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What is the extent of the transmission probability of the HIV infection into the general population? A comparison between Poland, a new EU member country, and Germany by applying the national point prevalence estimate and projection method

Diplomarbeit

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4 List of abbreviations

ANC:	Antenatal clinics
BZGA:	Bundeszentrale für gesundheitliche Aufklärung
CCSW:	Clients of female commercial sex workers
CIDUSW:	Clients of intravenous / injection drug using sex workers
CSW:	Female commercial sex workers
DAH:	Deutsche AIDS-Hilfe e. V.
ENAADS:	European Non-Aggregate AIDS Dataset
EuroHIV	European Center for the Epidemiological Monitoring of AIDS
HAART:	Highly active antiretroviral treatment
HPC:	High prevalence countries
IDU:	Intravenous / injection drug users
IDUSW:	Female intravenous / injection drug using sex workers
NIS:	Newly independent states of former Soviet Union
PHR:	Populations at higher risk
PLR:	Populations at lower risk
PLWHA:	People living with HIV/AIDS
RKI	Robert Koch Institute
SGHS:	Second generation HIV surveillance
STD / STI:	Sexually transmitted diseases / infections
UAT:	Unlinked anonymous testing
UNAIDS:	Joint United Nations Programme on HIV/AIDS
WHO	World Health Organisation

1. Abstract:

1.1 Background: The aim of this investigation was to examine and to compare the levels of the HIV/AIDS epidemic in Germany and Poland at the end of the year 2003 and to design an idea of probable epidemic tendencies until the year 2030. The probability of spreading the HIV infection by high risk populations (PHR) as so called hard-to-reach-populations with their risky sexual behaviour towards people belonging to the population of lower risk (PLR) was the focus of attention. Another matter of concern was to contribute to point out probable requirements of improvement in HIV surveillance and recommendations concerning prevention measures in hard-to-reach-populations with regard to second generation HIV surveillance.

1.2 Methods: The national point prevalence estimate method was applied in order to obtain information about the number of people with high and low risks for HIV infections and their HIV prevalences as well as the average of people living with HIV/AIDS (PLWHA) in Poland and Germany at the end of 2003. The results were compared with already existing findings. This method is used in countries with low level (prevalence below 5% in higher risk populations) or concentrated epidemics (prevalence above 5% in at least one higher risk population but below 1% in pregnant women [1] [2]) developed by UNAIDS / WHO [3] [4] [5] [6].

By means of the projection method probable developments of the epidemical tendencies and the national adult prevalence in both countries from the base year 2003 until the year 2030 were predicted. A sensivity analysis finally gave information about the best and worst

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[1] UNAIDS/WHO working group on global HIV/AIDS/STI surveillance. Initiating second generation HIV surveillance systems: practical guidelines. Geneva 2002

[2] UNAIDS/WHO/CDS/CSR/EDC/2000.5 UNAIDS/00.03E. Second generation surveillance for HIV. www.unaids.org. (accessed 2004-04-15)

[3] The UNAIDS reference group on estimates, modelling and projections. Improved methods and assumptions
for the estimation of the HIV/AIDS epidemic and its impact: recommendations of the UNAIDS reference group on estimates, modelling and projections. In: AIDS 2002, 16: 1-14

[4] UNAIDS/WHO. Overview of making estimates of HIV/AIDS and its impact in countries with low-level or concentrated epidemics: The workbook method. The models and methodology of the UNAIDS/WHO approach to estimating and projecting national HIV/AIDS epidemics. The UNAIDS reference group on estimates, models and projections June 2003. http://www.unaids.org/html/pub/Topics/Epidemi/WorkBookMethod_Manual_en_doc.ht 2003-10-08, 1-19. (accessed 2004-04-15)

[5] UNAIDS. A joint UNAIDS/IMPACT/FHI workshop: report and conclusions. Estimating the size of populations at risk for HIV: Issues and methods. 2002. www.unaids.org, 3-56. (accessed 2004-04-15)

[6] Walker N et al. Methods and prodedures for estimating HIV/AIDS and its impact: The UNAIDS/WHO estimates for end of 2001, Geneva 2001: 6-9

probable future versions. The population sizes, prevalences in the low and high risk populations as well as the annual growth rate of each population and the saturation level concerning the prevalences in each population are estimates based on findings in vast literature reviews, personal communications with experts, programme suggestions and own estimates.

1.3 Results:

1.3.1 National point prevalence estimate

Germany

The PLR consisted of partners of PHR and of pregnant women (15-49 years) who attended antenatal clinics (ANC women) respectively. The estimated number of PLWHA in Germany at the end of the year 2003 came to an average of 46.386 individuals (low estimate 21.316; high estimate 78.112) and 46.327 (21.805 low estimate and 76.974 high estimate) respectively. The adult prevalence (15-49 years) amounted to 0,12% in both cases at the end of 2003. Among these 11.654 (25,1%) women (15-49) living with HIV/AIDS (LWHA) were found (4.984 low estimate, 29.010 high estimate) and 12.265 (26,5%) with a low estimate of 5815 and a high estimate of 28.976 respectively.

According to the Robert Koch-Institut (RKI) [7] the estimated number of PLWHA in Germany comes to 43.000 at the end of 2003. UNAIDS/WHO [8] additionally state a low estimate of 21.000 and a high estimate of 71.000 PLWHA with an adult prevalence (15-49 years) of 0,1% (low estimate) and 0,2% (high estimate). The estimate of women living with HIV/AIDS is 9.500 (4.700 low estimate and 16.000 high estimate).

Poland

The PLR constisted of partners of PHR and of ANC women respectively.

The results for the estimated number of PLWHA in Poland at the end of the year 2003 were 16.150 (low estimate 6593; high estimate 30.231) and 16.278 (6.948 low estimate and 29.859 high estimate) respectively. The adult prevalence (15-49 years) came to 0,08% in both cases. Among them were 3.758 women (23,3%) (1.240 low estimate and 7.871 high estimate) and 4.097 (25,2%) (low estimate 1.711, high estimate 7.829) respectively.

