-response, especially among men and younger age groups. Results of the evaluation were integrated in the final technical protocol.

Keyword: Hepatitis C, HCV, Prevalence, General population, Prevalence survey, Bulgaria

Introduction

The World Health Organization global strategy on viral hepatitis calls for elimination as a public health threat by 2030 [1] and national prevalence of chronic hepatitis C virus (HCV) infection is one of ten core indicators to be monitored [2].

HCV is primarily transmitted through infected blood and in European Union (EU) countries it mainly affects people who inject drugs (PWID) [3]. However, a higher prevalence may be found in birth cohorts of the general population (GP) exposed through nosocomial or transfusion-related transmission [4–7].

A recent systematic review found an anti-HCV prevalence in the GP in EU/European Economic Area (EEA) ranging from 0.1% (Belgium, Ireland and the Netherlands) to 5.9% (Italy) [3, 8]. Differences in prevalence between 16 countries with available estimates were difficult to interpret due to heterogeneous methodological approaches [3]. To address this, the European Center for Disease Prevention and Control contracted the Robert Koch Institute (RKI) from 2016 to 2019 to develop and pilot an evidence-based technical protocol with the aim to contribute to the standardisation of chronic HCV prevalence surveys in the GP. The protocol was developed in conjunction with an international and interdisciplinary expert panel and was published in March 2020

*Correspondence: sperle-heupeli@rki.de
[1] Department of Infectious Disease Epidemiology, Robert Koch Institute, Berlin, Germany
Full list of author information is available at the end of the article

Journal of Immigrant and Minority Health
https://doi.org/10.1007/s10903-020-01081-8

ORIGINAL PAPER

Levels of HIV Testing Among Young Men Who Have Sex with Men in Bulgaria: Very Low Testing by Ethnic Minority Roma (Gypsy) Men

Jeffrey A. Kelly[1] · Yuri A. Amirkhanian[1] · Elena Kabakchieva[2] · Sylvia Vassileva[2] · Timothy L. McAuliffe[1] · Wayne J. DiFranceisco[1] · Tonka Varleva[3]

Accepted: 5 September 2020

Abstract
Little is known about HIV testing among young men who have sex with men (MSM) in Southeastern European countries, nor about differences in testing by young ethnic majority and young Roma MSM, the region's most disadvantaged minority population. 271 young MSM (153 non-Roma and 118 Roma) were recruited in Sofia, Bulgaria and completed measures of HIV testing, psychosocial characteristics related to testing, sexual behavior, and substance use. While 74% of ethnic majority MSM had an HIV test (and 56% had multiple prior tests), only 4% of Roma MSM had ever been tested. Roma MSM had lower knowledge about HIV testing, perceived greater barriers and weaker social norms for testing, and held more negative testing attitudes and intentions. Although all had male partners, no Roma MSM self-identified as gay and most reported transactional sex. Efforts are urgently needed to increase HIV testing uptake by young Roma MSM.

Keywords Men who have sex with men · Gay/bisexual men · HIV · Testing · Roma (Gypsies) · Bulgaria

Introduction

In contrast to most other parts of the world, the HIV epidemic in former socialist countries of Southeastern Europe has received little public health research attention. Bulgaria's number of new diagnosed HIV infections has increased steadily almost every year since the mid-1990s and reached a record high in 2018 [1]. Although most HIV infections in the early years of Bulgaria's epidemic were among persons who inject drugs, the large majority of recently-diagnosed cases are attributable to sexual transmission, and 54% of HIV infections in 2018 were among men who have sex with men (MSM) [1]. Similar patterns characterize neighboring countries. Most new HIV infections in Serbia, Hungary, Czechia, Slovakia, and North Macedonia are among MSM, while more HIV cases have been diagnosed among MSM in Romania, Greece, and Turkey than any other exposure group [2, 3]. As in many other countries in the region, Bulgaria's HIV incidence is modest on a national population level, but the disease remains a concentrated epidemic that especially affects young MSM.

Early HIV diagnosis with immediate initiation of antiretroviral therapy (ART) that sustains viral suppression dramatically reduces HIV morbidity and mortality and prevents downstream disease transmission [4]. For these prevention and health benefits to be achieved, persons at high risk for contracting HIV infection—such as sexually-active MSM—must regularly test and—if diagnosed—be quickly linked and retained in medical care [5]. While MSM now account for most of Bulgaria's HIV infections, very little is known about their testing practices and about how well HIV testing programs function as gateways for early diagnosis and to support the approach of HIV treatment-as-prevention for young MSM.

Bulgaria's population is composed of ethnic majority Bulgarians and also ethnic minority Roma (Gypsies). Roma comprise between 4.4 and 10% of Bulgaria's population (325,343 to 750,00 persons), depending upon estimate sources and means used to designate ethnicity [6, 7]. The Roma population is marginalized and disadvantaged. Between 62 and 84% of Roma in Bulgaria have incomes below the country's poverty

✉ Jeffrey A. Kelly
jeff.kelly@mcw.edu

1 Center for AIDS Intervention Research (CAIR), Medical College of Wisconsin, 2071 North Summit Avenue, Milwaukee, WI 53202, USA

2 Health and Social Development Foundation, Sofia, Bulgaria

3 Bulgaria Ministry of Health, Sofia, Bulgaria

Published online: 11 September 2020

AIDS Research and Human Retroviruses

DOI: 10.1089/AID.2016.0148

HIGH RATE OF HEPATITIS B AND C CO-INFECTIONS AMONG PEOPLE LIVING WITH HIV-1 IN BULGARIA: 2010-2014 (doi: 10.1089/AID.2016.0148)
This paper has been peer-reviewed and accepted for publication, but has yet to undergo copyediting and proof correction. The final published version may differ from this proof.

HIGH RATE OF HEPATITIS B AND C CO-INFECTIONS AMONG PEOPLE LIVING WITH HIV-1 IN BULGARIA: 2010-2014

I Alexiev[1],M Alexandrova[2], E Golkocheva-Markova[3], P Teoharov[3], A Gancheva[1], A Kostadinova[1],R Dimitrova[1], I Elenkov[4], T Chervenjakova [4],M Stoycheva[5], D Nikolova[6],T Varleva[7], M. Nikolova[2]

1 National Reference Laboratory of HIV, National Center of Infectious and Parasitic Diseases, Sofia, Bulgaria.

2 National Reference Laboratory of Immunology, National Center of Infectious and Parasitic Diseases, Sofia, Bulgaria.

3 National Reference Laboratory of Hepatitis, National Center of Infectious and Parasitic Diseases, Sofia, Bulgaria.

4 Specialized Hospital for Active Treatment of Infectious and Parasitic Diseases, Sofia, Bulgaria.

5 Department of Infectious Diseases, Medical University, Plovdiv, Bulgaria.

6 Clinic of Infectious Diseases, Medical University, Varna, Bulgaria.

7 Program Prevention and Control of HIV/AIDS, Ministry of Health, Sofia, Bulgaria.

Running Title: HIV-1/HEPATITIS CO-INFECTIONS IN BULGARIA: 2010-2014

Corresponding author:

Prof. Maria Nikolova, MD, DSc

Head, National Reference Laboratory of Immunology

National Center of Infectious and Parasitic Diseases

26, Yanko Sakazov St.; 1504 Sofia

e-mail: mstoimenova@ncipd.org

+359 2 9435636

+359 884993155

Bulgaria is a south-eastern European country with a population of 7 million, and a cumulative number of 2077 HIV/AIDS cases in 2014 [1]. HIV-1 epidemics is concentrated among populations at risk, including persons who inject drugs (PWIDs), men who have sex with men (MSM), prisoners and Roma people [2]. The rates of HCV- and HBV-infections among the general population in 2010-2013 were within the lower and middle range for Europe (0.8%-1.3% and 4.1%-5.2%, respectively [3]). However, the rate of HCV infections among PWIDs in Bulgaria has significantly increased [4]. We evaluated the distribution of HBV and HCV co-infections among the newly diagnosed HIV+ cases between 2010 and 2014.

Out of 934 HIV-1+ cases, 404 were heterosexual (HET), 312 were MSM and 218 were PWIDs (Table 1). Together, prisoners and Roma people represented a significant share of 28.5%. ELISA tests for HBsAg and for HCV antibodies (Ab) were performed in almost 85% of the HIV/AIDS patients, yielding a positive result in 10.4% and 25.6% of the cases, respectively. In 31 patients double HBV/HCV co-infection was detected. PCR tests were conducted for 57.3% of the HBsAg+ and 74.4% of the HCVAb+ patients. HBV DNA was detected in 51.1% and HCV RNA – in 78.1% of the tested. Thus, the rates of HBV and HCV co-infection among people living with HIV (PLHIV) were much higher than the estimates for the general Bulgarian population and fell within the upper range reported in Europe [3].

While men prevailed among the new HIV/AIDS cases, HBV and HCV co-infections were not gender-associated. Coinfections were most frequent in the capital city of Sofia (33% of HBsAg+ and 45% of HCVAb+ cases) and the second largest town of Plovdiv (28% and 27%, respectively). Positive serology results were much more frequent in PWIDs, than in HET and MSM: 20.6%HBsAg+ and 87.4%HCVAb+ tests vs. 8.2% and 14.3% for HET and 8.4% and 3% for MSM, respectively ($p<0.001$). Importantly, 44.4% of the PCR-tested PWID were HBV-DNA+ and 81.9% were HCV-RNA+, indicating a high level of active viral replication within this group. A significantly higher rate of active HCV infections was detected among HIV+ MSM injecting drugs, as compared to MSM alone (88.9% vs. 50% of the tested). On the other hand, the frequency of active HBV infection was highest among MSM (42% vs. 33% for PWIDs and 25% for HET) underlining the importance of follow-up for HBsAg+ MSM including HBV DNA testing. Prisoners and Roma people were at increased risk for both HBV and HCV infection. Active HBV replication was significantly more frequent among prisoners as compared to Roma people (75% vs. 42.1%, $p< 0.001$) in spite of similar rates of HBsAg-positivity (16.9% and 17.4%, respectively, $p>0.05$), and close to that in MSM. The

HIGH RATE OF HEPATITIS B AND C CO-INFECTIONS AMONG PEOPLE LIVING WITH HIV-1 IN BULGARIA: 2010-2014 (doi: 10.1089/AID.2016.0148)
This paper has been peer-reviewed and accepted for publication, but has yet to undergo copyediting and proof correction. The final published version may differ from this proof.

rates of active HCV infections were high in both risk groups (73.3% and 76.6% respectively), and similar to those in PWID.

In conclusion, this nationwide representative study revealed unexpectedly high rates of HBV and HCV co-infections among PLHIV in Bulgaria. As a marker of parenteral drug use high HCV rates indicated a PWID-driven epidemic among vulnerable groups with multi-risk behaviour, such as Roma people and prisoners. Since HBV and HCV co-infections in PLHIV are associated with disease progression and reduced survival, the adequate laboratory and epidemiological monitoring of these multi-risk groups are essential for both patients' management and public health protection.

References:

1. 2014, ECDC/WHO, HIV/AIDSSurveillanceinEurope. Available from:http://ecdc.europa.eu/en/publications/surveillance_reports/HIV_STI_and_blood_borne_viruses/Pages/hiv_aids_surveillance_in_Europe.aspx
2. Alexiev I, Beshkov D, Shankar A, Hanson, D, Paraskevis D, Georgieva V, et al. Detailed Molecular Epidemiologic Characterization of HIV-1 Infection in Bulgaria Reveals Broad Diversity and Evolving Phylodynamics. PloS one, 2013; 8(3): e59666.
3. European Centre for Disease Prevention and Control.Hepatitis B/C surveillance in Europe – 2013. Stockholm: ECDC; 2015.Available from:http://ecdc.europa.eu/en/publications/Publications/hepatitis-b-surveillance-in-europe-2013.pdf /http://ecdc.europa.eu/en/publications/Publications/hepatitis-c-surveillance-in-europe-2013.pdf
4. Ciccozzi M, Zehender G, Cento V, Lo Presti A, Teoharov P, Pavlov I, et al. Molecular analysis of hepatitis C virus infection in Bulgarian injecting drug users. J MedVirol. 2011;83(9):1565-0.

Factors associated with tuberculosis among prisoners in Bulgaria for the period 2004-2013

Vladimir Milanov, Mariya Zamfirova, Tonka Varleva, Tsetska Simeonova, Margarita Trifonova, Angelina Yaneva
European Respiratory Journal 2014 44: P1434; **DOI:**

Article | Info & Metrics

Abstract

A retrospective study of the prisoners registered with active tuberculosis (TB) in Bulgaria from 2004 to 2013 was performed. **Aim:** To describe the demographic, epidemiological, microbiological and social factors associated with TB among prisoners. **Materials and methods:** Case-based data were obtained from the medical records a Hospital for Active Treatment of Inmates at Lovech Prison and from the National TB Registry Database. **Results:**Of the 28,134 total TB cases registered, 783 (2.8%) were reported from the prison system, with median rate of 769 per 100,000 inmates, 20 times higher than those in the general population (37 per 100,000 people). The Male:Female ratio was 195:1. The mean age was 34.7 years (range: 17-77). There were 105 TB cases (13.4%) in age group 15-24 years, 332 (42.4%) in age group 25-34 years, 215 (27.5%) in age group 35-44 years, 98 (12.5%) in age group 45-54 years, 30 (3.8%) in age group 55-64 years, and 3 (0.4%) ove 65 years. There were 566 new cases (72.2%) and 217 (27.8%) after previous treatment. Six hundred seventy si prisoners (86.3%) had pulmonary TB, out of them 182 (26.9%) with positive microscopy and/or culture. Seven cases were with multidrug-resistant TB, 4.2% of all confirmed by positive cultures (n=166). Out of 735 TB cases who started treatment in 2004-2012, 535 (72.8%) completed it successfully, 13 (1.8%) died, 180 (24.5%) did not complete their treatment because of interruption, transfer or unknown outcome. **Conclusion:** Our study demonstrates disparities in TB rates and treatment outcomes in the prison system compared with general population. Important factors associated with TB among prisoners are male sex, younger age groups and previous treatment.

