

# CURRENT TRENDS IN HIV/ AIDS EPIDEMIOLOGY IN POLAND, 1999 – 2004

M Rosinska\*

The first HIV/ AIDS cases in Poland were diagnosed in the mid-1980, and the outbreak in injecting drug users was first observed in 1989. For many years the HIV epidemic in Poland was driven by injecting drug use. In this study we examine the trends in the HIV/ AIDS epidemic based on the surveillance data for 1999–2004. During this period, 3561 new HIV infections (annual rate of 15.4 per 1 000 000 inhabitants) were reported and 803 incident AIDS cases (incidence 3.5 per 1 000 000) were diagnosed. Both the annual number of newly detected HIV infections and the AIDS incidence showed a slight increasing trend. In particular, the vertically transmitted AIDS incidence increased from 0.46 in 1999–2000 to 0.91 per 1 000 000 children under 15 years in 2003–2004. Approximately 36% of AIDS patients aged 15 years or above had not been previously diagnosed with HIV. The annual number of the late presenters increased markedly between 1999 and 2004 and was higher amongst individuals infected through sexual transmission (51.0%) than those infected by injecting drug use (20.1%). Injecting drug users made up 78.6% of new HIV infections with known transmission route, but for 47.9% of all cases the route of transmission was not reported. In order to generate more accurate data, HIV surveillance must be enhanced. Nevertheless, there is clear evidence for implementation of a comprehensive programme of prevention of vertical transmission and encouraging more extensive HIV testing especially in the groups at risk for sexual transmission. An effort is needed to enhance HIV surveillance and prevention in the framework of programmes for STI.

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## Introduction

The Polish HIV/ AIDS surveillance system was implemented in 1985 as a part of the routine infectious disease surveillance system and has been maintained up to the present by the Department of Epidemiology at the National Institute of Hygiene (Państwowy Zakład Higieny). The surveillance of other sexually transmitted infections, however, is run under a different system by the Institute of Venerology of the Medical Academy of Warsaw (Instytut Dermatologii i Wenerologii).

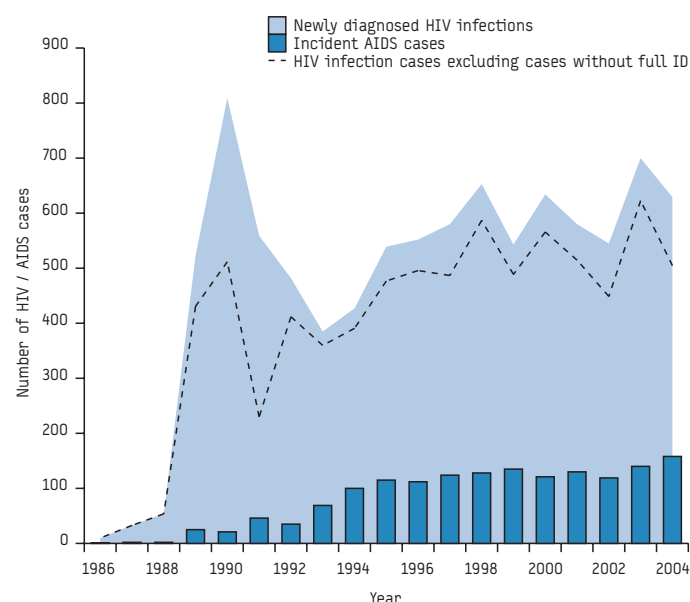
The first HIV infections in Poland were diagnosed and registered in 1985, in six haemophilic patients, four men who had sex with men (MSM) and a female sex worker. The first case of AIDS was reported in 1986. During the early years of the epidemic, most of the diagnosed patients were infected through sexual contact between men, but in 1989 the HIV epidemic among injecting drug users (IDUs) was uncovered and from 1989 to 1991 over 70% of newly diagnosed infections were most probably acquired through injecting drug use [1]. This proportion remained high during the 1990s, as IDUs continued to be the population the most affected by HIV/ AIDS in Poland. In general, however, in Poland as in most other central European countries, the HIV/ AIDS epidemic has had a relatively small impact. The 2003 estimated adult HIV prevalence rates in central Europe (0.1% or below) were lower than in western (0.1%–0.5%) or eastern Europe (0.1%–1.4%) and much lower than in the region most affected by the epidemic, sub-Saharan Africa (7.5%) [2].