[7] Robert Koch Institut. Aktuelle Daten und Informationen zu Infektionskrankheiten und Public Health. 26. November 2003/ Nr. 48. Epidemiologisches Bulletin 2003; B/2003. http://www.rki.de/INFEKT/EPIBULL/2003/B_03.PDF (accessed 2004-06-12)

[8] UNAIDS/WHO. Germany. Epidemiological Fact Sheets on HIV/AIDS and sexually transmitted infections. Updated 4 February 2004

UNAIDS/WHO [9] estimate the PLWHA in Poland with a number of 14.000 at the end of 2003 with a low estimate of 8.000 and a high estimate of 20.000.
The adult prevalence (15-49 years) amounts to 0,1% (low estimate) and 0,2% (high estimate). The percentage of women is between 20% [10] and 26% [11].

1.3.2 Projection method:

Germany

In the German version of stability with partners of PHR as PLR and with antenatal clinic (ANC) women as PLR respectively the national adult HIV prevalence (15-49 years) will reach 0,25% and 0,24% respectively in the year 2030. The percentage of the PLWHA who come from the PLR will increase from 6,5% and 6,4% respectively at the end of the year 2003 to 8,6% and 8% respectively in the year 2005 and will reach 9,8% and 8,1% respectively in the year 2010.

The German version of increase with partners of PHR as PLR and with ANC women as PLR respectively the national adult HIV prevalence (15-49 years) will come to 0,35% and 0,33% respectively in the year 2030. The percentage of PLWHA who come from the PLR will increase from 6,5% and 6,4% respectively at the end of the year 2003 to 11% and 12,4% respectively in the year 2005 and will reach 16% and 11,3% respectively in the year 2010.

Poland:

In the Polish version of slight movement with partners of PHR as PLR and with ANC women as PLR respectively the national adult prevalence (15-49 years) will become 0,1% and 0,11% respectively in the year 2030. The PLWHA who come from the PLR will increase and decrease respectively from 9,2% and 10,1% respectively at the end of the year 2003 to 10,4% and 10% respectively in the year 2005 and will reach 12% and 9,8% respectively in the year 2010.
In the Polish version of increase with partners of PHR as PLR and with ANC women as PLR respectively the national adult prevalence (15-49 years) will become 0,15% in both

[9] UNAIDS/WHO. Poland. Epidemiological Fact Sheets on HIV/AIDS and sexually transmitted infections. Updated 4 February 2004
[10] ibidem
[11] Rosinska M, Werbinska B. AIDS i zakazenia HIV w 2002 roku. In: Przeglad prazy epidemiologii 2004, 58: 171-181

cases in the year 2030. The percentage of PLWHA who come from the PLR will increase from 9,2% and 10,1% respectively at the end of the year 2003 to 13,1% and 19,4% in the year 2005 respectively and will reach 17,1% and 18,1% respectively in the year 2010.

1.4 Discussion:

The results found by applying the national point prevalence estimate method confirm the findings made by the RKI [12] and the UNAIDS/WHO [13]. Although the applied calculations hold several uncertainties the national point prevalence and projection method nevertheless provides an impression of the present and probable future situation of the HIV epidemic in Poland and Germany.

An independent epidemic among the general heterosexual population has not yet developed and is not expected to break out [14]. It is recognizable that the level of the epidemic in Germany is higher than that in Poland. Probable future prognosis could be stability in both countries or an increase which will not pass the level of a concentrated epidemic.

Nonetheless the increase in risky sexual behaviour and the growth of the number of PHR leads to the conclusion that surveillance efforts, educational work and prevention measures especially aligned to these hard-to-reach-populations as well as already existing cooperations among cross-border institutions are matters of urgent necessity.

2. Introduction:

The idea for this investigation emerged within the framework of a WHO/GTZ Backup Initiative 2003-2004 with the title "Developing Training Package 'Second Generation HIV Surveillance' (SGHS) for Central and Eastern European Countries" [15] [16]. The HIV epidemic is mostly driven by behaviours. Thus one of the core purposes of the SGHS-systems is to promote a standard set of indicators and regular behavioural surveys in order

[12] Robert Koch Institut. Aktuelle Daten und Informationen zu Infektionskrankheiten und Public Health. 26. November 2003/ Nr. 48. Epidemiologisches Bulletin 2003; B/2003.
http://www.rki.de/INFEKT/EPIBULL/2003/B_03.PDF (accessed 2004-06-12)

[13] UNAIDS/WHO. Germany. Epidemiological Fact Sheets on HIV/AIDS and sexually transmitted infections. Updated 4 February 2004

[14] Marcus U, Hamouda O. Epidemiologie der HIV-Neuinfektionen in den verschiedenen Risikogruppen. In: Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz. Berlin: Springer-Verlag, 2000, 43: 3-8

[15] WHO Regional Office for Europe. Introduction of second-generation HIV surveillance guidelines in some newly independent states of eastern Europe. Report on a WHO meeting, St. Petersburg, Russian Federation 2001.www.who.org (accessed 2004-04-14)

[16] School of Public Health „Andrija Stampar". Newsletter. Training in second generation HIV surveillance. Volume 1, issue 1, Zagreb, Croatia 2003

to monitor trends in behaviour and to target intervention programmes. Comparable country-specific estimates of HIV/AIDS are important as these estimates are needed for organizations to determine how to allocate resources and as a basis of judgement of need.

HIV spread much earlier and HIV prevalence is higher in western than in eastern Europe due to the former societal environment of central and eastern Europe. A closed totalitarian Soviet system was responsible for high levels of social control, strict norms concerning sexuality and prohibition of homosexuality. After the fall of the Soviet Union market reforms and political restructures took place. Subsequently poverty, huge increase in income differences and unemployment walked along with collapses of health care systems and changes or even losses in social values [17] [18] [19]. Shifts in sexual behaviour and migration on account of border openings developed and supported the spread of HIV and STD. Choosing the neighbour countries Germany and Poland as the subject of this examination is relevant as on the one hand both countries show similarities in their sizes and connections in history. On the other hand Poland as a new EU member state and a bridge between east and west Europe and western European Germany are both countries with cultural and religious distinctions, different political pasts and developments of the HIV/AIDS epidemic against the background of a dramatic increase in HIV prevalence in the Newly Independent States (NIS) of the former Soviet Union and the eastern expansion of the EU.