Tuberculosis - management Epidemiology Treatments

International Journal of Science and Research (IJSR)
ISSN (Online): 2319-7064
Index Copernicus Value (2013): 6.14 | Impact Factor (2015): 6.391

HCV Co-Infection Compromising the Effects of c-ART–An Insight from the HIV-Positive Population in Bulgaria

M. Alexandrova[1], E. Golkocheva-Markova[2], A.Timchev[3], N. Yancheva[4], I.Elenkov[5], I.Alexiev[6], P. Teoharov[7], T. Varleva[8], M. Nikolova[9]

[1, 9]National Reference Laboratory for Immunology, National Center of Infectious and Parasitic Diseases (NCIPD), Sofia

[2]Specialized Hospital for Active Treatment of Infectious and Parasitic Diseases "Professor Ivan Kirov", Sofia

[3, 4, 5, 7] National Reference Laboratory for Viral Hepatitis, NCIPD, Sofia

[6] National Reference Laboratory for HIV, NCIPD, Sofia

[8] Program Prevention and Control of HIV/AIDS, Ministry of Health, Sofia, Bulgaria

Abstract: ***Hepatitis C is common in HIV-positive patients and may considerably impact their prognosis. In Bulgaria, 26% of the HIV+ patients diagnosed between 2010 and 2014 were HCV seropositive, with a very high rate of active co-infections, and multi-risk profile. Immunological and virological parameters (CD4AC, CD4/CD8, HIV viral load) at the time of HIV diagnosis were similar as compared to HIV monoinfection but deteriorated quickly until registration at hospital. Only 52% of HIV+ patients with active HCV infection were started on c-ART. In the absence of HCV-specific therapy, they were characterised by significantly inferior immune restoration (in terms of CD4 AC and CD4/CD8 increase), and lower rate of sustained HIV virologic response (63% vs. 38%; p<0.0001). Altogether, HCV co-infection is a significant risk factor for the progress of HIV epidemics in Bulgaria, and requires specific efforts for successful management and treatment of a multi-risk patients' group.***

Keywords: HIV, Hepatitis C co-infection, c-ART

1. Introduction

Due to shared transmission routes, co-infections with HIV and HCV are very common. Among nearly 40 million infected with HIV worldwide, an estimated 4–5 million (15-30%) are chronically infected with HCV (1). HIV may considerably impact the clinical course and prognosis of HCV infection and vice versa. In the presence of untreated HIV infection, HCV leads to rapid liver fibrosis and decompensation, and increases significantly the risk of liver-related mortality, especially in advancing age (2). Co-infected patients experience more frequent hepatic flares, associated with immune reconstitution during c-ART, or development of resistance to hepatitis treatment (3, 4). Although it remains unclear how HCV affects response to c-ART, a number of studies report a worse immunological response for co-infected individuals (5). The recently introduced into practice direct-acting antiviral agents (DAAs) have dramatically changed the prognosis of HCV infection, allowing a quick and sustained virologic response (SVR) even in case of HIV co-infection and advanced liver disease (6). Against this background, efforts to monitor and manage adequately HCV and HIV co-infected patients have markedly increased.

With 213 new diagnoses, and 2077 registered HIV+ cases in 2014 Bulgaria remains a country with low prevalence of HIV infection: 3.4 %oooo vs. anaverage of 5,9%oooo for EU/EAA (7). Since 2004, owing to an efficient national program for HIV/AIDS prevention, the share of HIV+ patients monitored at specialized departments, and successfully receiving c-ART has been increasing. On the other hand, HIV epidemics in Bulgaria is concentrated among the most vulnerable groups (IDUs, MSM, sex workers, Roma people), with a constant risk of spread among the general population through heterosexual practices (8).

In a previous study, we found that the prevalence of HCV co-infection among the HIV+ patients diagnosed between 2010 and 2014 in Bulgaria was 25.6% (9). This rate was much higher than the estimates for the general Bulgarian population, and fell within the upper range reported for Europe (10, 11). Importantly, high rates of active hepatitis C infection were confirmed by detection of HCV RNA in 78% of the tested individuals (9). HCV co-infection affected mostly high risk groups and persons with multiple risk behavior (9). As none of the co-infected patients received HCV treatment at that time, unique cohorts to evaluate the impact of HCV co-infection on the effects of c-ART emerged.

In the current study we compared the basic demographic and monitoring parameters of HCV co-infected and monoinfected nationwide cohorts of HIV+ patients, diagnosed between 2010 and 2014, and investigated the net effect of active untreated HCV infection on the outcomes of 12- month c-ART.

European Respiratory Society
Annual Congress 2013

Abstract Number: 1986

Publication Number: P4467

Abstract Group: 10.2. Tuberculosis

Keyword 1: Tuberculosis - diagnosis **Keyword 2:** Children **Keyword 3:** Epidemiology

Title: Demographic and epidemiological characteristics of children with tuberculosis at hospital for lung diseases "St. Sofia", Sofia, Bulgaria, for the period 2007-2011

Dr. Vladimir 18888 Milanov vlmilanov@yahoo.com MD [1], Dr. Svetlana 18889 Velizarova velizarovasv@gmail.com MD [2], Dr. Mariya 18890 Zamfirova zamfidoc@gmail.com MD [1], Dr. Tonka 18891 Varleva tvarleva@gmail.com MD [1] and Mrs. Angelina 18892 Yaneva angelina.yaneva@gmail.com [3]. [1] Directorate "Public Health and Management of Specialized Donor-Funded Programmes", Ministry of Health, Sofia, Bulgaria ; [2] University Clinic for Pediatric Respiratory Diseases, Specialized Hospital for Active Treatment of Lung Diseases "St. Sofia", Sofia, Bulgaria and [3] Programme "Strengthening the National Tuberculosis Programme in Bulgaria", Ministry of Health, Sofia, Bulgaria .

Body: A retrospective study of the children and adolescents aged 0 to 18 years admitted for diagnosis and treatment of tuberculosis (TB) to University Clinic for Pediatric Respiratory Diseases at Hospital for Lung Diseases "St. Sofia", Sofia, Bulgaria, from 2007 to 2011 was performed. Our aim was to describe the demographic and epidemiological characteristics of the children with TB for the above mentioned period. Methods: Data were obtained from the medical records at the clinic and from the National Tuberculosis Registry Database. Results: A total of 945 children were enrolled. The Male:Female ratio was 1.2:1. The mean age was 9.3 years (range: 0-18). There were 43 infants under 1 year (4.6%), 181 children (19.2%) in age group 1-4 years, 213 (22.5%) – in age group 5-9 years, 316 (33.4%) – in age group 10-14 years, and 192 (20.3%) – over 15 years. The children originated from all over the country, with higher numbers from the larger conurbations in the capital Sofia city, Plovdiv and Varna, and from the districts with higher than the average TB incidence for Bulgaria (Kyustendil, Vratsa, Vidin). Two hundred and twenty children lived in rural areas (23.3%). Out of all cases, 371 (39.3%) had a history about contact with patient with active TB; 806 children (85.3%) were diagnosed with active TB disease and 139 (14.7%) – with latent TB infection (LTBI). Conclusions: Most of the children with TB belong to older age groups and live in urban settings. Further activities are needed to find the children in close contact with adult index TB cases and to prevent the progression of LTBI to active TB in children at risk.

(14)

European Respiratory Society
Annual Congress 2012

Abstract Number: 3408

Publication Number: P3328

Abstract Group: 10.2. Tuberculosis

Keyword 1: Tuberculosis - management **Keyword 2:** MDR-TB **Keyword 3:** Treatments

Title: Treatment outcome and factors associated with unfavourable treatment results in cases with multidrug-resistant tuberculosis in Bulgaria for the period 2009-2010

Dr. Vladimir 20556 Milanov vlmilanov@yahoo.com MD [1], Dr. Mariya 20557 Zamfirova zamfidoc@gmail.com MD [1], Dr. Tonka 20558 Varleva tvarleva@gmail.com MD [1], Dr. Elizabeta 20559 Bachiyska elizabetbatchiiska@abv.bg MD [2] and Dr. Antoniya 20560 Koleva tub_gabrovo@abv.bg MD [3]. [1] Directorate "Management of Specialized Donor-Funded Programmes", Ministry of Health, Sofia, Bulgaria ; [2] National Tuberculosis Reference Laboratory (NRL-TB), National Center of Infectious and Parasitic Diseases (NCIPD), Sofia, Bulgaria and [3] Manager, Specialized Hospital for Active Treatment of Lung Diseases, Gabrovo, Bulgaria .

Body: A retrospective study of all patients with MDR-TB in Bulgaria who started treatment for the period September 2009-March 2010 was performed. Aim: To make treatment outcome analysis and to determine the factors associated with unfavourable treatment results in cases with MDR-TB. Materials and methods: Medical records, recording and reporting forms for the MDR-TB cases included in treatment and TB registries of the NRL-TB were examined. Results: A total of 50 MDR-TB patients with mean age 45.8 years started treatment during the period. The male to female ratio was 2.3:1. Nineteen patients (38%) were new, and the other 31 cases were previously treated: 12 relapses (24%), after failure – 8 (16%), after default – 10 (20%). The median duration of recorded disease before treatment was 3.1 years (range, 0-13). None of all the patients tested for HIV had a positive result. Eight cases were found with XDR-TB during the treatment: 4 in 2010, and 4 – in 2011. Treatment was given for 18-24 months, including at least 12 months after culture conversion. Twenty four months after beginning of treatment, 24 patients (48%) were cured, 19 patients (38%) died, and one patient (2%) interrupted treatment. The cases with XDR-TB had higher mortality rate than the other MDR-TB cases (75% vs. 30.9%). Conclusion: This study shows high mortality rate in MDR-TB cases during two years after treatment initiation. XDR-TB is the strongest predictor of poor treatment outcomes. Previous TB treatment, weight loss and positive smears for acid-fast bacilli at the start of treatment are the other important factors associated with unfavourable treatment results.

Epidemiological and microbiological characteristics of reported cases with multidrug-resistant tuberculosis in the Republic of Bulgaria for the period 2007-2009

Vladimir Milanov, Mariya Zamfirova, Tonka Varleva, Elizabeta Bachiyska, Antoniya Koleva, Angelina Yaneva
European Respiratory Journal 2011 38: p2612; **DOI:**

Abstract

A retrospective study of all patients with multidrug-resistant tuberculosis (MDR-TB) registered and reported in Bulgaria during the period 2007-2009 was performed.

Aim: To make epidemiological and microbiological characteristics of all cases with culture confirmed MDR-TB recorded and reported in the country during the above-mentioned period.

Materials and methods: Case-based data for all TB patients recorded and reported by the regional TB health facilities for the period 2007-2009, data sent by the microbiological laboratories for TB diagnosis, and TB registries of the NRL-TB at the NCIPD were examined.

Results: According to the case-based data, a total of 149 MDR-TB patients (age range 18-87) were recorded and reported during the period 2007-2009, representing 5.3% of all tested with DST. Out of all MDR-TB cases, 107 (72%) were male. Fifty-six patients (38%) were new, and 93 cases (62%) were previously treated. Out of all registered MDR-TB patients, 88.6% were confirmed by the NRL-TB.

Conclusion: The case-based registries provide exact clinical, microbiological and epidemiological information, avoiding case duplication during the reporting period. The frequency of MDR-TB among previously treated TB cases is higher, mainly among the relapses and the defaulters after previous treatment. Active investigation among the contacts of MDR-TB cases and among targeted groups of TB patients (defaulters, failure of treatment, chronic cases), and confirmation of the resistance by the NRL-TB is needed, in order to provide timely and appropriate treatment of all confirmed MDR-TB cases.

AIDS RESEARCH AND HUMAN RETROVIRUSES
Volume 24, Number 6, 2008

DOI: 10.1089/aid.2007.0181

The HIV Type 1 Epidemic in Bulgaria Involves Multiple Subtypes and Is Sustained by Continuous Viral Inflow from West and East European Countries

Marco Salemi,[1] Maureen M. Goodenow,[1] Stefania Montieri,[2] Tulio de Oliveira,[3] Maria Mercedes Santoro,[4] Danail Beshkov,[5] Ivailo Alexiev,[5] Ivailo Elenkov,[6] Ivan Elenkov,[7] Tsvetana Yakimova,[8] Tonka Varleva,[8] Giovanni Rezza,[2] and Massimo Ciccozzi[2]

Abstract

Little is known about the HIV-1 epidemic in Balkan countries. To fill the gap, we investigated the viral genetic diversity in Bulgaria, by sequencing and phylogenetic characterization of 86 plasma samples collected between 2002 and 2006 from seropositive individuals diagnosed within 1986–2006. Analysis of *pol* gene sequences assigned 51% of the samples to HIV-1 subtype B and 27% to subtype A1. HIV-1 subtype C, F, G, H, and a few putative recombinant forms were also found. Phylogenetic and molecular clock analysis showed a continuous exchange of subtype A and B between Bulgaria and Western as well as other Eastern European countries. At least three separate introductions of HIV-1 subtype A and four of HIV-1 subtype B have occurred within the past 25 years in Bulgaria. The central geographic location of Bulgaria, the substantial genetic heterogeneity of the epidemic with multiple subtypes, and the significant viral flow observed to and from the Balkan countries have the potential to modify the current HIV-1 epidemiological structure in Europe and highlight the importance of more extensive and continuous monitoring of the epidemic in the Balkans.

Introduction

CURRENT EPIDEMIOLOGICAL DATA indicate that the impact of the HIV-1 epidemic on Balkan countries, which are part of the central European region, is still limited.[1] In Bulgaria, up to the end of 2005, 689 cumulative cases of HIV infection, including 164 who had developed AIDS, have been reported. The annual number of HIV-1 diagnoses increased from 15–20 in the early 1990s to 40–60 within the past 5 years, with a peak of 91 diagnoses in 2005, following implementation of second generation surveillance systems. Most of the infections (87%) are attributable to heterosexual contact, whereas only 5.1% have been attributed to injecting drug use and 3.6% to blood transfusion. Moreover, most cases (about 75%) have been identified in the capital city of Sofia, followed by the towns of Buras, Plovdiv, and Varna.[1,2]

According to recent serological surveys conducted in Bulgaria's largest cities and towns, the prevalence of HIV-1 infection is only 0.73% among commercial sex workers and 0.59% among injecting drug users, whereas no infection has been found among the Roma population.[2] However, the high incidence of HCV infection and syphilis and the high level of risk behavior in these population groups suggest that they are quite vulnerable to HIV infection and thus represent a potential source of infection.[3–5]

Following the end of the cold war a decade ago, most Balkan countries have been affected by dramatic political and socioeconomic changes, which could contribute to the spread of HIV infection. Given the central geographic location of Bulgaria at the crossing point between Western Europe, Eastern Europe, and the Middle East, defining the origin and evolution of HIV in Bulgaria has obvious epi-

[1]Department of Pathology, Immunology, and Laboratory Medicine, University of Florida, Gainesville, Florida 32610.
[2]Epidemiology Unit, Department of Infectious Parasitic and Immunomediate Diseases, Istituto Superiore di Sanità, Rome, Italy.
[3]MRC Bioinformatics Unit, South African National Bioinformatics Institute, University of Western Cape, Cape Town, South Africa.
[4]Department of Experimental Medicine, University Roma Tor Vergata, Rome, Italy.
[5]National HIV Confirmatory Laboratory—National Center of Infectious and Parasitic Diseases, Sofia, Bulgaria.
[6]Hospital of Infectious Diseases, Sofia, Bulgaria.
[7]Faculty of Biology, University of Sofia, Sofia, Bulgaria.
[8]Ministry of Health, Program of "Prevention and Control of HIV/AIDS," Sofia, Bulgaria.

Trends in HIV surveillance data in the EU/EEA, 2005 to 2014: new HIV diagnoses still increasing in men who have sex with men

A Pharris [1], C Quinten [1], L Tavoschi [1], G Spiteri [1], AJ Amato-Gauci [1], the ECDC HIV/AIDS Surveillance Network [2]
1. European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
2. The members of the network are listed at the end of the article

Correspondence: Anastasia Pharris (anastasia.pharris@ecdc.europa.eu)

Citation style for this article:
Pharris A, Quinten C, Tavoschi L, Spiteri G, Amato-Gauci A, the ECDC HIV/AIDS Surveillance Network. Trends in HIV surveillance data in the EU/EEA, 2005 to 2014: new HIV diagnoses still increasing in men who have sex with men. Euro Surveill. 2015;20(47):pii=30071. DOI: http://dx.doi.org/10.2807/1560-7917.ES.2015.20.47.30071

Article submitted on 12 November 2015 / accepted on 24 November 2015 / published on 26 November 2015

Human immunodeficiency virus (HIV) transmission remains significant in Europe. Rates of acquired immunodeficiency syndrome (AIDS) have declined, but not in all countries. New HIV diagnoses have increased among native and foreign-born men who have sex with men. Median $CD4^+$ T-cell count at diagnosis has increased, but not in all groups, and late diagnosis remains common. HIV infection and AIDS can be eliminated in Europe with resolute prevention measures, early diagnosis and access to effective treatment.