With exception of two outbreaks – in Romanian children and, as mentioned above, in Polish IDUs – the rate of new HIV diagnoses in central Europe remains low and the epidemic is driven by sexual transmission.

Between 1985 and 2004, 9151 newly detected HIV infections and 1537 AIDS cases were registered in Poland. The AIDS incidence and the rate of detection of HIV infection cases after the early peak due to the epidemic among IDUs remained stable, with a consistent slow increase year on year [FIGURE 1].

**FIGURE 1**

**Newly detected HIV infections and incident AIDS cases in Poland, 1986–2004**



A large proportion of the cases registered during the peak lacked sufficient identifying information and it is possible that some of these cases were registered again at a later time.

Highly active antiretroviral therapy (HAART) was first introduced in Poland in 1996, and in 1999 a special government programme coordinated by the National AIDS Centre was established, assuring general availability of free-of-charge therapy [3].

The aim of this study is to describe current trends in the epidemiological situation of the HIV/ AIDS in Poland, based on the surveillance data from 1999–2004.

## Methods

The surveillance system comprises reporting of newly diagnosed HIV infections as well as the incident AIDS cases.

AIDS case notification is mandatory for all attending physicians, who complete standardised case report forms and send them to the regional public health departments (WSSE, Wojewódzkie Stacje Sanitarno-Epidemiologiczne). Epidemiologists at the WSSE review the cases to check if the case definition criteria are met and collect additional information if necessary. Subsequently the WSSE forward the forms to the Department of Epidemiology of the National Institute of Hygiene.

The laboratories performing confirmatory HIV tests (immunoblot, PCR) report newly diagnosed HIV infections directly to the Department of Epidemiology.

\* Department of Epidemiology, National Institute of Hygiene, Warsaw, Poland

HIV/AIDS reports include personal identifiers: name (or only the initials), date of birth (or age), gender, address (or administrative region) and, recently, personal identification number, as well as the presumed mode of transmission. For cases of AIDS, data on indicator diseases and vital status are also required. Cases with known initials, date of birth and sex are considered to have the full identifier.

The Department of Epidemiology at NIH maintains a registry of HIV/AIDS cases. All newly reported cases are compared with the registry to avoid double registration; the case classification is once again validated.

The system registers all HIV infections diagnosed with definite methods and all confirmed AIDS cases according to the 1987 European case definition, taking into account the 1993 correction and the 1995 case definition for children [4, 5]. Each AIDS case must be linked to a record in the HIV registry.

In the present study data on newly detected HIV infection cases reported in 1999 – 2004 and on incident AIDS cases diagnosed during the same time period (reported until 31 March 2005) were included in the analysis. Reporting delays of over 3 months are uncommon.

## Results

### HIV infection

During 1999 – 2004, 3561 newly detected HIV infections (annual rate 15.4 per 1 000 000) were reported through the routine surveillance system, 2584 (73.7%) in males and 923 (26.3%) in females [TABLE 1]. Injecting drug use was the most commonly presumed transmission route, accounting for 78.6% of infections with reported transmission route.