3. HIV surveillance in Europe

Reporting AIDS cases has been the main means of monitoring the HIV/AIDS situation in Europe since 1989 [20]. In most European countries AIDS surveillance systems were installed in the early 1980, soon after the first cases were identified. AIDS surveillance at the European level started in 1984 with the foundation of the European Center for the Epidemiological Monitoring of AIDS (EuroHIV), a World Health Organisation (WHO) Collaborating Centre in France. 51 countries of the WHO European participate voluntarily in European HIV/AIDS surveillance. These areas are the West (the former 15 European

[17] Dehne K L et al. The HIV/AIDS epidemic in eastern Europe: recent patterns and trends and their implication for policy-making. In: AIDS 1999, 13: 741-749

[18] Hamers F F, Downs A M. HIV in central and eastern Europe. In: The Lancet 2003, 361: 1035-1044

[19] Hamers F F, Downs A M., Infuso A, Brunet J-B. Diversity of the HIV/AIDS epidemic in Europe. In: AIDS 1998, 12: 63-70

[20] Hamers F F et al. Current situation and regional perspective on HIV/AIDS surveillance in Europe. In: JAIDS 2003, 32: 39-48

Union countries and Andorra, Iceland, Israel, Malta, Monaco, Norway, San Marino, Switzerland), the East with the 15 NIS of the former Soviet Union and the Center with the 13 remaining countries of which several including Poland now belong to the EU since 2004-05. Per country, one institution nominated by the national health authorities, reports individual data on AIDS cases to EuroHIV every quarter. These national data are merged and form the European Non-Aggregate AIDS Dataset (ENAADS). AIDS data reported at the European level are without case identifiers and include the following details:

- Reporting country
- Age at diagnosis
- Sex
- Date of diagnosis
- Date of report
- Transmission category
- AIDS indicative disease(s) at diagnosis
- Type of virus (HIV-1 or HIV-2)
- Date of first HIV-positive test
- Vital status
- Date of death
- Date of death report [21]

With the advent and wide use of highly active antiretroviral treatment (HAART) principally in western Europe the AIDS incidence and AIDS deaths were markedly reduced. HAART is a triple combination of active substances with a life-prolonging effect due to the reduction of the viral load. Simultaneously, large epidemics among injecting drug users (IDU) in several countries in the Newly Independent States (NIS) of the former Soviet Union could be observed. The AIDS incidence was no longer suitable as the main indicator of HIV trends in Europe. Thus the HIV/AIDS surveillance in Europe needed to be reformed and adapted to this new situation [22].

In early 1999 a European HIV case reporting system was implemented, recommended by the European Commission (EC), WHO and the Joint United Nations Programme on HIV/AIDS (UNAIDS) and coordinated by EuroHIV. HIV cases are half-yearly reported

[21] ibidem
[22] ibidem

without personal identifiers and a database is maintained.[23] Reported cases include the following details:

- Reporting country
- Date of birth
- Sex
- Date of HIV diagnosis (HIV test)
- Date of HIV report
- Transmission category
- Clinical stage at HIV diagnosis
- Type of virus (HIV-1 or HIV-2)
- Probable date of infection

3.1 HIV/AIDS surveillance in Germany

3.1.1 Assessment of the epidemiological situation

The Federal Republic of Germany has a total population of 82,5 million people of whom 88% live in urban areas [24] [25]. About half of all infections are in MSM with an upward trend since the end of the 1990s. About 20% of infections are found in migrants from HPC, additionally 18% are heterosexually infected and about 9% of all infections are IDU [26] [27] [28].

3.1.2 Surveillance

Since 1982 when the first AIDS case was reported in Germany information on AIDS cases has been collected at the national register at the AIDS Center of the Robert Koch Institute (RKI). The reporting of AIDS cases or deaths is not mandatory in Germany. AIDS case reports contain information on sex, year of birth, region of residence, transmission route,

[23] ibidem

[24] Statistisches Bundesamt Deutschland 2004 www.destatis.de (accessed 2004-04-15)

[25] UNPOP. World population policies 2003. http://www.un.org/esa/populations. (accessed 2004-07-09)

[26] UNAIDS/WHO. Germany. Epidemiological Fact Sheets on HIV/AIDS and sexually transmitted infections. Updated 4 February 2004

[27] Robert Koch Institut. Aktuelle Daten und Informationen zu Infektionskrankheiten und Public Health. 26. November 2003/ Nr. 48. Epidemiologisches Bulletin 2003; B/2003. http://www.rki.de/INFEKT/EPIBULL/2003/B_03.PDF (accessed 2004-06-12)

[28] Hamers F F, Downs A M. The changing face of the HIV epidemic in western Europe: what are the implications for public health policies? In: The Lancet 2004, 364: 83-94

AIDS-defining diseases, date of diagnosis and antiretroviral treatment and are sent by doctors to the RKI. Since 1987 the Mandatory Laboratory Reporting Ordinance (Laborberichtsverordnung, LabVO) came into effect and all laboratories performing HIV confirmatory testing have been required to report positive results anonymously directly to the national level, to the AIDS Center of the RKI [29].

3.1.2.1 Sentinel Serosurveillance

HIV testing among blood donors is systematic. Since 1993 the RKI has carried out a small programme of sentinel surveillance. Unlinked anonymous testing (UAT) of dried blood spots from newborns is performed in 2 federal states: the metropolitan state Berlin as an urban area and the mainly rural state Lower Saxony. The aim of this programme is to estimate the HIV prevalence of HIV infection among child-bearing women as a marker of seroprevalence in the general population [30] [31] [32].

3.1.2.2 Behavioural Surveillance

The Federal Centre for Health Education (Bundeszentrale für gesundheitliche Aufklärung, BZGA) which is within the responsibility of the Federal Ministy of Health is the institution which performs health promotion in general, the planning and implementation of the nationwide AIDS prevention programmes aimed at the general population (e.g. “Don’t give AIDS a chance!”). Since 1987 surveillance of behaviour and attitudes of the general public have been carried out by the BZGA. Non-governmental, non-profit organisations such as the Deutsche AIDS-Hilfe (DAH) hold the planning and implementation of nationwide prevention campaigns for high risk groups. Surveys of high risk groups are mainly research projects conducted at the local level [33].