Global goals to end acquired immunodeficiency syndrome (AIDS) by 2030 have been set by the Joint United Nations Programme on HIV/AIDS (UNAIDS) [1]. Despite growing evidence of effective measures to prevent human immunodeficiency virus (HIV) infections and eliminate AIDS, such as early treatment and new prevention interventions, HIV transmission continues at considerable levels in Europe [2-5]. To better understand transmission patterns and identify key populations where prevention efforts need strengthening, we analysed HIV and AIDS surveillance data for the years 2005 to 2014 [6]*. These data are reported annually by the 31 countries of the European Union and European Economic Area (EU/EEA) to a joint database for HIV/AIDS coordinated by the European Centre for Disease Prevention and Control (ECDC) and the World Health Organization (WHO) Regional Office for Europe.

HIV and AIDS diagnoses in the EU/EEA in 2014

In 2014, 29,992 people were newly diagnosed with HIV in the EU/EEA, a rate of 5.9 diagnoses per 100,000 population. The majority of cases (76.8%) were men (9.2 per 100,000 population vs 2.6 in women). This was largely driven by HIV transmission attributed to sex between men, which accounted for 12,677 (42%) of all HIV diagnoses. A total of 9,833 cases (33%) were attributed to heterosexual contact, 1,244 (4%) to injecting drug use, and for 5,908 (20%) of new diagnoses, the transmission mode was not reported or unknown. Migrant status was defined as native (born in the reporting country) or foreign-born (born outside the reporting country). We adjusted for reporting delay, defined as the time between HIV diagnosis and the report of this event, using reverse Cox proportional hazards models. Linear regression models were used to test for trends, whereby the significance level was set at 0.05. Analysis of migrant status showed that more than one third (37%) of cases were foreign-born. The transmission patterns and migrant status of cases varied considerably between EU/EEA countries (Figure 1).

In 2014, 4,020 persons in 30 EU/EEA countries were diagnosed with AIDS, resulting in a rate of 0.8 per 100,000 population. AIDS rates varied markedly from 0.1 in Slovakia to 8.5 in Latvia. The most common route of HIV acquisition among persons diagnosed with AIDS was heterosexual contact (1,771 cases, 44%), while 1,130 cases (28.1%) were in men who have sex with men (MSM) and 588 (14.6%) in people who inject drugs (PWID). Just over one quarter (27.8%) of those diagnosed with AIDS in 2014 were foreign-born.

Trends in new HIV and AIDS diagnoses

Among the 27 countries reporting on new HIV diagnoses and transmission consistently between 2005 and 2014, the number and proportion of cases with known information on transmission and migrant status that were attributed to MSM increased significantly in native men from 5,319 (20% of cases) to 6,265 (29%) and in foreign-born men from 1,438 (6%) to 2,783 (10%) (p value for trend <0.001 and 0.005, respectively) (Figure 2).

Potential adjustment methodology for missing data and reporting delay in the HIV Surveillance System, European Union/European Economic Area, 2015

Magdalena Rosinska[1], Nikos Pantazis[2], Janusz Janiec[1], Anastasia Pharris[3], Andrew J Amato-Gauci[3], Chantal Quinten[3], ECDC HIV/AIDS Surveillance Network[4]

1. National Institute of Public Health – National Institute of Hygiene, Warsaw, Poland
2. National and Kapodistrian University of Athens, Athens, Greece
3. European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
4. Members of the ECDC HIV/AIDS Surveillance Network are listed at the end of the article

Correspondence: Magdalena Rosinska (mrosinska@pzh.gov.pl)

Citation style for this article:
Rosinska Magdalena, Pantazis Nikos, Janiec Janusz, Pharris Anastasia, Amato-Gauci Andrew J, Quinten Chantal, ECDC HIV/AIDS Surveillance Network. Potential adjustment methodology for missing data and reporting delay in the HIV Surveillance System, European Union/European Economic Area, 2015. Euro Surveill. 2018;23(23):pii=1700359. https://doi.org/10.2807/1560-7917.ES.2018.23.23.1700359

Article submitted on 02 Jun 2017 / accepted on 09 Oct 2017 / published on 07 June 2018

Accurate case-based surveillance data remain the key data source for estimating HIV burden and monitoring prevention efforts in Europe. We carried out a literature review and exploratory analysis of surveillance data regarding two crucial issues affecting European surveillance for HIV: missing data and reporting delay. Initial screening showed substantial variability of these data issues, both in time and across countries. In terms of missing data, the $CD4^+$ cell count is the most problematic variable because of the high proportion of missing values. In 20 of 31 countries of the European Union/European Economic Area (EU/EEA), CD4+ counts are systematically missing for all or some years. One of the key challenges related to reporting delays is that countries undertake specific one-off actions in effort to capture previously unreported cases, and that these cases are subsequently reported with excessive delays. Slightly different underlying assumptions and effectively different models may be required for individual countries to adjust for missing data and reporting delays. However, using a similar methodology is recommended to foster harmonisation and to improve the accuracy and usability of HIV surveillance data at national and EU/EEA levels.

Introduction

HIV remains one of the most important public health concerns in the European Union and European Economic Area (EU/EEA). Accurate data are therefore crucial to appropriately direct and evaluate public health response.

The European Centre for Disease Prevention and Control (ECDC) and the World Health Organization Regional Office for Europe (WHO/Europe) have jointly coordinated enhanced HIV/AIDS surveillance in the European Region since 2008. The general objectives of the surveillance system in EU/EEA countries include monitoring of trends over time and across countries. Specific HIV-related objectives include the monitoring of testing patterns, late HIV diagnoses, defined by low $CD4^+$ counts (<350 cells/mm^3), and mortality, as well estimating HIV incidence and prevalence stratified by key populations, e.g. transmission category and migrant status [1].

To meet these objectives, the long-term strategy states that improving the quality of surveillance data is needed [2]. Achieving this in practice poses challenges, especially given the heterogeneous national surveillance systems in the EU/EEA and that the routinely collected data are known to suffer from important quality limitations. The limitations originating from national data collection systems may include under-reporting or duplication of cases, delays in reporting, incompleteness of data and misclassification. Accounting for some of these limitations (e.g. assessment of under-reporting) requires additional data such as cohort studies or registries, while other issues, such as incompleteness and reporting delay, may be addressed directly within the surveillance datasets.

Missing data are a well-recognised problem within surveillance systems. When values for some variables are missing and cases with missing values are excluded from analysis, it may lead to biased and potentially less precise estimates [3,4]. In principle, whenever there are missing data or reporting delays, the accuracy

New HIV diagnoses among adults aged 50 years or older in 31 European countries, 2004–15: an analysis of surveillance data

*Lara Tavoschi, Joana Gomes Dias, Anastasia Pharris, on behalf of the EU/EEA HIV Surveillance Network**

Summary

Background The HIV burden is increasing in older adults in the European Union (EU) and European Economic Area (EEA). We investigated factors associated with HIV diagnosis in older adults in the 31 EU/EEA countries during a 12 year period.

Methods In this analysis of surveillance data, we compared data from older people (aged ≥50 years) with those from younger people (aged 15–49 years). We extracted new HIV diagnoses reported to the European Surveillance System between Jan 1, 2004, and Dec 31, 2015, and stratified them by age, sex, migration status, transmission route, and CD4 cell count. We defined late diagnosis as CD4 count of less than 350 cells per μL at diagnosis and diagnosis with advanced HIV disease as less than 200 cells per μL. We compared the two age groups with the χ^2 test for difference, and used linear regression analysis to assess temporal trends.

Findings During the study period 54 102 new HIV diagnoses were reported in older adults. The average notification rate of new diagnoses was 2·6 per 100 000 population across the whole 12 year period, which significantly increased over time (annual average change [AAC] 2·1%, 95% CI 1·1–3·1; p=0·0009). Notification rates for new HIV diagnoses in older adults increased significantly in 16 countries in 2004–15, clustering in central and eastern EU/EEA countries. In 2015, compared with younger adults, older individuals were more likely to originate from the reporting country, to have acquired HIV via heterosexual contact, and to present late (p<0·0001 for all comparisons). HIV diagnoses increased significantly over time among older men (AAC 2·2%, 95% CI 1·2–3·3; p=0·0006), women (1·3%, 0·2–2·4; p=0·025), men who have sex with men (5·8%, 4·3–7·5; p<0·0001), and injecting drug users (7·4%, 4·8–10·2; p<0·0001).

Interpretation Our findings suggest that there is a compelling need to deliver more targeted testing interventions for older adults and the general adult population, such as by increasing awareness among health-care workers and expanding opportunities for provider-initiated and indicator-condition-guided testing programmes.

Funding European Centre for Disease Prevention and Control.

Lancet HIV 2017

Published Online September 26, 2017 http://dx.doi.org/10.1016/S2352-3018(17)30155-8

See Online/Comment http://dx.doi.org/10.1016/S2352-3018(17)30151-0

*Members listed at the end of the paper

European Centre for Disease Prevention and Control, Solna, Sweden (L Tavoschi PhD, J Gomes Dias MSc, A Pharris PhD)

Correspondence to: Dr Lara Tavoschi, European Centre for Disease Prevention and Control, Tomtebodavägen 11A, 171 65 Solna, Sweden **lara.tavoschi@ecdc.europa.eu**

Introduction

The global population is ageing as a combined result of improvements in living standards, decreasing mortality, and declining fertility.[1] Data from high-income countries, such as the 31 member states of the European Economic Area (EEA, which consists of the 28 countries of the European Union [EU] plus Iceland, Liechtenstein, and Norway), show a steady increase in life expectancy at age 60 years.[2] Health and ageing are high on the global agenda in view of the growing burden of disease among adults aged 50 years or older, the corresponding need for health-care systems to adapt to evolving demands, and the call to invest in healthy ageing.[3]

In 2013, UNAIDS estimated that 4·2 million people aged 50 years or older were living with HIV worldwide. The prevalence of HIV in this segment of the population has steadily increased over the past couple of decades in all WHO regions, particularly in central and western Europe, the USA, and Canada.[2,4] This increase has been attributed to two distinct factors: the rise in life expectancy among people living with HIV on antiretroviral therapy (ART), and the rise, in some settings, in the number of people seroconverting at older ages.[2,4–6]

An increasing trend of new HIV diagnoses among adults aged 50 years or older across the WHO European region[5] and in specific EEA countries[6,7] has been noted. However, no in-depth analysis has been done of the population of older adults newly diagnosed with HIV in the EU/EEA. Estimation of the incidence of HIV is challenging, because infection might have occurred several years before symptoms arise or diagnosis is made. A proxy is provided by surveillance of new diagnoses reported over time. An estimate of about 30 000 new infections occur annually across all age groups in the EU/EEA, with substantial variability in notification rates across countries.[8,9] Studies suggest that older adults infected with HIV are more likely to present late[6,7,10] and are at increased risk of short-term mortality[6,11] than are younger adults. Older adults living with HIV and health professionals caring for them face unique challenges, first and foremost that of increasing coverage and uptake of testing to promote early diagnosis and reduce stigma.[12]

Reduction in undiagnosed HIV infection in the European Union/European Economic Area, 2012 to 2016

Ard van Sighem[1], Anastasia Pharris[2], Chantal Quinten[2], Teymur Noori[2], Andrew J Amato-Gauci[2], the ECDC HIV/AIDS Surveillance and Dublin Declaration Monitoring Networks[3]
1. Stichting HIV Monitoring, Amsterdam, the Netherlands
2. European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
3. The members of the networks are listed at the end of the article

Correspondence: Anastasia Pharris (anastasia.pharris@ecdc.europa.eu)

Citation style for this article:
van Sighem Ard, Pharris Anastasia, Quinten Chantal, Noori Teymur, Amato-Gauci Andrew J, the ECDC HIV/AIDS Surveillance and Dublin Declaration Monitoring Networks. Reduction in undiagnosed HIV infection in the European Union/European Economic Area, 2012 to 2016. Euro Surveill. 2017;22(48):pii=17-00771. https://doi.org/10.2807/1560-7917.ES.2017.22.48.17-00771

Article submitted on 17 Nov 2017 / accepted on 29 Nov 2017 / published on 29 Nov 2017

It is well-documented that early HIV diagnosis and linkage to care reduces morbidity and mortality as well as HIV transmission. We estimated the median time from HIV infection to diagnosis in the European Union/European Economic Area (EU/EEA) at 2.9 years in 2016, with regional variation. Despite evidence of a decline in the number of people living with undiagnosed HIV in the EU/EEA, many remain undiagnosed, including 33% with more advanced HIV infection (CD4 < 350 cells/mm³).

HIV remains an important public health issue affecting the 31 countries of the European Union and European Economic Area (EU/EEA) [1]. In 2015, it was estimated that ca 120,000 people (15% of those living with HIV in the EU/EEA) were living with undiagnosed HIV infection [2]. In order to understand regional variations in (i) HIV incidence, (ii) time to HIV diagnosis, and (iii) the number of people living with undiagnosed HIV, we analysed HIV and AIDS surveillance data from 2003 through 2016.

Calculation of 2016 estimates

Annually, HIV surveillance data are reported by EU/EEA countries to a database for HIV/AIDS that is coordinated jointly by the European Centre for Disease Prevention and Control (ECDC) and the World Health Organization (WHO) Regional Office for Europe within the European Surveillance System (TESSy) [1].

Countries were grouped into four geographical regions (East, South, West, North) (Figure 1) based on a United Nations definition [3]. For those countries lacking data on CD4 count at diagnosis, the distribution of CD4 count in the region they belonged to was assumed to be representative. When grouping countries, the epidemic characteristics across countries were pooled and a similar probability of diagnosis by CD4 cell count category for all countries within that region was assumed.

Annual data on HIV diagnoses reported to TESSy for 2003–2016 were adjusted for reporting delay and under-reporting. Data were adjusted for non-national coverage of some countries' reporting systems (2003–2011 for Italy and 2003–2012 for Spain) and cases (3%) that had been previously reported as diagnosed were excluded. Data were then stratified by the presence of a concurrent AIDS diagnosis and, for people without concurrent AIDS, by CD4 cell count levels at the time of diagnosis i.e. ≥ 500, 350–499, 200–349, < 200 cells/mm³ [4]. The 'incidence method' in the European Centre for Disease Prevention and Control (ECDC) HIV Modelling Tool version 1.3.0 was used for each region in 2016 to estimate the (i) HIV incidence, (ii) median time from infection to diagnosis, and (iii) number of people living with HIV who were not yet diagnosed [5,6].