TABLE 1

Number of newly detected HIV infections and incident AIDS cases, by sex, age groups and transmission route in Poland, 1999-2004

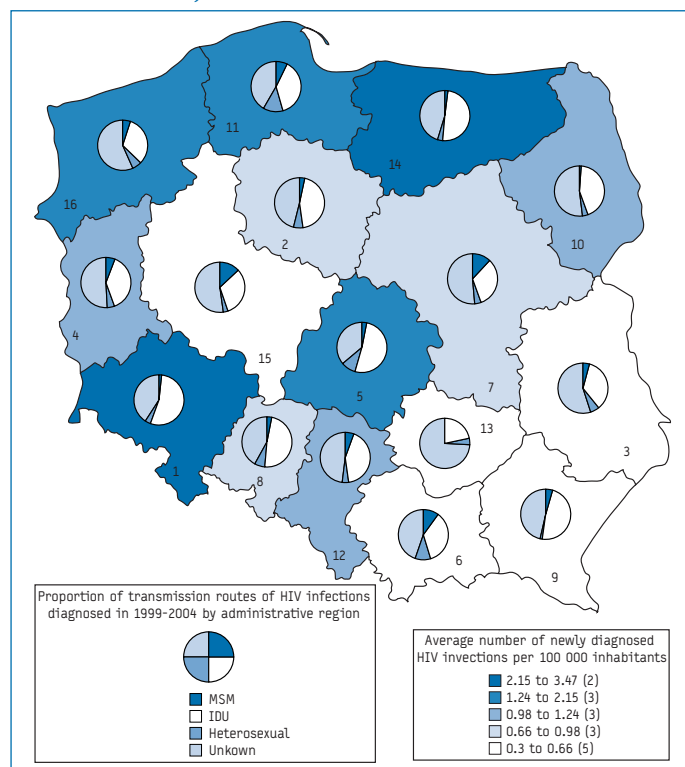
|      |                   |                         |  | Transmission route |       |      |       |       |       |       |
|------|-------------------|-------------------------|--|--------------------|-------|------|-------|-------|-------|-------|
|      |                   |                         |  | MSM                | IDU   | HCA  | Het   | MtC   | Unkn. | Total |
| HIV  | Sex               | Male                    |  | 166                | 1072  | 1    | 107   | 32    | 1206  | 2584  |
|      |                   | Female                  |  | -                  | 373   | 0    | 63    | 28    | 459   | 923   |
|      |                   | Unknown                 |  | -                  | 12    | 0    | 0     | 0     | 42    | 54    |
|      |                   | %Female                 |  | -                  | 25.8% | 0.0% | 37.1% | 46.7% | 27.6% | 26.3% |
|      | Age group (years) | <15                     |  | 0                  | 0     | 0    | 0     | 60    | 11    | 71    |
|      |                   | 15-24                   |  | 28                 | 543   | 0    | 28    | 0     | 417   | 1016  |
|      |                   | 25-34                   |  | 54                 | 586   | 1    | 61    | 0     | 640   | 1342  |
|      |                   | 35-44                   |  | 47                 | 238   | 0    | 47    | 0     | 321   | 653   |
|      |                   | 45+                     |  | 32                 | 54    | 0    | 30    | 0     | 201   | 317   |
|      |                   | Unknown                 |  | 5                  | 36    | 0    | 4     | 0     | 117   | 162   |
|      |                   | Median age at diagnosis |  | 34yrs              | 26yrs | -    | 34yrs | 2yrs  | 30yrs | 28yrs |
|      |                   | Total                   |  | 166                | 1457  | 1    | 170   | 60    | 1707  | 3561  |
| AIDS | Sex               | Male                    |  | 118                | 339   | 2    | 91    | 12    | 65    | 627   |
|      |                   | Female                  |  | -                  | 94    | 0    | 49    | 16    | 17    | 176   |
|      |                   | Unknown                 |  | -                  | 1     | 0    | 0     | 0     | 0     | 1     |
|      |                   | %Female                 |  | -                  | 21.7% | 0.0% | 35.0% | 57.1% | 20.7% | 21.9% |
|      | Age group (years) | <15                     |  | 0                  | 0     | 1    | 0     | 28    | 3     | 32    |
|      |                   | 15-24                   |  | 6                  | 42    | 0    | 11    | 0     | 5     | 64    |
|      |                   | 25-34                   |  | 29                 | 217   | 0    | 51    | 0     | 31    | 328   |
|      |                   | 35-44                   |  | 46                 | 140   | 0    | 47    | 0     | 21    | 254   |
|      |                   | 45+                     |  | 37                 | 33    | 1    | 31    | 0     | 22    | 124   |
|      |                   | Unknown                 |  | 0                  | 1     | 0    | 0     | 0     | 0     | 1     |
|      |                   | Median age at diagnosis |  | 41yrs              | 32yrs | -    | 36yrs | 2yrs  | 35yrs | 34yrs |
|      |                   | Total                   |  | 118                | 433   | 2    | 140   | 28    | 82    | 803   |