3.2 HIV/AIDS surveillance in Poland

3.2.1 Assessment of the epidemiological situation

[29] Hamouda O. HIV/AIDS surveillance in Germany. In: Journal of Acquired Immune Deficiency Syndromes 2003, 32: 49-54
[30] ibidem
[31] Petzold D et al. Sexually transmitted diseases in Germany. In: International Journal of STD & AIDS 2002, 13: 246-253
[32] Vettermann W et al. Spread of HIV infection in the general population in Germany. In: AIDS 2000, 14 (18): 2949-2951
[33] Hamouda O. HIV/AIDS surveillance in Germany. In: Journal of Acquired Immune Deficiency Syndromes 2003, 32: 49-54

The Republic of Poland has a population of 38,7 million people of whom 64% live in urban areas. After the fall of the soviet system the country carried out structural reforms in health care, education and other sectors. Most infections were found among IDU (50%), followed by homo/bisexuals (23%) and 15,8% by heterosexual transmission [34] [35] An increase of HIV infections through heterosexual route of transmission has been observed in the last few years. A substantial increase in commercial sex work and growing unemployment are factors that have contributed to an increase in sexually transmitted diseases including HIV.

3.2.2 Surveillance

HIV reporting is not mandatory in Poland. The data about HIV/AIDS are being collected by the Department of Epidemiology at the National Institute of Hygiene by the provisions of the Ministry of Health. The data from individual voievodships (local levels) are sent to the National Institute of Hygiene by sanitary inspectors. Since 1995 the system of reporting HIV data has been based on anonymity and entails the following details: age, sex, place of residence.The managers of HIV test performing laboratories have to report HIV infections to the sanitary inspector of the voievodships. AIDS cases are reported with the names and are part of the responsibility of the doctor who diagnoses AIDS and who send these data to the sanitary inspector. HIV testing is free of charge. IDU are systematically screened in treatment centres, outpatient clinics and residential homes. All other groups are tested on a voluntary basis [36] [37].

3.2.2.1 Sentinel Serosurveillance

HIV testing among blood donors are carried out but no sentinel surveillance data in pregnant women are available [38].

[34] UNAIDS/WHO. Poland. Epidemiological Fact Sheets on HIV/AIDS and sexually transmitted infections. Updated 4 February 2004

[35] UNPOP. World population policies 2003. http://www.un.org/esa/populations. (accessed 2004-07-09)

[36] Epidemiological surveillance. http://www.aids.gov.pl/arch_part.php3?Identyfikator=3873 2003-11-23 (accessed 2004-05-16)

[37] Anonymous and free of charge testing for HIV. http:/www.aids.gov.pl/arch_part.php3?Identyfikator=3872 2003-11-23 (accessed 2004-05-16)

[38] Magdalena Rosinska, National Hygiene Institute, Warsaw, personal communication 2004-03

3.2.2.2 Behavioural Surveillance

Especially with the beginning of the implementation of the first multisectoral national programme for HIV prevention and care for people living with HIV/AIDS by the Ministy of Health and Social Welfare several research projects regarding behavioural surveillance among the general population and among high risk groups have been carried out with the involvement of the National AIDS Centre. The National AIDS Centre coordintates the activities around information, education and prophylactics ("Don't live in uncertainty! Conduct a test in HIV!"), monitoring and evaluation, financing, publishing, research work, intervention and support. Several non-governmental, non-profit organisations like TADA or LAMBDA exist in cities of Poland and aim at homosexuals, bisexuals and sex workers, whereas MONAR concentrates on IDU [39] [40] [41].

3.3 Second generation HIV surveillance systems

The second generation HIV surveillance does not propose a radical change in the methods of data collection but it aims to improve the quality and diversity of information sources. The concentration is on existing methods on appropriate populations and sub-populations and combining them in ways that have the greatest explanatory power. The goals are the better understanding of trends over time and of behaviours driving the epidemic in a country. Surveillance should be more focussed on sub-populations at highest risk of infection. A flexible surveillance is capable of moving with the needs and the state of the epidemic [42] [43].

In low-level epidemics where relatively low HIV prevalence (less than 5% in any sub-population) [44] [45] is measured in any group surveillance systems are recommended to focus on behaviours and HIV infections in groups at high risk, looking for changes in behaviour that may lead to an increase in the rate of infection.

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[39] Behavioural research relating to selected aspects of HIV/AIDS in Poland. http://www.aids.gov.pl/arch_part.php3?Identyfikator=39212003-12-07. (accessed 2004-05-16)

[40] Prevention campaigns http://www.aids.gov.pl/arch_part.php3?Identyfikator=3870. (accessed 2004-05-16)

[41] Polish strategy for prevention of epidemics. The National program for HIV prevention and care for people living with HIV/AIDS – principle and reality. http://www.aids.gov.pl/arch_part.php3?Identyfikator=3923 (accessed 2004-05-16)

[42] UNAIDS/WHO working group on global HIV/AIDS/STI surveillance. Initiating second generation HIV surveillance systems: practical guidelines. Geneva 2002

[43] UNAIDS/WHO/CDS/CSR/EDC/2000.5 UNAIDS/00.03E. Second generation surveillance for HIV. www.unaids.org. (accessed 2004-04-15)

[44] ibidem

[45] ibidem

In concentrated epidemics where HIV is over 5% in any sub-population at higher risk [46] [47], surveillance systems should monitor infections and behaviours in those groups, paying particular attention to behavioural links between members of those groups and the general population. Groups linking sub-populations at higher risk of infection with the general population are called bridging-populations.

The purpose of this investigation is also to contribute to point out probable requirements of improvement in HIV surveillance and recommendations concerning prevention measures in hard-to-reach-populations with regard to second generation HIV surveillance.

4. Methods

4.1 National point prevalence method

The national point prevalence programme developed by UNAIDS/WHO [48] [49] [50] [51] was used in order to carry out point prevalence estimates for both countries for the end of the year 2003.