HIV incidence in 2016

In 2016, 29,444 cases of HIV were diagnosed and reported in the EU/EEA, resulting in a notification rate of 5.9 per 100,000 population when adjusted for reporting delay [1]. Rates in 2010–2015 had ranged from 6.5 to 6.7 and in 2016, for the first time in a decade, there was a clear decline in the rate of new HIV diagnoses at EU/EEA level although rates in 11 of 31 EU/EEA countries have continued to increase.

Estimating HIV incidence and number of undiagnosed individuals living with HIV in the European Union/ European Economic Area, 2015

A Pharris [1], C Quinten [1], T Noori [1], AJ Amato-Gauci [1], A van Sighem [2], the ECDC HIV/AIDS Surveillance and Dublin Declaration Monitoring Networks [3]

1. European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
2. Stichting HIV Monitoring, Amsterdam, the Netherlands.
3. Members are listed at the end of the article.

Correspondence: Anastasia Pharris (anastasia.pharris@ecdc.europa.eu)

Citation style for this article:
Pharris A, Quinten C, Noori T, Amato-Gauci AJ, van Sighem A, the ECDC HIV/AIDS Surveillance and Dublin Declaration Monitoring Networks. Estimating HIV incidence and number of undiagnosed individuals living with HIV in the European Union/European Economic Area, 2015. Euro Surveill. 2016;21(48):pii=30417. DOI: http://dx.doi.org/10.2807/1560-7917.ES.2016.21.48.30417

Article submitted on 21 November 2016 / accepted on 01 December 2016 / published on 01 December 2016

Since 2011, human immunodeficiency virus (HIV) incidence appears unchanged in the European Union/ European Economic Area with between 29,000 and 33,000 new cases reported annually up to 2015. Despite evidence that HIV diagnosis is occurring earlier post-infection, the estimated number of people living with HIV (PLHIV) who were unaware of being infected in 2015 was 122,000, or 15% of all PLHIV (n=810,000). This is concerning as such individuals cannot benefit from highly effective treatment and may unknowingly sustain transmission.

Although preventable through effective public health measures, human immunodeficiency virus (HIV) persists in the 31 countries of the European Union and European Economic Area (EU/EEA) [1]. In this report an analysis of EU/EEA HIV and acquired immunodeficiency syndrome (AIDS) surveillance data from 2015 as well as from prior years is presented. We estimate that, in 2015, 15% (122,000/810,000) of people living with HIV (PLHIV) in the EU/EEA were unaware of their infection.

Analysis of annual surveillance data

HIV and AIDS surveillance data are reported annually by EU/EEA countries to a joint database for HIV/AIDS within the European Surveillance System (TESSy) coordinated by the European Centre for Disease Prevention and Control (ECDC) and the World Health Organization (WHO) Regional Office for Europe [1].

Annual data on HIV diagnoses from 2003 to 2015 were stratified by the presence of a concurrent AIDS diagnosis, i.e. an AIDS-defining event within 3 months of HIV diagnosis, and, for individuals without AIDS, by CD4 cell count (≥500, 350–499, 200–349, <200 cells/mm3) at the time of diagnosis [2].

The ECDC HIV Modelling Tool version 1.2.2 was used to derive both the estimates of annual HIV incidences, as well as those of the average times from infection to HIV diagnosis each year [3]. These two types of estimates are only presented for the period from 2011 to 2015 due to greater uncertainty of data from the previous years of the study.

The number of PLHIV in 2015 who were not yet diagnosed was obtained by fitting to data on HIV diagnoses from 2003 to 2011, adjusted for reporting delay, using the 'Incidence Method', a CD4 cell count-based back-calculation method [4].

Data on the estimated number of diagnosed PLHIV were reported for 2015 by nominated contact points in EU/EEA countries to ECDC as part of the Dublin Declaration monitoring process in 2016 [5]. In the three countries (Iceland, Liechtenstein, and Norway) not reporting estimates of diagnosed PLHIV, data on cumulative HIV cases reported to TESSy through 2015 minus the number of persons reported to have died, were used as a proxy for diagnosed PLHIV.

The estimated number of diagnosed PLHIV from the Dublin Declaration monitoring reports and the undiagnosed PLHIV estimate from the model were summed to obtain the total number of PLHIV in the EU/EEA for 2015. This was used to derive the proportion undiagnosed PLHIV in that year.

Comparable estimates of the number of diagnosed PLHIV from the Dublin Declaration monitoring are not available for earlier years than 2015, thus the estimates of PLHIV overall and of the proportion of PLHIV unaware of their infection could only be calculated for 2015.

Rapid communication

HIV among women in the WHO European Region – epidemiological trends and predictors of late diagnosis, 2009-2018

Otilia Mårdh[1], Chantal Quinten[1], Giorgi Kuchukhidze[2], Nicole Seguy[2], Masoud Dara[2], Andrew J Amato-Gauci[1], Anastasia Pharris[1], on behalf of the ECDC/WHO HIV Surveillance network[3]

1. European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
2. WHO Regional Office for Europe, Copenhagen, Denmark
3. The members of the ECDC/WHO HIV network are acknowledged at the end of the article

Correspondence: Anastasia Pharris (Anastasia.Pharris@ecdc.europa.eu)

Citation style for this article:
Mårdh Otilia, Quinten Chantal, Kuchukhidze Giorgi, Seguy Nicole, Dara Masoud, Amato-Gauci Andrew J, Pharris Anastasia, on behalf of the ECDC/WHO HIV Surveillance network. HIV among women in the WHO European Region – epidemiological trends and predictors of late diagnosis, 2009-2018. Euro Surveill. 2019;24(48):pii=1900696. https://doi.org/10.2807/1560-7917.ES.2019.24.48.1900696

Article submitted on 14 Nov 2019 / accepted on 28 Nov 2019 / published on 28 Nov 2019

Human immunodeficiency virus (HIV) transmission among women remains an issue in the WHO European Region, with nearly 50,000 women diagnosed in 2018 and over half (54%) diagnosed late. Although new HIV diagnoses declined between 2009 and 2018 in the West of the Region, they increased in the Centre and East. Understanding the characteristics of women diagnosed with HIV can inform gender-sensitive prevention services including pre-exposure prophylaxis and early testing and linkage to care.

Globally, more women are living with human immunodeficiency virus (HIV) than men [1]. However, in the World Health Organization (WHO) European Region, twice as many men are newly diagnosed with HIV than women each year [2]. Nevertheless, large numbers of HIV infections occur in women in Europe annually suggesting that further efforts toward prevention across the Region are warranted for countries to achieve Universal Health Coverage for all and meet the Sustainable Development Goal 3 target of ending AIDS by 2030 [3]. Here, we describe demographic and clinical characteristics and trends among women diagnosed with HIV in the WHO European Region and identify risk factors for late diagnosis by sub-Region to provide information for enhanced targeted prevention and testing.

Data collection and analysis

All HIV diagnoses between 2009 and 2018, reported by the 53 countries in the WHO European Region were collected from the joint surveillance database of the European Centre for Disease Prevention and Control (ECDC) and WHO Regional Office for Europe.

Women were categorised as all people newly diagnosed with HIV with reported female sex, regardless of age. In the majority of European countries, the sex category is binary so it is unknown whether transwomen may be included in reported cases. Countries were grouped in three sub-regions based on geographic and broad epidemiological patterns [2]: (i) West (Andorra, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, Monaco, Netherlands, Norway, Portugal, San Marino, Spain, Sweden, Switzerland, United Kingdom) (ii) Centre (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Hungary, Montenegro, North Macedonia, Poland, Romania, Serbia, Slovakia, Slovenia, Turkey), and (iii) East (Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Republic of Moldova, Russian Federation, Tajikistan, Turkmenistan, Ukraine, Uzbekistan).

Migrant status was classified based on the reported country of birth or region of origin. Late diagnosis was defined as having a CD4+ T-cell count ≤ 350 cells/mm^3 at HIV diagnosis.

All WHO European Region countries and territories except Tajikistan, Turkmenistan and Uzbekistan provided overall HIV rates by sex for the entire period 2009–2018. For countries and territories reporting case-based data for 2018 (all European countries and territories except for Russian Federation, Tajikistan, Turkmenistan and Uzbekistan), descriptive statistics were produced for age, HIV transmission and migrant status and compared across sub-regions. Time series analysis was performed to assess any statistically significant ($p < 0.05$) difference in trends (2009–2018) between men and women overall for the WHO European Region and at sub-region level. Multivariable logistic regression was performed for each sub-region separately for cases aged over 14 years to assess the

Rapid communication

HIV in Europe and Central Asia: progress in 2018 towards meeting the UNAIDS 90-90-90 targets

Alison E Brown[1,2], Rosalie Hayes[3], Teymur Noori[4], Yusef Azad[3], Andrew J. Amato-Gauci[4], Anastasia Pharris[4], Valerie C. Delpech[1,5], the ECDC Dublin Declaration Monitoring Network[6]

1. Public Health England, London, United Kingdom
2. Independent Consultant, London, United Kingdom
3. National AIDS Trust, London, United Kingdom
4. European Centre for Disease Prevention and Control, Stockholm, Sweden
5. Independent Consultant, Watipa, London, United Kingdom
6. The ECDC Dublin Declaration Monitoring group are listed at the end of the article

Correspondence: Alison E Brown (alison.brown@phe.gov.uk)

Citation style for this article:
Brown Alison E, Hayes Rosalie, Noori Teymur, Azad Yusef, Amato-Gauci Andrew J., Pharris Anastasia, Delpech Valerie C., the ECDC Dublin Declaration Monitoring Network. HIV in Europe and Central Asia: progress in 2018 towards meeting the UNAIDS 90-90-90 targets. Euro Surveill. 2018;23(48):pii=1800622. https://doi.org/10.2807/1560-7917.ES.2018.23.48.1800622

Article submitted on 15 Nov 2018 / accepted on 29 Nov 2018 / published on 29 Nov 2018

In 2018, 52 of 55 European and Central Asian countries reported data against the UNAIDS 90–90–90 targets. Overall, 80% of people living with HIV (PLHIV) were diagnosed, of whom 64% received treatment and 86% treated were virally suppressed. Subregional outcomes varied: West (87%–91%–93%), Centre (83%–73%–75%) and East (76%–46%–78%). Overall, 43% of all PLHIV were virally suppressed; intensive efforts are needed to meet the 2020 target of 73%.

In 2014, the Joint United National Programme on HIV/AIDS (UNAIDS) established the global 90–90–90 targets. The aim was for 90% of all people living with HIV (PLHIV) to be diagnosed, 90% of those diagnosed to receive antiretroviral treatment (ART) and 90% of those receiving treatment to achieve viral suppression, by 2020 [1]. Here, we describe progress towards the UNAIDS 90–90–90 targets across Europe and Central Asia and discuss whether current performance is sufficient to eliminate HIV transmission.

The Dublin Declaration on Partnership to Fight HIV/AIDS

Between January and March 2018, the European Centre for Disease Prevention and Control (ECDC) disseminated an online survey to the 55 countries of Europe and Central Asia that comprise the World Health Organization (WHO) European Region, to monitor the implementation of the Dublin Declaration on Partnership to Fight HIV/AIDS [2]. Countries provided estimates of the number and proportion of people within a defined four-stage continuum of care for the most recent year available (Box) [3,4].

Countries also specified the year to which the estimates related, data sources and collection methods and uncertainty bounds for each continuum stage. Where necessary, data were supplemented using Global AIDS Monitoring (GAM) indicators collected by UNAIDS. Data were validated by countries between May and November 2018 and updated accordingly.

Definitions and analyses

The global 90–90–90 targets are assessed as percentages of each previous stage of the continuum. The 'substantive target' is defined as the percentage of all PLHIV who are virally suppressed, making 73% the target (Figure 1). The global targets include countries reporting at least two consecutive stages but the substantive target only includes countries reporting all four stages of the continuum. Data were presented by WHO European subregion (West, Centre and East) which categorises countries in Europe and Central Asia in to three geographic areas by HIV epidemic type [5]. At the (sub)regional level, analyses were undertaken after summing each continuum stage across countries [3]. Data were compared with that previously submitted through the Dublin Declaration survey [3,6,7].

Key findings

In 2018, 52 of 55 countries completed the survey with 34 providing data across all four continuum stages (compared with 29 in 2016) and 42 providing at least two consecutive stages (compared with 41 in 2016). In 2018, progress towards the global 90–90–90 targets in Europe and Central Asia stands at 80%–64%–86%. In the West subregion, 87%–91%–93% was achieved with equivalent figures at 83%–73%–75% and 76%–46%–78% in the Centre and East, respectively. In countries in the European Union/European Economic Area (EU/EEA), which includes countries from each of the subregions, the progress stands at 86%–91%–92%. The number and proportion in each continuum stage are presented in the Table.

NATIONAL HIV BIOLOGICAL AND BEHAVIORAL SURVEY AMONG HARD-TO-REACH POPULATIONS IN BULGARIA (2004 -2016). PART 3: ETHICAL ASPECTS OF THE SURVEY

Tonka Varleva[1], Hristo Taskov[2], Emilia Naseva[3], Vyara Georgieva[1], Elena Kabakchieva[6], P. Tsintsarski[5], Tsveta Raycheva[4], Stefka Boneva[5] and B. Petrunov[2]

1 – Ministry of Health, Sofia
2 – National Center Infectious and Parasitic Diseases, Sofia
3 – Medical University of Sofia, Faculty of Public Health
4 – State psychiatric hospital for drug and alcohol users
5 – Consultant at Ministry of Health
6 –Health and Social Development Foundation (HESED)

ABSTRACT

Between 2004 and 2016, in Bulgaria nine rounds of bio-behavioral survey were conducted among hard-to-reach populations within the framework of the National Programs for Prevention and Control of HIV and STIs. The surveys were performed in ten of 28 municipalities were selected according their HIV risk. The total number of participant in the survey was 27,210 disaggregated by groups as follow: MSM (4,725); PWID (8,626); SW (4,013); prisoners (4,557) and Roma population at higher risk (5,289).

In Part 1 and 2 of the article, we described in detail the methodological aspect of survey. This article describes the ethical issues faced in all phases of the study. The results are published elsewhere.

ADDRESS FOR CORRESPONDENCE

Prof. Dr. Hristo Taskov MD, PhD, DSc,
National Center Infectious and Parasitic Diseases,
Sofia 1504, Bul. Yanko Sakazov 26
E-mail: hristotaskov@gmail.com

KEYWORDS:

vulnerable groups, MSM, PWID, SW, prisoners Roma population, key populations, surveillance.

INTRODUCTION

Ethical principles for human research are based on the United Nations Declaration on Human Rights (1). For the first time, they were formulated in Nuremberg (2, 3) and Helsinki Declaration of 1964 (4). Later, they were further developed in the European Convention for the Protection of Human Rights (EU Charter of Human Rights 1991) (5) and the revised CIOMS 2009 epidemiological guidelines (6). In Bulgaria, all medical information is generally considered confidential and protected by law. This is regulated by the Health low (2004) (7) and Ordinance No 31 of the Ministry of Health on the Determination of Good Clinical Practice (2007) (8).

There are three broadly recognized principles in bioethics, which refer to both clinical and scientific ethics: respect for personality, prosperity and justice (9). *Respect for the person* implies respect for the decisions of autonomous persons and protection of persons who have no decision-making power and are therefore not autonomous. It also imposes an obligation to treat individuals with respect by preserving trust and keeping promises. *Prosperity* imposes an obligation to act in the best interests of patients or participants in research. It is often understood that research risks should be minimized so that the risks are acceptable in the light of the potential benefits of research. Finally, *justice* requires people to be treated fairly. It is often understood that benefits and burdens must be distributed fairly in society. Bio-behavioral research, especially among vulnerable people, obeys the above-mentioned principles and norms.