MSM - men who have sex with men; IDU - injecting drug users; HCA - Health care associated; Het - heterosexual contact; MtC - mother to child; Unkn. - unknown

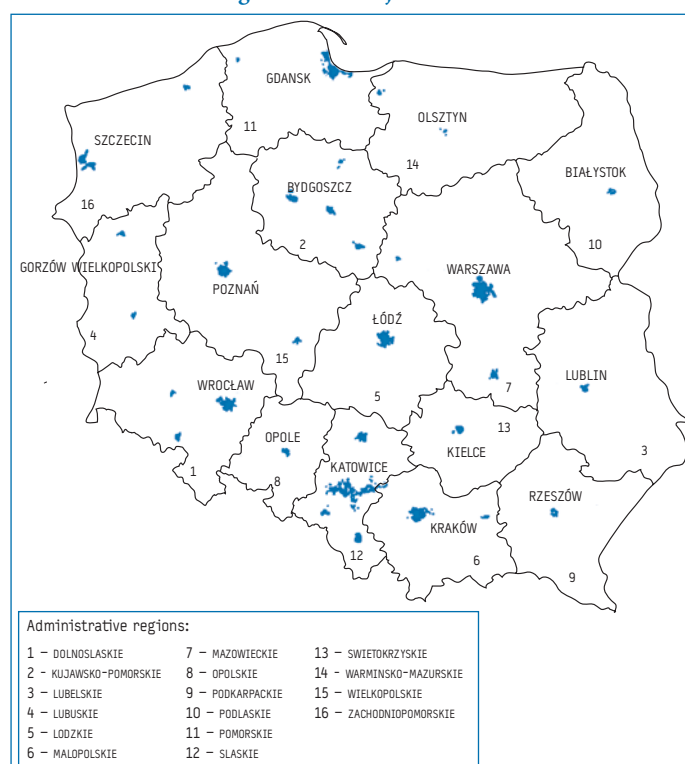
Two other important routes of transmission included heterosexual contact (9.2%) and sexual contact between men (9.0%). In 47.9% of all HIV cases, however, the route of transmission was not reported. HIV infections were detected in all regions in Poland, but the rate varied between the regions, with the lowest average annual rate of 3.1 per 1 000 000 inhabitants in Swietokrzyskie and the highest, in Dolnoslaskie (34.7/1 000 000) and Warminsko-Mazurskie (21.5/1 000 000) [FIGURE 2]. Among cases with reported transmission route, the proportion of IDU transmission was the highest in the two northeastern regions – 89.3% in Warminsko-Mazurskie and 88.1% in

FIGURE 2

A. Regional variation of the rate of newly detected HIV infections and of the proportions of different transmission routes in Poland, 1999-2004