The adult population (15-49 years), differentiated between the percent of urban and rural portion, was divided into sub-groups based on exposure to HIV. Among these sub-groups the differentiation between populations at higher risk (PHR) and populations at lower risk (PLR) was done. Estimates of the population size and HIV prevalence for each sub-group were necessary to calculate the number of people living with HIV/AIDS (PLWHA). Values for both population sizes and prevalence estimates were taken from vast literature reviews, personal communications with experts, programme suggestions and own estimates. As it is difficult to make accurate estimates for each sub-group a minimum and a maximum value was used concerning population size and prevalence.

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[46] ibidem

[47] ibidem

[48] The UNAIDS reference group on estimates, modelling and projections. Improved methods and assumptions for the estimation of the HIV/AIDS epidemic and its impact: recommendations of the UNAIDS reference group on estimates, modelling and projections. In: AIDS 2002, 16: 1-14

[49] UNAIDS/WHO. Overview of making estimates of HIV/AIDS and its impact in countries with low-level or concentrated epidemics: The workbook method. The models and methodology of the UNAIDS/WHO approach to estimating and projecting national HIV/AIDS epidemics. The UNAIDS reference group on estimates, models and projections June 2003. http://www.unaids.org/html/pub/Topics/Epidemi/WorkBookMethod_Manual_en_doc.ht 2003-10-08, 1-19. (accessed 2004-04-15)

[50] UNAIDS. A joint UNAIDS/IMPACT/FHI workshop: report and conclusions. Estimating the size of populations at risk for HIV: Issues and methods. 2002. www.unaids.org, 3-56. (accessed 2004-04-15)

[51] Walker N et al. Methods and prodedures for estimating HIV/AIDS and its impact: The UNAIDS/WHO estimates for end of 2001, 6-9

To obtain the number of PLR two possibilities were applied.

In the first approach the numbers of regular sexual partners of each PHR sub-group were estimated. Partner prevalences for both countries were not available and thus estimated by a programme suggestion of transmission probability per sex act per year [52] [53] [54] [55]. For calculation the values for the transmission probability per sex act male to female, female to male and male to male were based on assumptions made by Downs [56], Gray [57], Marcus [58] and Mastro [59] [60]. In this calculation the transmission probability was multiplied by the above mentioned programme suggested assumption of 2 sex acts per week per year and the prevalence results were finally combined and aligned with own estimates. Anal intercourse is associated with the highest probability of transmission per sex act. Male-to-female-transmission is observed to be higher than female-to-male-transmission. Published estimates of transmission pobabilities per sex act vary from 0,0001 to 0,0014 in US and European studies of discordant couples and were reported to increase among men who contacted sex workers in Thailand and Kenya [61] [62] [63] [64].

Alternatively, the PLR consisted of urban and rural female low risk population to whom antenatal clinic (ANC) data were applied. To use this approach the number of women in the populations at high risk was subtracted from the number of women in the reproductive age (15-49 years). Therefore the percentage of women in the high risk groups had to be included and the general population size (15-59 years) as well as the percentage among them who live in urban areas had to be entered into the programme. The HIV prevalence of urban and rural women attending antenatal clinics (ANC) was applied. For calculation the HIV prevalence was adjusted to the value of the rural women as the unadjusted value was

[52] ibidem
[53] ibidem
[54] ibidem
[55] ibidem
[56] Downs A M, De Vincenzi. Probability of heterosexual transmission of HIV: relationship of the number of unprotected sexual contacts. In: Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology. Philadelphia: Lippincott-Raven Publishers, 1996, 11: 388-395
[57] Gray R H et al. Probability of HIV-1 transmission per coital act in monogamous heterosexual, HIV-1-discordant couples in Rakai, Uganda. In: The Lancet 2001, 357: 1149-1153
[58] Marcus U. Risiken und Wege der HIV-Übertragung. Auswirkungen auf Epidemiologie und Prävention der HIV- Infektion. In: Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz. Berlin: Springer-Verlag, 2000, 43: 449-458
[59] Mastro T D et al. Probability of female-to-male transmission of HIV-1 in Thailand. In: The Lancet 1994, 343: 204-207
[60] Mastro T D, De Vincenzi I. Probabilities of sexual HIV-1 transmission. In: AIDS 1996, 10: 75-82
[61] ibidem
[62] ibidem
[63] ibidem
[64] ibidem

thought to overestimate the prevalence. In countries with a low level epidemic pregnant women of populations of high risk can alter the prevalence among pregnant women of the general population substantially [65].

Now for each sub-group the average of PLWHA was calculated by multiplying low population by low prevalence; low population by high prevalence; high population by low prevalence and high population by high prevalence. After all the national point prevalence estimates for Germany and Poland for the end of the year 2003 were calculated by summing up the averages of PLWHA of each sub-group.

4.1.1 German point prevalence estimate

4.1.1.1 Population at higher risk (PHR)

For Germany the PHR were subdivided into 9 groups:

- Injecting drug users (IDU) excluding IDU sex workers and IDU rent boys because their HIV prevalence was assumed to be higher than that of IDU
- Men who have sex with men (MSM) including homosexuals, bisexuals and excluding rent boys and their clients. The HIV prevalence among rent boys was assumed to be higher than that of MSM [66] [67] [68] [69] [70].
- Female commercial sex workers (CSW) including migrant sex workers who are professionals meaning they offer safe condom using and self-determinate sexual services [71] [72] [73] [74]. Call-boys who are assumed to mainly work as professionals were neglected in this

[65] Walker N et al. Methods and prodedures for estimating HIV/AIDS and its impact: The UNAIDS/WHO estimates for end of 2001, 6-9

[66] Bochow M. Schichtspezifische Vulnerabilität: Zur besonderen HIV-Gefährdung von homosexuellen Männern der unteren Schichten. In: Brockmeyer N H et al (Hrsg). HIV-Infekt: Epidemiologie, Prävention, Pathogenese, Diagnostik, Therapie, Psycho-Soziologie. Berlin Heidelberg: Springer-Verlag 2000, 634-641