At 2004, National Biological and Behavioral Survey of HIV (NBBS-04-16) has been launched among key populations as part of the National Program for Prevention and Control HIV and STIs (NHP-01-07) (10), financially supported by a GFATM Grant (11). NBBS-04-16 continued to be carried out within the next National HIV/AIDS Prevention and Control Program (NHP-08-16) (12). NBBS-04-16 was conducted among men who have sex with men (MSM), people who inject drugs (PWID), sex workers (SW), prisoners and Roma population at higher risk

BULGARIA HIV SURVEILLANCE SYSTEM IN THE CONTEXT OF CONTINUUM OF CARE 90-90-90 STRATEGY

T. Varleva[1], M. Zamfirova[1], V. Georgieva[1], M. Nikolova[2], I. Alexiev[2] and H. Taskov[2]

[1]Ministry of Health
[2]National Center of Infectious and Parasitic Diseases, Sofia.

ABSTRACT

The burden of HIV disease in Bulgaria is monitored by using a comprehensive surveillance system which includes case surveillance, incidence surveillance, and bio-behaviour surveillance. Data from this system are used for describing epidemics trends and risk behaviours associated with HIV acquisition, which are essential for effective public health interventions for HIV, to plan, implement, and evaluate public health policies and programs and monitoring of 90-90-90 strategy.

In this article we describe the elements of National HIV surveillance system.

KEYWORDS

HIV case surveillance, incidence surveillance, bio-behaviour surveillance.

INTRODUCTION

Bulgaria's public health surveillance system for HIV was established in the late 1980s. It has evolved significantly during the past three decades in parallel with the implementation of antiretroviral therapy monitoring (1, 2), tests for recent infection (3, 4), HIV modeling tools (5, 6) and monitoring of HIV cascade to reach the 90-90-90 goals (7). All this requires high-quality usable surveillance data. To maximize the ability to monitor trends in HIV and HIV cascade, the Ministry of Health (MoH) has developed a comprehensive National HIV Surveillance System (NHSS) that guides data collection and reporting. Surveillance data for HIV infection have been used for many years to monitor the spread of HIV, plan prevention programs and health-care services, and allocate funding for prevention and care (8-10).

ADDRESS FOR CORRESPONDENCE:
Prof. Dr. Hristo Taskov MD, PhD, DSc,
National Center Infectious and Parasitic Diseases,
Sofia 1504, Bul. Yanko Sakazov 26,
E-mail: hristotaskov@gmail.com

SURVEILLANCE METHODS

HIV case surveillance

Conducting HIV case surveillance. HIV infection is one of many nationally notifiable diseases regulated by an ordinance of Ministry of Health (11). The country has adopted the ECDC/CDC/WHO HIV surveillance case definition (12-14). which incorporats a staging system that categorizes Acquired immunodeficiency syndrome (AIDS) as HIV infection, stage 3, and underscores that AIDS is late-stage HIV infection, rather than a separate disease. The case definition will continue to be updated, as needed, to ensure the most accurate monitoring of HIV disease (e.g., to incorporate new diagnostic testing algorithms or monitor acute HIV infection [stage 0]).

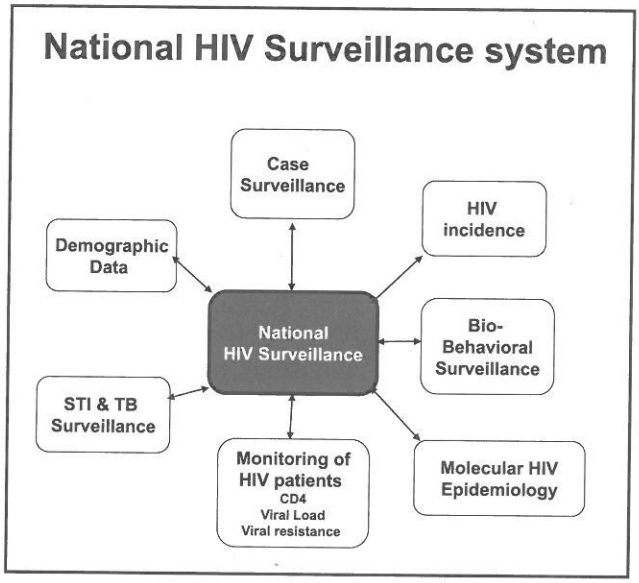


Fig.1. Components of Bulgaria HIV surveillance system

The Ministry of Health, National Center of Infectious and Parasitic Diseases (NCIPD) and Regional Health Inspectorates (RHI) hold the legal authority for public health surveillance.

New cases of HIV infection are typically identified passively through laboratory reports of HIV-specific tests based on antibody, antibody/antigen, or viral nucleic acid detection. Case information is collected on standardized case report form (15), which is completed by providers

MYCOBACTERIUM TUBERCULOSIS INFECTION RATES IN EXPOSED BULGARIAN HEALTHCARE WORKERS BASED ON INTERFERON-GAMMA RELEASE ASSAYS

R. Emilova[1], V. Milanov[2], M. Tyufekchieva[3], M. Muhtarova[1], M. Zamfirova[3], D. Stefanova[2], T. Varleva[3], N. Gesheva[4], A. Mihaylova[4], E. Naumova[4], M. Nikolova[1]

[1] National Reference Laboratory of Immunology, National Center of Infectious and Parasitic Diseases, Sofia, Bulgaria;
[2] Tuberculosis Clinic, University Hospital for Respiratory Diseases "St. Sofia", Medical University, Sofia, Bulgaria;
[3] Programme "Improving the sustainability of the National Tuberculosis Programme", Ministry of Health, Sofia, Bulgaria;
[4] Department of Clinical Immunology and Stem Cell Bank, University Hospital "Alexandrovska", Medical University, Sofia, Bulgaria

ABSTRACT

Background: The incidence of tuberculosis (TB) in Bulgaria remains higher than the average for EU/EEC countries. Healthcare workers (HCWs) providing TB care are at increased risk of MTB infection. Interferon-gamma release assays (IGRAs) are an accurate means for diagnosis of MTB infection. **Objectives:** The study aims to assess the prevalence of MTB infection among exposed HCWs in Bulgaria based on IGRAs as screening tools. **Methods:** Data about age, sex, professional category and employment history were collected. Screening was performed in four rounds (2012, 2014, 2015 and 2016), using QuantiFERON-TB® Gold in-tube assay (QFT-GIT) and T-SPOT.TB assay. **Results:** A total of 633 HCWs from 37 specialized healthcare facilities were tested, including medical doctors (22.7%), nurses (34.8%), laboratory workers (16.6%), cleaning staff (20.1%) and administrative personnel (5.8%). A positive IGRA result was obtained in 260 (41%) HCWs. Positive results were associated with higher age but not with gender, professional category or employment duration. Unclassifiable results (4.3%) were obtained mostly with T-Spot, and in the elderly HCWs. Consecutive testing in 125 (19.7%) HCWs revealed a significant share of reversions and conversions (30.4%) requiring retesting/follow-up. The quantity of MTB-specific IFNg measured by QFT-GIT was not directly associated with infection duration, activity, or MTB-specific treatment. **Conclusion:** HCWs providing TB care in Bulgaria are at increased risk of MTB infection. Occupational screening programs with focus on the elderly HCWs should be routinely applied in high-risk settings. Retesting "close to zero" results and combining sequential IGRAs with detailed history, clinical examination, and radiography would improve the efficiency of screening.

KEY WORDS: *MTB infection, Healthcare workers, IGRA*

ADDRESS FOR CORRESPONDENCE:
Maria Nikolova
Head, National Reference Laboratory of Immunology
National Center of Infectious and Parasitic Diseases
26 Yanko Sakazov blvd.
Sofia 1504, Bulgaria
Tel. 02/943 56 36
e-mail: mstoimenova@ncipd.org

INTRODUCTION:

Tuberculosis (TB) remains a significant health issue, being the most prevalent infectious disease, and is the ninth cause of death worldwide. The active infection may remain undiagnosed for months leading to a high spreading risk. According to the latest World Health Organization (WHO) TB report, every single day 4,400 people die from TB (1). In 2016, there were an estimated 10.4 million new (incident) TB cases worldwide, of which 6.7 million (65%) were among men, 3.7 million (35%) among women and 1.0 million (10%) among children. There were 600,000 new cases with resistance to rifampicin (RR-TB), the most effective first-line drug, of which 490,000 had multidrug-resistant TB (MDR-TB). The average proportion of MDR-TB cases with extensively drug-resistant TB (XDR-TB) was 6.2% (2). Bulgaria is one of the six European countries with TB incidence above 20 %0 000. Although the newly registered cases tend to decrease (27%0 000 in 2016 vs. 54%0 000 in

USING CASE SURVEILLANCE DATA FOR ESTIMATION AND PROJECTION OF HIV INFECTION IN PWID AND MSM POPULATION BY COMBINING ECDC-HIV MODELING TOOL AND SPECTRUM-ESTIMATION AND PROJECTION PACKAGE

H. Taskov[1] and T. Varleva[2]

1 – National Center Infectious and Parasitic Diseases, Sofia
2 – Ministry of Health, Sofia

ABSTRACT

Background

Bulgaria is low HIV prevalence country with concentrated epidemic. The National HIV surveillance system collect case-based data for MSM and PWID. The main objective of this study was to explore an appropriate method for estimation and projection of MSM and PWID case surveillance data.

Methods

We have used a combination of ECDC-HIV Modeling Tool with Spectrum-EPP to calculate the total number of persons infected with HIV, number of new HIV infections, HIV incidence and prevalence. For computing bio-behaviour surveys data for MSM and PWID Spectrum-EPP model was used.

Result

The present results show that both models led to similar results regarding the study parameters. Although the values obtained by the studied models differ, the estimations and projection curves show similar patterns.

Conclusions

We have demonstrated that the study approach is appropriate for analysis of MSM and PWID case-based data. It has several advantages. It applies a combination of established models that are widely used. Secondly, it allows parallel analyzes of data obtained from both case surveillance and other surveys e.g. population, sentinel, BBCs etc. Therefore, a more complete and accurate picture of the dynamics of the HIV epidemic can be obtained. Finally, the described approach uses models, which are constantly developing, free and accessible.

KEYWORDS:

Bulgaria, bio-behaviour surveillance, HIV modeling, EPP.

ADDRESS FOR CORRESPONDENCE:
Prof. Dr. Hristo Taskov DSc,
National Center Infectious and Parasitic Diseases,
Sofia 1504, Bul. Yanko Sakazov 26,
Tel.: +359887304381;
E-mail: hristotaskov@gmail.com

INTRODUCTION

Mathematical modeling and computer simulation are powerful tools for assessing the impact of intervention programs. Based on the results, the health policy decisions and the direction of action can be formulated (1). The modeling of HIV infection in populations is of particular interest in understanding the dynamics of the HIV epidemic, making prognosis, and monitoring the effect of different programs. For this purpose, various models were used to evaluate the epidemic and its progression (2, 3). Currently, the SPECTUM package is the most widely used for UNAIDS annually assessing the HIV epidemic and the world (4). It includes the modules EPP, AIM, CSVAR and ECDC for estimation and projection of an epidemic. The European Center for Disease Control (ECDC) has developed the HIV Modeling tool (HMT) (5), which can be used alone or as a module in SPECTRUM. The EPP module is used by 2001 with sentinel surveillance data or surveys such as biobehaviour survey (BBS). The CSVAR and HMT require case-surveillance data.

The National HIV Surveillance System of Bulgaria consists of case surveillance, BBS, and HIV incidence (6). Individual case-based data, including the number of CD4 counts, have been collected in Bulgaria since 1997. BBS started in 2004 among the key HIV populations and nine rounds have been

SEXUAL RISK BEHAVIORS AND HIV/ STI PREVALENCE IN MEN WHO HAVE SEX WITH MEN IN THE BULGARIA IN 2016: DATA FROM A CROSS-SECTIONAL BIO-BEHAVIOR STUDY

T. Varleva[1], P. Tsintsarski[2], E. Naseva[3], V. Georgieva[1], H. Taskov[4] and B. Petrunov[4]

1 – Ministry of Health, Sofia
2 – Consultant at Ministry of Health
3 – Medical University of Sofia, Faculty of Public Health
4 – National Center Infectious and Parasitic Diseases, Sofia

ABSTRACT

Introduction: The aim of this study was to assess sexual behavior and measure HIV and STI prevalence among men who have sex with men in Bulgaria in 2016.

Methods: We conducted a cross-sectional study from June to September 2016 in five major cities of Bulgaria. The time location sampling method was used to recruit MSM. Behavioral data were collected by interviewer-administered questionnaires. The blood tests were then carried out among MSM to assess their HIV and STIs status.

Results: A total 437 MSM were enrolled in this study, 44.4% of them in the capital, Sofia. Over the past month, 85.8% of MSM had had sexual intercourse with men and 31.9% of them had had sex with female partner. A sexual intercourse with a casual partner in last 12 months was reported by 85.8% of MSM and 75.2% of them had used condoms the last sexual intercourse. Having sex in exchange for money or gift in past 12 months was declared by 18.3% and buying of sex – by 6.3% of responders. An opportunity for a confidential HIV testing w reported by 95.8% of MSM. In the last 12 month 52.4% of responders have been tested for HI The prevalence rate of HIV among MSM wa 3.2% The prevalence rate of other STIs was a follows: 3.1% for HBV, 4.2% for HCV and 6.3 for syphilis.

Conclusion: This study confirms that HI prevalence among MSM is 46 times high than the low risk general population (3.1%. v 0.069%). Though our results reflect a relativ good knowledge about HIV/AIDS infection, ther is an increase of new HIV-positive cases an high-risk behavior, suggesting the need for mor effective HIV prevention among MSM populatio in Bulgaria. Thus, there is a need to rethink HI sensitization and prevention strategies targetin hidden and stigmatized populations such as MSM

KEYWORDS:
HBV, HCV, syphilis, surveillance

ADDRESS FOR CORRESPONDENCE:
Prof. Dr. Hristo Taskov MD, DSc,
National Center Infectious and Parasitic Diseases,
Sofia 1504, Bul. Yanko Sakazov 26,
E-mail: hristotaskov@gmail.com

INTRODUCTION

Men who have sex with men (MSM) have been a large high-risk population for human immunodeficiency virus (HIV) infection and transmission because of their more hidden and stigmatized nature (1, 2), more diverse sexual networks (3), and tendency toward risky sexual behaviors such as multiple sexual partners and condomless anal intercourse (4, 5). A priority action in Europe is to reduce new HIV infections among MSM by improving HIV combination prevention programs. (6).