B. Administrative regions and major urban areas in Poland

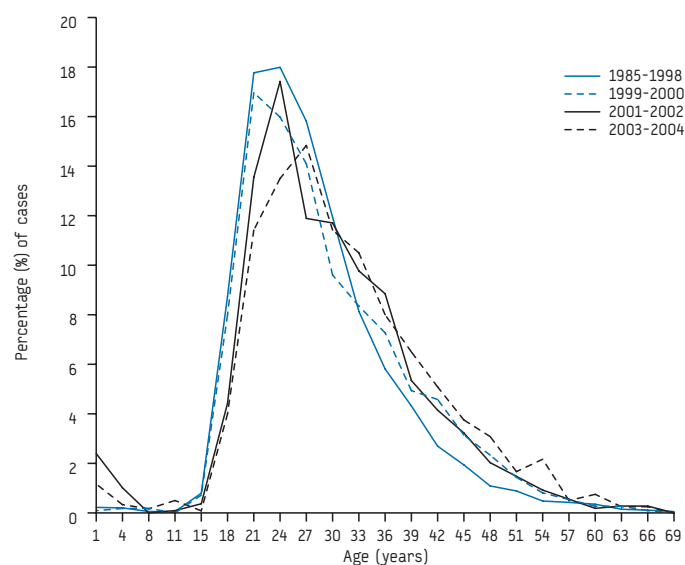


Podlaskie - and the lowest in Mazowieckie (61.4%) and Malopolskie (62.5%). Heterosexual transmission was more common in Malopolskie (17.9%), Lodzkie and Swietokrzyskie (14.3%) and sexual transmission between men in Wielkopolskie (27.1%), Mazowieckie (22.9%) and Malopolskie (17.9%).

Overall, the median age at HIV diagnosis was 28 years and, excluding children of HIV infected mothers, and ranged from 26 years in the IDU to 34 years in people infected through sexual contact. Approximately 30% (n=1087) of the infected were under 25 years of age, including 60 children, who acquired the infection from their mothers [TABLE 1]. In recent years, however, the age distribution appears to have shifted towards older age groups [FIGURE 3].

FIGURE 3

Trend of age distribution of the newly detected HIV cases, Poland 1985–2004

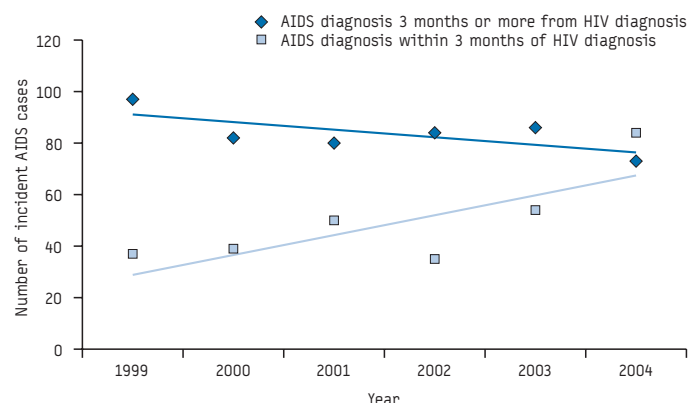


#### AIDS cases

A total of 803 AIDS cases were diagnosed during the study period, including 176 (21.9%) in females. The median age was 34 years, but the cases in MSM tended to be in older patients (median age 41 years) and those in IDUs, in younger patients (median age 32 years) [TABLE 1]. Approximately 36% of all cases, excluding children under 15 years, were diagnosed with AIDS within 3 months of HIV diagnosis (late presenters). Although overall AIDS incidence was stable over the years examined, the number of late presenters has recently increased sharply and the number of incident cases who were diagnosed with AIDS 3 months or more after HIV infection diagnosis has gradually decreased [FIGURE 4]. Late presenting cases, as compared to other cases, were more likely to be in people younger than 25 or older than 45 years,

FIGURE 4

Incident AIDS cases (and linear trend lines) by the time from HIV diagnosis, Poland, 1999–2004



although mean age was comparable for the two groups (36.3 and 35.5 years for late presenters and others, respectively, p-value 0.283). The majority of the late presenters acquired their infection through sexual contact, while the IDUs predominated in the group of cases that were not late presenters [TABLE 2]. However, the transmission route was not reported for 20% of late presenters.