[67] Bochow M. AIDS – wie leben schwule Männer heute? Kurzfassung der Ergebnisse der Befragung 1999. In: Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz. Berlin: Springer-Verlag, 2000, 43: 677-682

[68] Bochow M. Sozial- und sexualwissenschaftliche Erkenntnisse zur Homosexualität. Tagung: Gleichgeschlechtliche Lebensgemeinschaften in sozialethischer und rechtlicher Perspektive (26.-28.01.2001) Evangelische Akademie Bad Boll

[69] Sergiu Grimalschi, SUB/WAY berlin e. V., personal communication 2004-07

[70] Rainer, Basis Projekt, Hamburg, personal communication 2004-06

[71] Krüger M. Prostitution und Gesundheit. Gesundheitsrelevante Aspekte weiblicher Prostitutionstätigkeit. In: Degethoff de Campos (Hrsg.). Wissenschaftlerinnen-Forum an der TU Berlin, Hoffmann & Hoyer Verlag, Kirchlinteln 2001 Bd. 6, 29-31

[72] Mitrovic E. Arbeitsplatz Prostitution. Bericht über die Ergebnisse der Feldstudie „Der gesellschaftliche Wandel im Umgang mit Prostitution seit Inkrafttreten der neuen Gesetzgebung am 1.1.2002. In: Vereinte Dienstleistungsgewerkschaft (ver.di) Fachbereich 13 (Hrsg). Berlin 2004, 2-3

[73] Nitschke-Özbay H. HIV-Prävention für Migrantinnen in der Prostitution. Zentralblatt für Gynäkologie 1999, 121: 36-41

investigation because their population size seems not to be remarkably high and their HIV prevalence is assumed not to differ much from that of their female colleagues [75].

- Clients of commercial sex workers (CCSW) excluding clients of IDU sex workers and clients of rent boys
- Female IDU sex workers (IDUSW) whose working conditions differ from that of CSW because they offer drug-related prostitution. Their HIV prevalence is is assumed to be higher than that of CSW. They may be easily extorted by clients to practise risky sexual behaviour due to their drug addiction [76] [77].
- Clients of IDU sex workers (CIDUSW)
- Members of high prevalence countries (HPC) excluding migrant sex workers. In this sub-group migrants from high prevalence or Pattern II countries were summarized. The countries of sub-Saharan, south-east-Asian and Caribbean regions were the HIV epidemic has reached a generalized level are called high prevalence countries or Pattern-II-countries. The HIV prevalence is over 1% in the general population and in pregnant women [78] [79]. These migrants are thought to have acquired their HIV infection in their country of origin [80] [81] [82] [83].
- Rent boys including IDU rent boys
- Clients of rent boys

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[74] Steffan E. Gesundheitsförderung für Prostituierte – notwendige öffentliche Aufgabe? In: SPI Forschung gGmbh (Hrsg.). Sexuell übertragbare Krankheiten. Ein Lesebuch für die Beratungspraxis. Heidelberg und Kröning 2004, Asanger Verlag GmbH: 337-341

[75] Sergiu Grimalschi, SUB/WAY berlin e. V., personal communication 2004-07

[76] Krüger M. Prostitution und Gesundheit. Gesundheitsrelevante Aspekte weiblicher Prostitutionstätigkeit. In: Degethoff de Campos (Hrsg.). Wissenschaftlerinnen-Forum an der TU Berlin, Hoffmann & Hoyer Verlag, Kirchlinteln 2001 Bd. 6, 105-161

[77] Nitschke-Özbay H. HIV-Prävention für Migrantinnen in der Prostitution. Zentralblatt für Gynäkologie 1999, 121: 36-41

[78] UNAIDS/WHO working group on global HIV/AIDS/STI surveillance. Initiating second generation HIV surveillance systems: practical guidelines. Geneva 2002

[79] UNAIDS/WHO/CDS/CSR/EDC/2000.5 UNAIDS/00.03E. Second generation surveillance for HIV. www.unaids.org. (accessed 2004-04-15)

[80] Muluneh A, Waka A. Afrikanische communities in Deutschland. In: AIDS und Migration. Berlin: Deutsche AIDS-Hilfe, 2001 (AIDS-Forum DAH; Bd. 41): 133-176

[81] Hamers F F, Downs A M. The changing face of the HIV epidemic in western Europe: what are the implications for public health policies? In: The Lancet 2004, 364: 83-94

[82] Hamouda O, Marcus U. Current trends in the HIV/AIDS epidemic in Germany. Eurosurveillance Weekly 2003; 7: 030424. http:www.eurosurveillance.org/ew/2003/030424.asp (accessed 2004-06-14)

[83] Robert Koch Institut. HIV Infektionen und AIDS-erkrankungen in Deutschland aktuelle epidemiologische daten (Stand vom 30.06.2003). Epidemiologisches Bulletin 2003; B/2003; 1-16. http://www.rki.de/INFEKT/EPIBULL/2003/B_03.PDF (accessed 2004-06-16)

4.1.1.2 Partners of PHR and ANC women as PLR

In Germany 6 sub-groups were subdivided for the first approach to obtain the PLR:

- Partners of IDU
- Female partners of MSM
- Female partners of clients of CSW
- Female partners of clients of IDUSW
- Partners of members of HPC
- Female partners of clients of rent boys

In the second approach ANC women were taken as PLR. The population size of the ANC women was calculated as described in Chapter 4.1. The prevalence stem from results of sentinel surveillance in unlinked anonymous testing (UAT) from two federal states in the years 1993-1997. The average prevalence was 0,057% in the urban area Berlin and 0,014% in the rural area Lower Saxony. For calculation, as already mentioned in Chapter 4.1, the HIV prevalence estimates were adjusted to the value of the rural women as the unadjusted value was thought to overestimate the prevalence. Thus 0,01% were taken for the low estimate and 0,02% for the high estimate [84] [85] [86].