Bulgaria is a country with a HIV epidemic concentrated mainly among people who inject drugs (PWIDs)(7) and (MSM) (8). There have been significant falls in HIV prevalence among IDU from 29.35 % in 2002 to 22 % in 2013 and among FSW from 5.9 % in 2002 to 5.3 % in 2013 [8, 11, 12]. However, there are signs of an increase in HIV prevalence among MSM. HIV infection among MSM was projected to increase from 1.7 % in 2005 to 2.4 % in 2013, but a recent HIV case surveillance data showed a significant increase from 2.26 % in 2012 to 3.69 % 2013 [8]. Since 2005, the annual number of new HIV diagnoses among MSM has increased from six cases to 111 cases in 2015. This is in line with the increased male-to-female ratio of HIV-positive persons from 2:1 in 2005 to 5:1 in 2016. In 2015, about 49.6% of newly diagnosed HIV cases came from MSM population. (9) Thus MSM

ПЪРВИ СЛУЧАИ НА ХЕПАТИТ Е ВИРУСНА ИНФЕКЦИЯ В БЪЛГАРИЯ

П. Теохаров[1], М. Тихолова[2], П. Драганов[2], В. Лилянова[2], Р. Иванова[1], Т. Върлева[1], Т. Димитрова[2]

1. НЦЗПБ
2 . ВМИ, София

Ключови думи: хепатит Е, хепатит Е вирус, ELISA, нито-А, нито-В, нито-С хепатити

FIRST CASES OF HEPATITIS E IN BULGARIA - INFECTOLOGY, XXXII, 1995, 3, 17-18
R. Teoharov, M. Ticholova, P. Draganov, V. Lilianova, R. Ivanova, T. Varleva, T. Dimitrova

To assess the presence of hepatitis E virus (HEV) in Bulgaria serum sample from patients with acute non-A, non-B, non-C (NA, NB, NC) hepatitis were examined for specific anti-HEV antibody. Fifty three samples were tested by an enzyme immunoassay (EIA) for specific IgG anti-HEV (Abbott Laboratories). Four of 53 (7,5%) patients were found to be positive for anti-HEV antibody. All of them were followed clinically. Antibody positive cases were not associated with travelling to endemic areas. The presence of IgG-anti HEV in 47,5% of the tested patients with sporadic NA, NB, NC hepatitis shows a low, but not insignificant circulation of HEV in Bulgaria.

ПЪРВИ СЛУЧАИ НА ХЕПАТИТ Е ВИРУСНА ИНФЕКЦИЯ В БЪЛГАРИЯ - ИНФЕКТОЛОГИЯ, XXXII, 1995, 3, 17-18
П. Теохаров, М. Тихолова, П. Драганов, В. Лилянова, Р. Иванова, Т. Върлева, Т. Димитрова

За да се установи наличието на хепатит Е вирусна инфекция в България серуми на болни с диагноза остър нито-А, нито-В, нито-С вирусен хепатит са изследвани за наличие на специфични anti-HEV антитела. Петдесет и три серумни проби са изследвани за наличие на специфични ИгГ anti-HEV антитела по метода ELISA с тест на фирмата ABBOTT-USA. Четири от 53 пациенти (7,5%) са положителни за anti-HEV антитела. Всичките са със симптоми на остър вирусен хепатит. Пациентите не са пътували в ендемични за хепатит Е вирусна инфекция области и не са имали контакт с пътували до посочените области лица в последните 3 месеца. Получените данни говорят за слабо, но не незначително, разпространение на хепатит Е вирусната инфекция в България без очевидна връзка с ендемични за тази инфекция райони в света.

Хепатитният Е вирус (HEV) се свързва с предаваните ентерално нито-А, нито-Б, нито-С (NA, NB, NC) хепатити в различни части на света, най-вече в области със субтропичен климат. Клонирането на генома на HEV през 1990 г. (1, 2) убедително показа, че този вирус е напълно различен от другия хепатотропен вирус, предаващ се по фекално-орален начин - хепатит А вирус (HAV). Епидемични и спорадични случаи на вирусни хепатити причинени от HEV са описани в Азия, Африка и Латинска Америка (3, 4). Изследвания в няколко страни в Европа (5, 6, 7), извършени в последнте години потвърдиха предположенията, че хепатит Е вирусната инфекция съществува в страни без епидемично разпространение на HEV.

Целта на настоящото изследване е да се установи дали хепатит Е вирусната инфекция съществува сред пациенти със спорадичен нито-А, нито-В, нито-С вирусен хепатит в България.

МАТЕРИАЛИ И МЕТОДИ

За периода януари 1993 - май 1994 г. бяха подбрани 53 пациенти с диагноза нито-А, нито-В, нито-С остър вирусен хепатит, постъпили за лечение в Инфекциозна болница, София. Серумите на пациентите бяха тестирани за серологичните маркери на остра А вирусна инфекция anti-HAV/IgM, остра хепатит В вирусна инфекция - HBsAg и anti-HBc IgM, хепатит С вирусна инфекция - anti HCV и остра инфекция с цитомегаловирус - anti-CMV-IgM по метода ELISA с тестове на фирмите ABBOTT Labsystems.

Хепатит Е вирусната инфекция беше диагностицирана чрез установяване на anti-HEV антитела с тест на фирмата ABBOTT по метода ELISA. При това изследване полистеринови перли покрити с рекомбинантни протеини кодирани от ORF 2 и ORF 3 на генома на бирмански щам на HEV се инкубират с изследваните серуми. Тези антигени предизвикват образуване на anti-HEV антитела клас ИгГ, ако пациентът има хепатит Е вирусна инфекция. Според изискванията на производителя за положителни се приемат серумите повторно позитивни след първичния скрининг. Изследването за наличие на антитела от клас ИгМ срещу нуклеарния антиген (EBNA) на Епщайн Бар вируса (EBV) се извършваше по метода на ELISA на фирмата Sigma.

РЕЗУЛТАТИ И ОБСЪЖДАНЕ

Изследваните 53 пациенти с клинична картина на вирусен хепатит бяха отрицателни за маркерите на остра инфекция, причинена от HBV, HAV, HCV, CMV с изключение на една пациентка положителна едновременно за anti-CMV IgM, anti-HEV, HBsAg, anti-HBc, но отрицателна за anti HBC IgM. Четирима пациенти (7,5%) от изследваните 53 болни бяха положителни за anti-HEV антитела. На таблица 1 е представен серологичен профил на положтелните за anti-HEV антитела пациенти. Всички са имунни срещу хепатитния А вирус, а двама от болните имат смесена инфекция - Б. П. Г. е позитивен за anti-EBV-IgM срещу нуклеарния антиген EBV и А.М.С. има антитела с висок титър срещу CMV от класа ИгГ и хронично носителство на HBV с позитивна HBsA и anti- HBc, но отрицателна за anti- HBcIgM антитела, които са маркер за свежа инфекция за HBV.

Четиримата пациенти - 2 мъже и 2 жени със средна

Адрес за кореспонденция:
София 1504 , НЦЗПБ, бул. „Я. Сакъзов" 26, П. Теохаров

СЕРОЕПИДЕМИОЛОГИЧНИ (ИМУНОЕНЗИМНИ) ПРОУЧВАНИЯ ЗА АНТИТЕЛА СПРЯМО ПРИЧИНИТЕЛИТЕ НА НЯКОИ ПЕРСИСТИРАЩИ ВИРУСНИ ИНФЕКЦИИ ПРИ ЗДРАВИ И БОЛНИ

П. Георгиев[1], П. Драганов[1], П. Теохаров[2], Т. Кузмова[1], Хр. Радева[1], Н. Рибарова[1], Т. Димитрова[1], Ал. Грозев[1], Кр. Миланов[1], В. Дойчева[1], Т. Върлева[2]

1. Катедра по епидемиология, ВМИ-София
2. Национален център по заразни и паразитни болести

Ключови думи: персистиращи инфекции, Епщайн Бар-вирусна инфекция (EBV), цитомегаловирусна инфекция (CMV), хепатит С вирусна ивфекция (HCV)

SEROEPIDEMIOLOGIC (IMMUNOENZYME) STUDIES OF ANTIBODY TITRES AGAINST SOME PERSISTANT VIRAL INFECTIONS - INFECTOLOGY, XXXVI, 1999, 2, 5-7

P. Georgiev, P. Draganov, P. Teoharov, T. Kuzmova, Hr. Radeva, N. Ribarova, T. Dimitrova, Al. Grozev, Kr. Milanov, V. Doitcheva, T. Varleva

The rate, groups of risk, clinical forms and prophylaxis of some persisting viral infections (EBV, CMV, HCV) were studied. A total of 555 sera were studied for antibodies against EBV, 145 - for anti-HCV antibodies and 166 - for anti-CMV antibodies by means of ELISA. In 40 cases results were confirmed by means of immunoblot. The results about the rate and distribution of EBV and CMV infections confirmed the existing literature data; results about HCV are hardly universal because of the non-homogeneous group. Mixed infections which activate an existing infection with persistent virus are of special interest. The authors have underlined the endemic character, the high rate of non-typical forms and the high risk of complications as well as the unsatisfactory routine diagnosis and registration of these infections.

СЕРОЕПИДЕМИОЛОГИЧНИ (ИМУНОЕНЗИМНИ) ПРОУЧВАНИЯ ЗА АНТИТЕЛА СПРЯМО ПРИЧИНИТЕЛИТЕ НА НЯКОИ ПЕРСИСТИРАЩИ ВИРУСНИ ИНФЕКЦИИ ПРИ ЗДРАВИ И БОЛНИ - ИНФЕКТОЛОГИЯ, XXXVI, 1999, 2, 5-7

П.Георгиев, П.Драганов, П.Теохаров, Т.Кузмова, Хр.Радева, Н.Рибарова, Т.Димитрова, Ал.Грозев, Кр.Миланов, В.Дойчева, Т.Върлева

Проучени са честотата, рисковите групи, формите на проява и възможностите за профилактика на някои персистиращи вирусни инфекции (EBV, CMV, вирусен хепатит С) при клинично здрави и болни лица. С помощта на ELISA са изследвани: 555 серума за антитела срещу EBV, 145 серума - за антитела срещу HCV и 166 серума - за CMV антитела. В част от случаите (40) е използван потвърдителен имуноблот. Установените данни за честотата и разпространението на EBV и CMV инфекция съвпадат с тези на други автори, а получената честота за HCV (5.12%) не може да се счита за показателна поради статистически нехегемонната група. Представляват интерес инфекциите от смесен тип, при които се активират персистиращи EBV или CMV инфекции. Обръща се внимание на високата ендемичност на наблюдаваните инфекции, високата честота на атипично протичане и риск от усложнения, както и незадоволителната им рутинна диагностика и регистрация.

Известно е, че EBV инфекция има широко (планетарно) разпространение в обществото, достигащо до 100 % още в първите пет години от живота, особено в някои ниско стоящи социални групи (3,4).

Честотата на CMV инфекция в размер до 60-80% (100%), се наблюдава сред населението над 30-годишна възраст. В различни страни процентът на децата, имащи антитела е между 13,3 и 90,9% (1,3). Честотата на HCV не е установена, но се знае, че сред трансфузионните пациенти хронична инфекция настъпва при около 50%. В някои географски райони разпространението е около 1% (3). По данни на СЗО (10) 3% от човечеството е инфектирано от HCV, което означава 170 милиона хронични носители.

Приема се, че микроорганизмите на хроничните персистиращи инфекции се размножават продължително, без организмът да може да ги елиминира. Това създава условие на относително равновесие, хронифициращ инфекциозен процес, респ. процеси с дегенеративни и имунни промени или малигнена траснформация (първичен рак) . Всичко това прави проблемът един от най-актуалните.

Адрес за кореспонденция:
София 1431
ул. "Г. Софийски" №1
ВМИ - Катедра по епидемиология
проф. д-р П. Георгиев

ЦЕЛ НА ПРОУЧВАНЕТО

Изследването цели да се определят: честотата, рисковите групи (възрасти и райони) и медико-социалната значимост на патологията, възможности за профилактика и различните форми на проявление на инфекцията (латентна, активирана, хронична) и характера на факторите, които ги определят.

МАТЕРИАЛИ И МЕТОДИ

Изследвани са 555 серума от здрави и болни лица за антитела спрямо общия антиген, VCA и EBNA на EBV. На 140 болни от ВХА са изследвани серумите за EBNA и VCA антитела, доказващи активирането на EBV-инфекцията. Серологично са изследвани 245 серума за антитела спрямо HCV. При 40 от тях бе използван третото поколение потвърдителен имуноблот - Chiron RIBA HCV 3.0.SIA (Chiron corporation Emeryvill CA). За CMV антитела, по същия метод ELISA са изследвани 166 серума.

Серологичните изследвания бяха извършени чрез мултипараметричен анализатор по метода.

Резултатите от изследваните серуми при смесените инфекции (EBV, HAV, CMV) се използваха за сравнителна оценка при болните от ВХА , относно различията в клиничното протичане със и без активирана латентна инфекция.

РЕЗУЛТАТИ

На таблица 1 са представени данните за честотата на EBV антитела при 555 серума от болни и здрави.

Общо честотата на положителните спрямо различни антиге-

Обобщение

Херпесните заболявания са широко разпространени в България. От тях страда над 60% от населението. При повече от 10% от хората протичат тежко и е необходимо ефективно лечение. Сериозно клинично значение имат херпесните заболявания, които дават тежки поражения-очен и невро херпес. Етиологичната диагноза се улеснява от съвпадението между локализациите на пораженията и типа на вируса-причинител.

ПЕТНАДЕСЕТ ГОДИШНО ПРИЛОЖЕНИЕ НА ХЕРПЕСНИТЕ ВАКСИНИ В БЪЛГАРИЯ

П. Андонов — 1, С. Дундаров — 1, С. Томов — 2, Л. Каваклова —1, А. Карпаров — 1, Б. Бакалов — 3, Д. Дундарова — 4, М. Танев — 1,Т. Върлева — 1

НЦЗПБ, МА-София — 1
ВМИ — Варна — 2
Биологичен факултет — София — 3
Национална банка за микроорганизми и клетъчни култури — София — 4

Въведение

България е една от първите страни в производството и приложението на херпесни ваксини. Тя единствена в света е осигурила масовото им производство и приложение при много добра организация на наблюдението върху тяхната ефективност. В това отношение българският опит е полезен за всички страни, които проявяват интерес към тези проблеми.

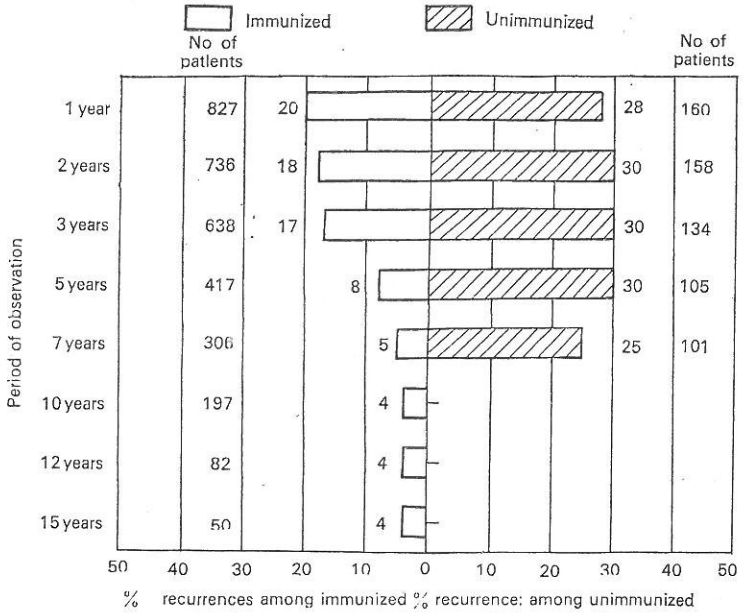
Материали и методи

Пациенти

Пациентите са лица над 14-годишна възраст, които страдат от чести и тежки заболявания от ХСВ-1 или ХСВ-2 и желаят да бъдат имунизирани. При голяма част от имунизираните пациенти е осигурена редовна регистрация на рецидивите при ежегодни консултации от повече от четиридесет водещи специалисти по дерматология и офталмология.