Between 1999 and 2004, 32 paediatric AIDS cases were reported, 28 transmitted vertically, one infected through blood transfusion and three for whom the route of transmission was not established. The AIDS incidence due to vertically transmitted HIV infection increased from 0.46 per 1 000 000 children younger than 15 in 1999 - 2000, to 0.64/1 000 000 in 2001 - 2002 and 0.91/1 000 000 in 2003 - 2004.

TABLE 2

AIDS cases diagnosed in 1999–2004, excluding children below 15 years. Comparison of characteristics of cases by the time of the HIV and AIDS diagnosis, Poland

|                             | AIDS diagnosis                   |       |                                          |       | P-value |
|-----------------------------|----------------------------------|-------|------------------------------------------|-------|---------|
|                             | Within 3 months of HIV diagnosis |       | 3 months or more after the HIV diagnosis |       |         |
| Age group (n,%)             | n=274                            |       | n=494                                    |       |         |
| 15–24                       | 32                               | 11.7% | 32                                       | 6.5%  |         |
| 25–34                       | 105                              | 38.3% | 223                                      | 45.1% |         |
| 35–44                       | 86                               | 31.4% | 166                                      | 33.6% |         |
| 45+                         | 51                               | 18.6% | 73                                       | 14.8% | 0.041   |
| Sex (n,%)                   | n=274                            |       | n=495                                    |       |         |
| Male                        | 215                              | 78.5% | 394                                      | 79.6% |         |
| Female                      | 59                               | 21.5% | 101                                      | 20.4% | 0.245   |
| Transmission category (n,%) | n=274                            |       | n=495                                    |       |         |
| MSM                         | 62                               | 22.6% | 55                                       | 11.1% |         |
| IDU                         | 87                               | 31.8% | 345                                      | 69.7% |         |
| Het                         | 68                               | 24.8% | 72                                       | 14.5% |         |
| HCA                         | 1                                | 0.4%  | 0                                        | 0.0%  |         |
| Unknown                     | 56                               | 20.4% | 23                                       | 4.6%  | <0.001  |

MSM - men who have sex with men; IDU - injecting drug users; HCA - Health care associated; Het - heterosexual contact

#### Discussion

During 1999 – 2004 the registered rate of newly detected HIV infections continued to increase gradually. In contrast to other central European countries, the epidemic in Poland is unlikely to be fuelled by sexual transmission, although it exhibits marked regional variability. Given the currently increasing trends of heterosexually acquired HIV infections in the Newly Independent States of the Former Soviet Union, the possibility of augmented heterosexual transmission has become an important concern [6]. A study comparing early syphilis and gonorrhoea incidence in the eastern part of Poland in 1988/89 and 1996/97 demonstrated a significant increase of the percentage of STI patients in this region who acquired the diseases through sexual contact with a person from one of the neighbouring countries to the east [7]. However, in the period of time examined there was no evidence of increased homo- or heterosexual spread of the HIV epidemic in the eastern Poland. Conversely, the apparently injection-driven epidemic in northeast Poland near the Kaliningrad border suggests possible links with the Russian outbreak. However, because transmission route was not reported for a large proportion of these cases, these data must be interpreted with caution. Gender distribution of cases with unknown transmission route (72.4% males, 27.6% females) parallels that in IDUs (74.2% males, 25.8% females), indicating that injecting drugs could play an important role in the group with unreported transmission route. In comparison, the proportion of females among those infected heterosexually is higher (37.1%). However, those in the group with unknown transmission route were, on average, older than



those infected through injecting drug use, a characteristic similar to that of those infected through sexual intercourse. Also similar to cases infected through sexual transmission, people in this group are more likely to be late presenters, possibly because they were not aware of being at risk or because they did not seek medical care for different reasons. The observed age shift towards older ages represents either people infected at older ages or people who were diagnosed with HIV many years after being infected. The latter hypothesis is supported by a rapidly growing number of late presenters. On the other hand, data on HIV testing patterns in different age groups are not available and the observed age increase may result from increased testing in older age groups.