4.1.2 Polish point prevalence estimate

4.1.2.1 Population at higher risk (PHR)

Poland's PHR consisted of 8 sub-groups:

- Injecting drug users (IDU) excluding IDU sex workers and IDU rent boys
- Men who have sex with men (MSM) including homosexuals, bisexuals and excluding rent boys and their clients [87] [88] [89]
- Female commercial sex workers (CSW) who are professionals meaning they offer safe condom using and self-determinate sexual services [90] [91] excluding migrant sex workers

[84] Hamouda O. HIV/AIDS surveillance in Germany. In: Journal of Acquired Immune Deficiency Syndromes 2003, 32: 49-54
[85] Petzold D et al. Sexually transmitted diseases in Germany. In: International Journal of STD & AIDS 2002, 13: 246-253
[86] Vettermann W et al. Spread of HIV infection in the general population in Germany. In: AIDS 2000, 14 (18): 2949-2951
[87] Werner W, Grimalschi S. Arbeit mit ausländischen Strichern am Beispiel des Stricherprojekts SUB/WAY berlin e.V. In: Deutsche AIDS Hilfe e.V. (Hrsg.). Handbuch Migration für AIDS-Hilfen, AIDS-Fachkräfte und andere im AIDS-Bereich Tätige Berlin 1998: 391-404
[88] Sergiu Grimalschi, SUB/WAY berlin e. V., personal communication 2004-07
[89] Rainer, Basis Projekt, Hamburg, personal communication 2004-06

- Clients of commercial sex workers (CCSW) excluding clients of IDU sex workers and clients of rent boys
- Female IDU sex workers (IDUSW) including migrant sex workers (here: mainly Russian sex workers). Migrant sex workers and IDU sex workers were united because their prevalence was thought to be higher than that of commercial sex workers [92] [93].
- Clients of IDU sex workers (CIDUSW)

4.1.2.2 Partners of PHR and ANC women as PLR

In the first approach to obtain the PLR the number of partners of PHR were estimated. As for Poland no data of the population sizes for partners of PHR were available estimates from Germany and Russia were taken for calculation according to programme suggestions [94] [95] [96]. The prevalence was assumed as described in Chapter 4.1.

5 sub-groups were divided as PLR:

- Partners of IDU
- Female partners of MSM
- Female partners of clients of CSW
- Female partners of clients of IDUSW
- Female partners of clients of rent boys

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[90] Robinson N J. HIV infection in Poland (1985-96). In: Revue d' Epidemiologie et de Sante´Publique 2000, 48: 17-31

[91] Zachowania seksualne i wiedza na temat HIV/AIDS w grupie kobiet swiadczacych uslugi seksualne. http://www.aids.gov.pl/arch_part.php3?Identyfikator=3158 (accessed 2003-05-22)

[92] Bornemann R, Krämer A. HIV-Ausbreitung bei i.v.-Drogenkonsumenten (IDU) in Mittel- und Osteuropa: Konsequenzen für Epidemiologie und Prävention in Deutschland. In: Brockmeyer N H et al (Hrsg). HIV-Infekt: Epidemiologie, Prävention, Pathogenese, Diagnostik, Therapie, Psycho-Soziologie. Berlin Heidelberg: Springer-Verlag 2000, 141-148

[93] Robinson N J. HIV infection in Poland (1985-96). In: Revue d' Epidemiologie et de Sante´Publique 2000, 48: 17-31

[94] UNAIDS/WHO. Overview of making estimates of HIV/AIDS and its impact in countries with low-level or concentrated epidemics: The workbook method. The models and methodology of the UNAIDS/WHO approach to estimating and projecting national HIV/AIDS epidemics. The UNAIDS reference group on estimates, models and projections June 2003. http://www.unaids.org/html/pub/Topics/Epidemi/WorkBookMethod_Manual_en_doc.ht 2003-10-08, 1-19. (accessed 2004-04-15)

[95] Ramon J S et al. Estimating HIV/AIDS prevalence in countries with low-level and concentrated epidemics: the example of Honduras. In: AIDS 2002, 16(3): 18-22

[96] Walker N et al. Methods and prodedures for estimating HIV/AIDS and its impact: The UNAIDS/WHO estimates for end of 2001, 6-9

In the second approach of ANC women were taken in order to obtain the PLR. Their population sizes were calculated as described in Chapter 4.1. The HIV prevalence estimates were taken from Germany [97] [98] [99] (see also Chapters 4.1 and 4.1.1.2) as for Poland no data were available.

4.2 Projection method

By applying the projection method [100] [101] probable prognosis about the development of the epidemical level in both countries were discussed. The year 2003 of the national point prevalence estimate was taken as the base year for the projection. For the national adult population an assumption of the annual population growth rate for the years 2000-05, 2005-10, 2010-20 and 2020-30 was made based on demographic projections by UN statements. The medium scenario of the average annual growth rate of the general population for the years 2000 - 2050 is assumed to be –0,1 in Germany and in Poland –0,32 [102]. These medium scenario values were taken for projection calculations.

For each sub-group an annual growth rate was estimated. When the assumed annual growth rates differed from that of the general population generally an annual growth of 1% or –1% until 2010 was assumed. Also for each sub-group a HIV prevalence saturation level was set and the time when that level will be reached with the options for the years 2000-05, 2005-10, 2010-20 and 2020-30. In this calculation for both countries the year 2010 was taken as the year of saturation for all sub-groups because long-term predictions are difficult to make, comprise uncertainties and besides, more detailed prognosis were not

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[97] Hamouda O. HIV/AIDS surveillance in Germany. In: Journal of Acquired Immune Deficiency Syndromes 2003, 32: 49-54

[98] Petzold D et al. Sexually transmitted diseases in Germany. In: International Journal of STD & AIDS 2002, 13: 246-253

[99] Vettermann W et al. Spread of HIV infection in the general population in Germany. In: AIDS 2000, 14 (18): 2949-2951

[100] The UNAIDS reference group on estimates, modelling and projections. Improved methods and assumptions for the estimation of the HIV/AIDS epidemic and its impact: recommendations of the UNAIDS reference group on estimates, modelling and projections. In: AIDS 2002, 16: 1-14

[101] UNAIDS/WHO. Overview of making estimates of HIV/AIDS and its impact in countries with low-level or concentrated epidemics: The workbook method. The models and methodology of the UNAIDS/WHO approach to estimating and projecting national HIV/AIDS epidemics. The UNAIDS reference group on estimates, models and projections June 2003. http://www.unaids.org/html/pub/Topics/Epidemi/WorkBookMethod_Manual_en_doc.ht 2003-10-08, 1-19. (accessed 2004-04-15)

[102] UNPOP. Average annual growth rate by country. www.un.org/esa/population/publications/longrange2/country_Tables.xls. (accessed 2004-07-09)

available. These estimates were also guesses based on literature, experts enquiry and own estimates. By assuming the probable future growth or drop of risk groups and increase or decrease of HIV prevalence among them a best and a worst version regarding the epidemiological tendencies in both countries were discussed.