Ваксини

В NCTPD от 1975 година е лицензирано редовно производство на три типа пълни херпесни ваксини — тип-1, тип-2 и смесен тип. Те са поливалентни, пречистени и концентрирани, инактивирани и лиофилизирани. Всяка производствена серия се контролира в Института за контрол на лекарства и ваксини. Прилагат се две схеми за имунизация: а) 6 подкожни инжекции през двадесет или тридесет дни. б) при очен херпес или алергични пациенти се използува схема за ежедневни възходящи дози ваксина за период от две седмици. Прилагат се ваксини, които съответстват на серотипа на вируса-причинител.



фиг. 2

Сравнителни проучвания на „пълни“ и „DNA — Free“ херпесни ваксини в система „double blind triae“ на животни и при над 150 доброволци показаха несъмнено по-висока и трайна ефективност при използване на „пълните“ ваксини. Данните от групите, третирани с „плацебо“ доказват, че подобрението на състоянието се обуславя от специфичната имуногенност на херпесните ваксини.

Обобщение

В България е проведено най-масовото приложение на херпесните ваксини при много добре контролирано клинично наблюдение. „Пълните“ херпесни ваксини показват висока ефективност при над 95 % от пациентите. Те дават по-добри резултати в сравнение с „DNA — free“ херпесни ваксини.

фиг. 1

Таблица 1

ТУБЕРКУЛОЗА – ИМУНИЗАЦИЯ И РЕИМУНИЗАЦИЯ В НР БЪЛГАРИЯ ПРЕЗ 1989 ГОДИНА

ИМУНИЗИРАНИ	ПОДЛЕЖАЩИ	ИМУНИЗИРАНИ	Неимунизирани			
			ОБЩО	От тях		
				С трайни противопоказания	С временни противопоказания	Отсъствуващи
БРОЙ	110 907	110 830	77	45	31	0
%	100,00	99,93	100,00	58,44	40,26	0

РЕИМУНИЗИРАНИ	Подлежащи	Проверка с Манту	От тях с отрицателно Манту	РЕИМУНИЗИРАНИ	
				Подлежащи	Обхванати
БРОЙ	390 841	390 023	130 286	130 286	129 941
%	100,00	99,79	33,40	100,00	99,74

Таблица 2

ПРОФИЛАКТИЧНИ ИМУНИЗАЦИИ В Н.Р.БЪЛГАРИЯ
ПРЕЗ 1989 ГОДИНА

Вид на имунизацията	Подлежащи	От тях				
		Обхванати	Необхванати брой			
			Общо	От тях с противопоказания		
				Трайни	Временни	Отсъствуващи	Други
Полиомиелит							
1.Имунизация	117 703	99,73	319	124	102	85	8
2.Реимунизация	346 716	99,37	2185	222	152	229	1582
Дифтерия							
1.Имунизация	110 444	99,52	526	153	85	150	138
2. Реимунизация	350 687	98,74	4430	343	399	260	3428
Коклюш							
1.Имунизация	110 440	99,48	573	200	85	150	138
2.Реимунизация	110 339	99,65	382	113	97	112	60
Тетанус							
1.Имунизация	112 469	99,53	529	153	85	153	138
2.Реимунизация	90 789	98,50	13 476	4150	1099	849	7378
Морбили							
1.Имунизация	109 645	99 56	481	222	87	74	98
2.Реимунизация	115 189	99,53	541	253	134	130	24
Епидемичен паротит							
1.Имунизация	119 528	99,24	914	242	117	56	499

БИОЛОГИЧНОТО ОРЪЖИЕ И БОРБАТА ЗА НЕГОВАТА ЗАБРАНА

П.Георгиев, Т.Върлева - НИЗПБ, МА-София

С развитието на микробиологията и особено на вирусологията през 50-те години, се създадоха възможности в арсенала на биологичното оръжие наред с патогенните бактерии да бъдат включени още рикетсии, вируси, гъбички, бактериални токсини, някои вредни насекоми /преносители/, както и синтетични вещества - хербициди и дефолиенти за поразяване на растителните култури. С това биологичното оръжие наред с ядреното и химическото се превръща в мощно средство за масово поразяване на населението и живата природа./1,2/

Епидемичният характер на инфекциозните болести е основното съображение на военните дейци, да бъдат предизвикани искуствени епидемии сред състава на противника за постигане на победен ефект. Такива опити се извършват още в XIII-ти век по време на войната на татарите с Генуа, в XVI-ти в. от англичаните срещу индианците и др. През XIX-ти и XX-ти век при наличието вече на методи за култивиране на микробите в искуствени условия и произвеждането им в масови количества, възможностите в това отношение нарастват още повече. Така през Втората световна война се създават специални центрове за подготовка на биологична война. Известен е института в Познан, в който фашистка Германия организира масово производство на чумни и други бактерии. Японският милитаризъм създаде отрядите №№ 731 и 100. В тези центрове се култивираха масово причинителите на чума, холера, сап, антракс, газова гангрена. Фашистките специалисти достигнаха до експерименти с живи хора в лагерите Треблинка, Майданек, Освиенцим и в отрядите в Манджурия. /1,2/

Срещу това безумие на военолюбците човечеството поведе борба, като още през 1925 г. с Женевското споразумение постигна забраната за използуване на биологични и химически оръжия. Благодарение на бързите и решаващи действия на Съветската армия през 40-те години бе предотвратено използуването на създадения биологичен потенциал от фашистка Германия и Япония. /1/

През последните десетилетия биологичното оръжие се разработва от някои империалистически държави като средство за масово унищожение, съответствуващо на развитието и възможностите на науката и военната техника.

Годините след Втората световна война и до наши дни се характеризират с бурния тласък на биологичните изследвания за военни цели. Военнета индустрия предлага все по-модерни и нови методи за тяхното пренасяне и разпространение.

На биологичното оръжие се дава висока оценка, като се изхожда от неговите предимства пред ядреното и химическо оръжие.

Биологичното оръжие има избирателно действие, т.е. нанася голями поражения на живата сила, без да унищожава материалните ценности. Високото му поразяващо действие се определя от голямата патогенност на микроорганизмите /1 грам кристален ботулинов токсин съдържа 8 милиона смъртни дози за човека/. Продължителното му действие се обуславя от високата устойчивост на микроорганизмите във външната среда /дни, седмици, месеци, години/, което обуславя създаването на активно продължително действуващо огнище на зараза /антракс/. Продължителното му действие е резултат и на епидемичността, т.е. способността на патогенните микроорганизми да предизвикват заболявания които се предават от човек на човек /самовъзпроизвежда се/. Голямото проникващо действие на биологичното оръжие във всички укрития, в които може да проникне въздух или вода, осигурява поразяването на живата сила на огромни пространства. Възможността за използуването на микси, комбинирани с Химическо оръжие, както и наличието на открит период, характеризират биологичното оръжие като "идеален" вид оръжие.

Усъвършенствуването на биологичното оръжие на сегашния етап и подготовката за биологична агресия се извършва главно в две направления:

- усъвършенствуване на арсенала от биологични агенти и подобряване на тяхната "качествена" характеристика,
- усъвършенствуване на възможностите и разнообразието на способите и начините за използуване на биологично оръжие.

След Втората световна война арсенала на биологични агенти се допълва непрекъснато. Освен бактерии се включиха вируси, рикетсии, гъбички, токсини, хламидии. Броят на тези агенти непрекъснато нараства /по някои статистики той достига 30-40, а според други и повече/. Показателен е факта, че в лабораториите на форт Детрик за работа се допускат лица, имунизирани срещу двадесет агента.

ЗДРАВНО-СОЦИАЛНИ УСЛУГИ И ИНТЕРВЕНЦИИ СРЕД УЯЗВИМИТЕ ГРУПИ И ОБЩНОСТИ С ФОКУС ПРЕВЕНЦИЯ И КОНТРОЛ НА ХИВ/СПИН И ТУБЕРКУЛОЗА В БЪЛГАРИЯ

Тонка Върлева[1], Мария Замфирова, Вяра Георгиева

Резюме. *Заболявания като СПИН и туберкулоза представляват не само здравен, но и още по-голям социален, демографски, икономически и етичен проблем. И двете заболявания са свързани с редица уязвими групи. Представените данни показват, че са приети и са изпълнявани ефективни национални политики и програми за превенция и контрол на ХИВ/СПИН и туберкулозата.*

Основната част от дейностите по превенцията и контрола на заболяванията, както и предоставянето на здравно-социалните услуги на хората от уязвимите групи се осигуряват от външно донорско финансиране от Глобалния фонд за борба срещу СПИН, туберкулоза и малария. Благодарение на това стана изграждането на базова инфраструктура за развитие на човешките ресурси, както и запазване на ниско разпространение на СПИН и намаляване на разпространението на туберкулоза през последните пет години. Внедрени бяха и добри практики за сътрудничество между неправителствени организации, лечебни заведения и Министерството на здравеопазването.

Основни предизвикателства, пред които е изправена страната ни е развитието на модел за устойчиво финансиране на пълния пакет от услуги за превенция и контрол на ХИВ и туберкулоза, включително чрез въвличане на социалния сектор в изпълнението и финансирането на дейностите за обхващане на рисковите групи и социално слабите лица.

Ключови думи: ХИВ, туберкулоза, превенция, обхващане на рискови групи

Въведение

Глобалните тенденции и неблагоприятното въздействие върху здравето на хората, които оказват инфекциите причинени от ХИВ, сексуално предаваните инфекции и туберкулозата остават сред най-големите и неотложни предизвикателства за общественото здраве в нашето време. Въпреки че от 1983 г., когато беше доказан етиологичният причинител на синдрома на придобитата имунна недостатъчност (СПИН), се извършиха много инвестиции в областта на научните изследвания, проведоха се редица успешни интервенции в превенцията и контрола на ХИВ инфекцията, все още това заболяване е едно от основните предизвикателства пред общественото здраве в световен мащаб. Определящи фактори за справяне със здравните, социалните и демографските последици от ХИВ инфекцията на национално равнище са мултисекторна политическа ангажираност, финансови ресурси,

[1] **Д-р Тонка Върлева – Министерство на здравеопазването,** Директор на Програмите, финансирани от Глобалния фонд за борба срещу СПИН, туберкулоза и малария в България
Адрес за контакти: **tvarleva@gmail.com**

ПРОЕКТЪТ EMIS – УЧАСТИЕ НА БЪЛГАРИЯ. РЕЗУЛТАТИ ОТ ХИВ-ТЕСТВАНЕТО НА РЕСПОНДЕНТИТЕ

Емилия Насева[1], Тонка Върлева[2], Петър Цинцарски[2], Ева Папазова[3], Вяра Ганчева[4], Христо Тасков[5]

[1] Медицински университет - София,
[2] Министерство на здравеопазването,
[3] Институт за изследване на населението и човека - БАН,
[4] Институт за изследване на обществата и знанието - БАН,
[5] Национален център по заразни и паразитни болести

EMIS PROJECT – BULGARIAN PARTICIPATION. HIV-TESTING RESULTS OF THE RESPONDENTS

Emilia Naseva, Tonka Varleva, Petar Tsintsarski, Eva Papazova, Vyara Gancheva, Hristo Taskov

Резюме: *Групата на мъжете, които правят секс с мъже (МСМ) е най-засегна от ХИВ, както в Западно- и Централноевропейските държави, така и у нас. Ето защо, Европейската комисия финансира интернет проучване на МСМ общността в 33 държави от ЕС, което обхваща периода от април 2009 г. до септември 2011 г. Респондентите от България са 1036. Резултатите от проучването у нас показват, че над половината участващи лица (52,3%) се самоопределят като гей или хомосексуални, всеки четвърти (27,7%) се смята за бисексуален, а 17,1% не използват термин, за да определят сексуалното си поведение. Лицата, които твърдят, че знаят своя ХИВ статус, са едва 68,5% от всички респонденти, останалите 31,2% не са сигурни. Обезпокоително е, че значителен дял (61,4%) от отговорилите, че не са се тествали за ХИВ, са сигурни, че са с отрицателен ХИВ-статус. Информацията от проучването може да се използва като коректив на предприетите инициативи и допълването им с нови превенционни стратегии при планиране на дейности за ограничаване разпространението на ХИВ/СПИН в България на национално и регионално ниво.*

Ключови думи: *EMIS, МСМ, ХИВ, превенция*

Abstract: *The group of men who have sex with men (MSM) is the most affected by HIV, both in Western and Central European countries and in our country. Therefore, the European Commission has funded internet study of MSM community in 33 EU countries, covering the period from April 2009 to September 2011. The respondents from Bulgaria are 1036. The results of the study in our country showed that more than half of the involved subjects (52.3%) identified themselves as gay or homosexual, one in four (27.7%) considered themselves as bisexual, and 17.1% do not use any term to define their sexual behaviour. Those who claim to know their HIV status are only 68.5% of all respondents; the remaining 31.2% are not sure. It is a concern that a significant proportion (61.4%) of respondents who did not know their HIV status and are sure that they are HIV negative. The information from the survey could be used as a corrective to the already taken initiatives and as a supplement to the new prevention strategies when planning new activities for reducing the spread of HIV/AIDS in Bulgaria at national and regional level.*

Key words: *EMIS, MSM, HIV, prevention*

Въведение

Групата на мъжете, които правят секс с мъже (МСМ) е най-засегната от ХИВ в Западно- и Централноевропейските държави. В тези страни повече от една трета от случаите с ХИВ инфекция се дължат на сексуални контакти между мъже, като този начин на инфектиране е традиционно висок. През последните години, в Източноевропейските държави като България делът на новозаразените с ХИВ лица чрез секс между мъже значително нараства. В повечето Европейски страни уязвимите групи са добре „покрити" с по-

КУЛТУРНИ ПРЕДРАЗСЪДЪЦИ, СТЕРЕОТИПИ, ТОЛЕРАНТНОСТ

ОТНОШЕНИЕ НА ОБЩАТА ПОПУЛАЦИЯ И УЯЗВИМИТЕ ГРУПИ КЪМ ХОРАТА, ЖИВЕЕЩИ С ХИВ[1]

Емилия Насева, Петър Цинцарски, Цвета Райчева, Вяра Георгиева, Тонка Върлева, Христо Тасков

ATTITUDES OF THE GENERAL POPULATION AND VULNERABLE GROUPS TO THE PEOPLE LIVING WITH HIV

Emilia Naseva, Petar Tsintsarski, Tsveta Raycheva, Vyara Georgieva, Tonka Varleva, Hristo Taskov
e.naseva@foz.mu-sofia.bg

Abstract: Stigma towards people living with HIV is a social problem that leads to non-disclosure of HIV status, complicate social support and adherence to therapy while increase the risk of infection transmission. The results of the survey show that the general population demonstrates a lower level of tolerance and perception of people living with HIV while vulnerable groups are more likely to accept them. The most tolerate among key populations are MSM, inmates and people who inject drugs whilst the lowest level of acceptance is found in the groups of young Roma men.
Keywords: stigma; HIV; key populations; prevention; MSM; sex workers; people who inject drugs

Въведение

Вирусът на човешкия имунен дефицит (ХИВ), който причинява СПИН, е инфекция, предавана чрез необезопасен сексуален контакт, при използване на заразени режещи или инжекционни инструменти или от майка на бебето ѝ *по време на бременността или кърменето*. Съвременните тенденции в лечението *на ХИВ препоръчват прилагане на антиретровирусна терапия (АРТ) на поне 90% от всички хора, живеещи с ХИВ (ХЖХИВ) с цел поне 90% от тях да бъдат с неоткриваем вирусен товар, от което следва намаляване до минимум на риска от предаване на инфекцията на техните партньори [1].*

България е страна с ниско разпространение на ХИВ. Към средата на 2017 г. официално регистрираните с ХИВ случаи у нас са 2556. През

[1] Проучванията са финансирани от Глобалния фонд за борба срещу СПИН, туберкулоза и малария.