In the era of HAART, the number of AIDS cases continues to increase in Poland. Many developed countries experienced a distinct decrease in AIDS incidence when HAART became generally available [8]. Assuming the wide availability of HAART, stable or even increasing AIDS incidence may represent persons who were unaware of their HIV status due to low risk perception or limited access to HIV testing and appropriate medical consulting or care [8, 9]. Poland has, at present, one of the lowest HIV testing rates in Europe [10]. Approximately 36% of incident AIDS cases are diagnosed simultaneously with the HIV diagnosis. The increasing rate of these cases and the fact that a large proportion were infected through sexual contact (60% of cases with reported transmission route) indicate that the HIV epidemic in Poland may be underestimated and not limited to specific population compartments such as injecting drug users. Furthermore, despite the availability of the mother-to-child transmission prophylaxis since 1994, incidence of vertically transmitted AIDS in Poland continues to rise. The transmission mainly occurs in women who did not know about their serostatus during the pregnancy [11]. Based on a study of over 25 000 newborns tested in 2001 – 2002 in the Mazowieckie region, between 100 and 200 seropositive women give birth each year in Poland [12]. Pregnant women are still not routinely being offered testing for HIV.

To conclude, in order to generate more accurate data, HIV surveillance must be enhanced by collecting detailed risk information. Even though further studies to guide prevention strategies are warranted, it is clear

that implementation of a comprehensive programme of vertical transmission prophylaxis including voluntary testing of all pregnant women should be a priority. Moreover, there exists a need to increase access to and use of HIV testing by offering it more widely in accessible settings, or even by approving self-testing kits. Considering that the majority of late presenters were infected through sexual transmission, an effort is also needed to enhance collaboration between the HIV and STI surveillance and prevention programs.

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## ORIGINAL ARTICLES

### Surveillance report

# SURVEILLANCE OF HUMAN SALMONELLOSIS IN BULGARIA, 1999–2004: TRENDS, SHIFTS AND RESISTANCE TO ANTIMICROBIAL AGENTS

G Asseva, P Petrov, I Ivanov, T Kantardjiev\*

This article analyses the distribution of resistant salmonella and resistance mechanisms among the most frequently encountered serotypes in Bulgaria. Culture, biochemical tests and serotyping were used for identification. Screening for resistance to 14 antimicrobial agents with the standard Bauer-Kirby disk-diffusion method. The double disk synergy method was used to determine production of extended-spectrum  $\beta$ -lactamases (ESBL). Transfer of genes coding for ESBLs with experimental conjugation. Specific primers were used for PCR detection of *bla*-CTX-M, *bla*-SHV and *bla*-TEM. 245 resistant salmonella strains were determined in our study; the majority originated from sporadic cases of human illness or asymptomatic infection and the remaining 23 were isolated from outbreaks. 79 producers of ESBL were detected: 5 *S. Enteritidis*,

1 *S. Typhimurium*, 9 *S. Isangi* and 62 *S. Corvallis* with types of enzymes: CTX-M3, TEM and SHV. Gene coding for extended-spectrum  $\beta$ -lactamases were successfully transferred into a recipient *Escherichia coli* C1A strain simultaneously with genes coding for resistance to aminoglycosides and sulphonamides (for *bla*-CTX-M3) and gene coding for resistance to aminoglycosides and chloramphenicol (for *bla*-SHV and *bla*-TEM). PCR amplification revealed *bla*-CTX-M3 genes in *S. Enteritidis*, and *bla*-SHV and *bla*-TEM in *S. Corvallis*. Salmonellae have revealed increasing resistance to all clinically important groups of antimicrobial agents. Bulgaria is the first country in the world where ESBL in serotype Corvallis has been reported. A wide diversity of resistance genes is found among the leading serotypes of salmonella causing human disease in Bulgaria.

\* National Centre for Infectious and Parasitic Diseases, National Reference Laboratory for Enteric Pathogens, Sofia, Bulgaria