последните години броят новооткрити ХЖХИВ е около 200 човека годишно [2].

Стигмата към ХЖХИВ, е социален проблем, който води до страх от изследване за ХИВ и съответно намаляване броя на откритите случаи с инфекция. Това създава предпоставки за разпространение на инфекцията поради незнание на собствения ХИВ-статус. Стигмата води и до неразкриване на собствения ХИВ-статус, което създава психологически дискомфорт, затруднения при получаването на социална подкрепа, както и проблеми при придържане към терапията, което също увеличава риска от предаване на инфекцията. От друга страна, съобщаването на ХИВ-позитивния статус на семейството, близките и приятелите се свързва с конкретни здравни подобрения за ХЖХИВ и техните близки [3, 4]. Една от задачите на Програма „Превенция и контрол на ХИВ/СПИН" (ППКХС), изпълнявана от Министерство на здравеопазването през периода 2004 – 2017 г., е именно намаляване на стигмата към ХЖХИВ [2]. Постигането на нулева дискриминация е заложено и в Националната програма по ХИВ и сексуално предавани инфекции 2017 – 2020 г. [5].

Поради спецификата на предаване на ХИВ, някои групи от населението са по-уязвими към инфекцията и съответно засегнати от нея в по-голяма степен – т.нар. таргетни за ХИВ превенция популации (уязвими към ХИВ групи). Това са инжекционно употребяващите наркотици (ИУН), мъжете, които правят секс с мъже (МСМ), и мъжете и жените, предлагащи сексуални услуги (ПСУ). Тези три групи не са еднородни и изолирани. Рисковото поведение се комбинира и е възможно едно лице да попада едновременно в повече от една група. Поради концентриране на рискови практики, таргетни за превенция на ХИВ са и групите на мъжете, лишени от свобода (ЛЛС), както и младите мъже в ромска общност (МРМ) [2].

Освен стигма спрямо ХЖХИВ, може да е налице и автостигма или стигма от страна на стигматизирани общности, каквито са таргетните за ХИВ превенция групи. Целта на настоящата публикация е да сравни нивото на приемане на ХЖХИВ сред общата популация и уязвимите на ХИВ групи.

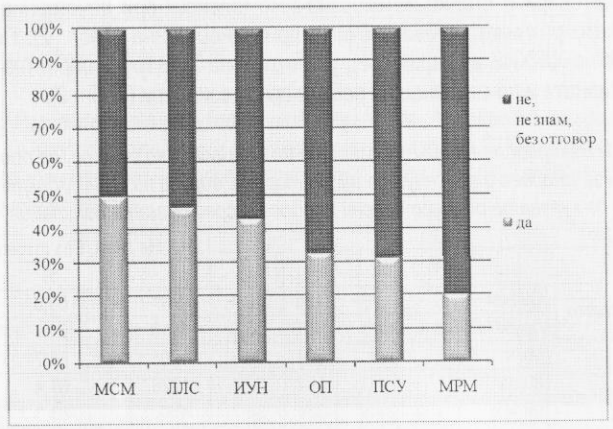
Материали и методи

През 2016 г. в рамките на ППКХС е проведено национално представително проучване сред общата популация на тема „Знания, нагласи и поведения на хората на възраст 15 – 49 г. към ХИВ". В него има въпрос, съобразен с международните индикатори, който измерва отношението на респондентите към хората, живеещи с ХИВ [6]. Респондентите са попитани „Ако знаете, че продавачът в магазин за плодове и зеленчуци е инфектиран с вируса на СПИН, бихте ли продължил/а да купувате от него пресни плодове". Същият въпрос е задаван и при проведените в периода 2005 – 2007 г. проучвания от второ поколение епидемиологичен надзор на ХИВ сред най-уязвимите на инфекцията групи [7 – 11]. Положителните отговори на този въпрос показват приемане на ХЖХИВ.

Използвани са методи от описателната статистика: категорийните данни са представени като абсолютен брой и относителен дял, а количествените – като медиана и интерквартилен размах (25 – 75 персентил) – IQR. Приложени са методи от аналитичната статистика: за определяне на връзки между категорийни променливи – хи квадрат анализ, при таблици 2*2 екзактен тест на Фишер; за оценка на разлика между количествени променливи – тест на Ман-Уитни. Количествените променливи не са нормално разпределени, което е доказано с тест на Колмогоров-Смирнов. За критично ниво на значимост е прието 0,05 при двустранна критична област.

Резултати и обсъждане

Единственият сравним въпрос за всички групи показва различна степен на приемане на ХЖХИВ от тях (*Фиг. 1*). Най-висок дял положителни отговори (50,2%) се наблюдава сред групата на МСМ, следвани от ЛЛС (46,8%) и ИУН (43,2%). Всеки трети от общата популация (33%) и почти толкова от ПСУ (31,3%) са изразили приемане на ХИВ-позитивен продавач. Най-нисък е делът на приемане сред МРМ – едва 20,4%.



Фиг. 1. Разпределение на отговорите на въпроса „Ако знаете, че продавачът в магазин за плодове и зеленчуци е инфектиран с вируса на СПИН, бихте ли продължил/а да купувате от него пресни плодове" по групи (относителен дял)

Въпреки че МСМ са показали най-високо ниво на приемане, то съставлява едва половината от извадката. Наред с това трябва да се посочи малкият брой лица от тази група, включени в проучването (едва 307 на фона на над 2000 от всяка от другите групи). Въпреки че тази група е доказано по-практична, по-рационална, по-прагматична отколкото мъжете и жените в ОП [12], резултатите показват и наличие на по-добро приемане на „различните". Това се потвърждава и от сходния дял на положителни отговори сред група-

АНАЛИЗ НА ФАКТОРИТЕ, СВЪРЗАНИ С ИЗХОДА ОТ ЛЕЧЕНИЕТО НА СЛУЧАИТЕ С МУЛТИРЕЗИСТЕНТНА ТУБЕРКУЛОЗА В БЪЛГАРИЯ ЗА ПЕРИОДА 2009-2011 Г.

тема на броя
оригинална статия

Торакална Медицина
Том VI, декември 2014, бр.4

В. Миланов[1], Д. Стефанова[1], М. Замфирова[2], Т. Върлева[2], Е. Бачийска[3], А. Колева[4], А. Янева[5]

УСБАЛББ „Света София" ЕАД, София[1]

Отдел „Управление на специализирани донорски програми", Министерство на здравеопазването, София[2]

Национална референтна лаборатория по туберкулоза, Национален център по заразни и паразитни болести, София[3]

СБАЛББ – Габрово ЕООД, Габрово[4]

Програма „Укрепване на Националната програма по туберкулоза в България", Министерство на здравеопазването, София[5]

Резюме

Проведено е ретроспективно проучване на случаите с мултирезистентна туберкулоза (MDR-TB), започнали лечение за периода 2009-2011 г.

Цел: Да се определят и анализират факторите, свързани с изхода от лечението на случаите с MDR-TB, започнали лечение за горепосочения период.

Материал и методи: Прегледана е медицинската документация, регистрационните и отчетните форми на случаите с MDR-TB, индивидуалните данни в Националния туберкулозен регистър и регистрите на НРЛ по туберкулоза.

Резултати: Сто и пет случаи с MDR-TB са започнали лечение. Съотношението мъже:жени е 2.4:1; средна възраст 43 години (интервал: 2-89). Тридесет и девет пациента (37.1%) са нови; 34 (32.4%) са рецидиви, 16 (15.3%) с неуспех и 15 (14.3%) след прекъсване. Средната продължителност на заболяването преди лечението за MDR-TB е 5.7 години (интервал: 1-17). Седемдесет случая (67.6%) са с положителни микроскопски и/или културелни изследвания за туберкулоза в началото на лечението. Всички пациенти са с отрицателни изследвания за HIV. Десет пациента (9.5%) са с екстензивнорезистентна туберкулоза (XDR-TB). Двадесет и четири месеца след началото му, 61 пациента (58%) са с успех от лечението, 27 (26%) са починали, 7 (7%) с неуспех и 10 (9%) са прекъснали лечението. Смъртността при случаите с XDR-TB е значително по-голяма в сравнение с останалите.

Заключение: Повечето случаи с MDR-TB са с напреднало заболяване, което обяснява по-високата смъртност и нисък успех. XDR-TB е най-значимият прогностичен фактор за неблагоприятен изход. Предшестващото лечение, забавянето на терапията след диагностицирането на MDR-TB и задържането на положителните микробиологични резултати по време на интензивната фаза са други важни фактори, свързани с лоша прогноза на лечението.

Ключови думи: туберкулоза, мултирезистентна туберкулоза, екстензивнорезистентна туберкулоза, изход от лечението

ABSTRACT

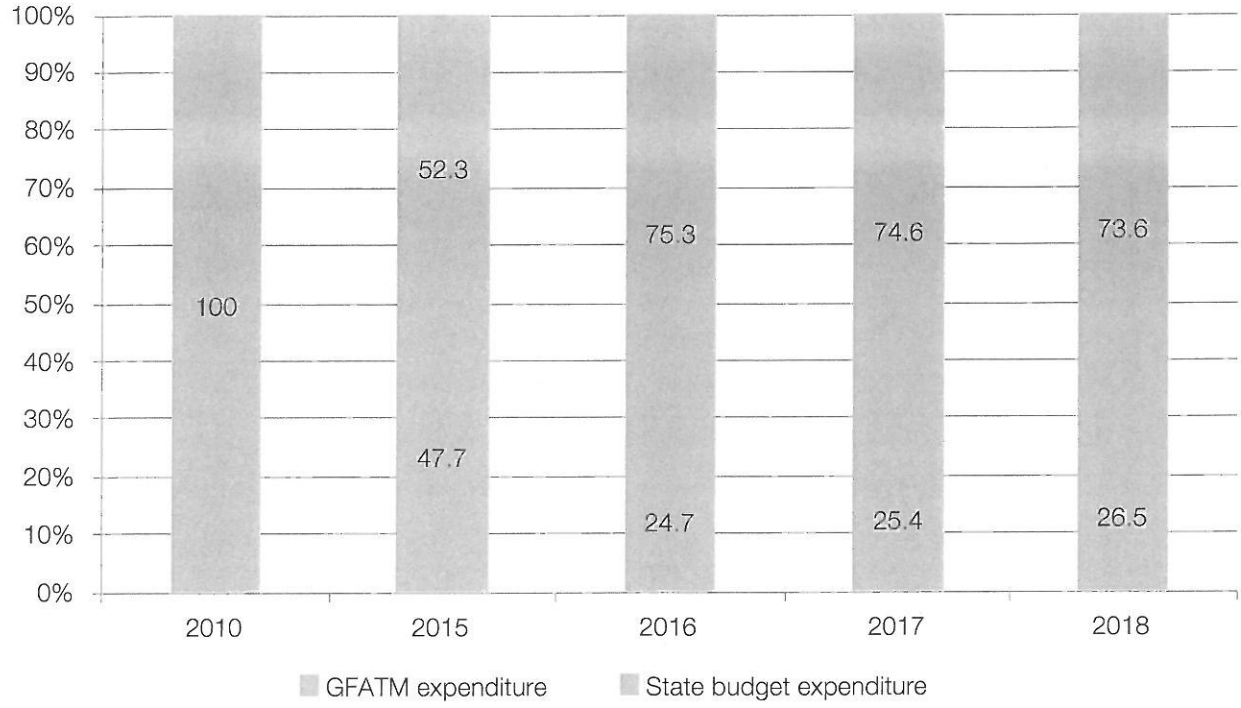
In response to the rapidly increasing number of new HIV infections in the WHO European Region, the action plan for the health sector response to HIV in WHO European Region was endorsed at the 66th session of the WHO Regional Committee for Europe in September 2016. From December 2017 to April 2018, the WHO Regional Office for Europe collected good practices in implementation of the action plan and compiled them in this compendium. National health authorities, national and international experts, and civil-society organizations involved in HIV prevention, treatment and care were solicited to share their practices. The practices exemplify efforts within five target areas: HIV prevention; HIV testing and treatment; reducing AIDS-related deaths; curbing discrimination; and increasing financial sustainability of the HIV/AIDS response. This first compendium of good HIV practices in the WHO European Region includes 52 practice examples from 32 Member States. The compendium is intended as a resource for relevant stakeholders in the HIV response.

Keywords
HIV Infections – Prevention and Control
Delivery of Health Care
Regional Health Planning
Europe

ISBN: 978 928 905 3358

Address requests about publications of the WHO Regional Office for Europe to:
Publications
WHO Regional Office for Europe
UN City, Marmorvej 51
DK-2100 Copenhagen Ø, Denmark
Alternatively, complete an online request form for documentation, health information, or for permission to quote or translate, on the Regional Office website (http://www.euro.who.int/pubrequest).

Fig. 27. Proportion of GFATM and state funding for ART, Republic of Belarus, 2010–2018



Source: Tatsiana Migal, Ministry of Health of the Republic of Belarus, Presentation on Zero Discrimination Day event, 1 March 2018, Minsk

BULGARIA. Development of low-threshold HIV testing services for key populations

Varleva, Tonka | Taskov, Hristo | Georgieva, Viara | Zamfirova, Mariya | Hristov, Kristyan

Bulgarian Ministry of Health

Background

The overall HIV prevalence in Bulgaria is low (0.07% in 2016) and concentrated in key populations *(82)*, including people who inject drugs, MSM, the Roma population (men), prisoners and SW (Table 9). In 2001, the Bulgarian Government adopted the first National AIDS Strategy and the National action plan for prevention and control of HIV/AIDS and STIs 2001–2007. Supported by the MoH, the National AIDS Strategy and National action plan mandated state responsibility to ensure HIV testing services and ART were guaranteed for all. In 2004, decentralized, low-threshold rapid HIV testing and counselling services combined with harm reduction programmes for people who inject drugs were implemented as national priorities, including for key populations.

Table 9. Average HIV prevalence in key populations, Bulgaria, 2006–2011

	People who inject drugs	MSM (2007–2016)	Roma men aged 15–25 years	Prisoners	SW
Prevalence	5.73%	2.95%	2.06%	0.98%	0.82%

Source: National Centre of Infectious and Parasitic Diseases, 2015 *(82)*.