5. RESULTS:

5.1 German point prevalence estimate 2003

According to UNPOP the population size of adults (15-49) comes to 40.190.500 end of 2003 with 88% urban population [103]. By applying the national point prevalence estimate two calculation possibilities were carried out. First, the population at lower risk (PLR) constisted of partners of people at higher risk (PHR). Germany's estimated number of PLWHA came to an average of 46.386 individuals (21.316 low estimate; 78.112 high estimate) and the adult prevalence (15-49 years) amounted to 0,12% at the end of 2003 (Table 1). Among these 11.654 (25,1%) women (15-49) living with HIV/AIDS were found (4.984 low estimate, 29.010 high estimate).

Second, the PLR was represented by pregnant women (15-49) who attended antenatal clinics (ANC). The average number of PLWHA then amounted to 46.327 (21.805 low estimate and 76.974 high estimate) (Table 2) with an adult prevalence (15-49 years) of 0,12%. The number of women among them came to 12.265 (26,5%) with a low estimate of 5815 and a high estimate of 28.976 (data not shown).

According to the RKI the estimated number of PLWHA in Germany is 43.000 end of 2003 [104]. UNAIDS/WHO additionally state a low estimate of 21.000 and a high estimate of 71.000 PLWHA with an adult prevalence (15-49 years) of 0,1%. The HIV prevalence is low in the general population, in particular outside metropolitan areas [105].

[103] UNAIDS/WHO. Germany. Epidemiological Fact Sheets on HIV/AIDS and sexually transmitted infections. Updated 4 February 2004

[104] Robert Koch Institut. Aktuelle Daten und Informationen zu Infektionskrankheiten und Public Health. 26. November 2003/ Nr. 48. Epidemiologisches Bulletin 2003; B/2003.
http://www.rki.de/INFEKT/EPIBULL/2003/B_03.PDF (accessed 2004-06-12)

[105] UNAIDS/WHO. Germany. Epidemiological Fact Sheets on HIV/AIDS and sexually transmitted infections. Updated 4 February 2004

In the following the population sizes of each sub-groups (PHR and PLR) with a low and a high estimate, the HIV prevalence with a low and a high estimate among them and the average number of PLWHA in each sub-group and in total are presented (Tables 1 and 2) as well as their references (Chapters 5.1.1 and 5.1.2).

Table 1: German point prevalence estimate with partners of PHR as PLR

Germany 2003	Population size estimates		Prevalence estimates %		Estimates of People living with HIV/AIDS (PLWHA)				Average of PLWHA
	Low	High	Low	High	(Low Pop. X Low Prev.)	(Low Pop. X High Prev.)	(High Pop. X Low Prev.)	(High Pop. X High Prev.)	
Adult population(15-49 years)	40.190.500								
Urban pop. %	88%								
IDU	61.000	102.500	2%	4%	1.220	2.440	2.050	4.100	2453
MSM	509.767	849.611	2%	4%	10.195	20.391	16.992	33.984	20.391
CSW	209500	250.500	0,08%	0,5%	168	1.048	200	1.253	667
Clients of CSW	1.618.005	3.266.040	0,04%	0,08%	647	1.294	1.306	2.613	1.465
IDUSW	37.500	45.000	5%	15%	1.875	5.625	2.250	6.750	4.125
Clients of IDUSW	301.429	602.859	0,5%	1%	1.507	3.014	3.014	6.029	3.391
Members of HPC	182.250	197.500	2%	8%	3.645	14.580	3.950	15.800	9.494
Rent boys	3.000	5.000	5%	20%	150	600	250	1.000	500
Clients of rent boys	90.091	150.152	0,5%	1%	450	901	751	1.502	901
Partners of IDU	30.500	51.250	1%	2%	305	610	513	1.025	613
Female Partners of MSM	127.629	212.715	0,5%	1%	638	1.276	1.064	2.127	1.276
Partners of clients of CSW	1.067.883	2.155.586	0,02%	0,04%	214	427	431	862	484
Partners of clients of IDUSW	198.943	397.886	0,1%	0,2%	199	398	398	795	448
Partners of members of HPC	60.750	65.833	0,1%	0,2%	61	122	66	132	95
Female partners of clients of rent boys	41.622	69.370	0,1%	0,2%	42	83	69	139	83
Total					21.316			78.112	46.386

Table 2: German point prevalence estimate with ANC women as PLR

Germany 2003	Population size estimates		Prevalence estimates %		Estimates of People living with HIV/AIDS (PLWHA)				Average of PLWHA
	Low	High	Low	High	(Low Pop. X Low Prev.)	(Low Pop. X High Prev.)	(High Pop. X Low Prev.)	(High Pop. X High Prev.)	
Adult population (15-49 years)	40.190.500								
% Urban Population	88%								
IDU	61.000	102.500	2%	4%	1.220	2.440	2.050	4.100	2453
MSM	509.767	849.611	2%	4%	10.195	20.391	16.992	33.984	20.391
CSW	209500	250.500	0,08%	0,5%	168	1.048	200	1.253	667
Clients of CSW	1.618.005	3.266.040	0,04%	0,08%	647	1.294	1.306	2.613	1.465
IDUSW	37.500	45.000	5%	15%	1.875	5.625	2.250	6.750	4.125
Clients of IDUSW	301.429	602.859	0,5%	1%	1.507	3.014	3.014	6.029	3.391
Members of HPC	182.250	197.500	2%	8%	3.645	14.580	3.950	15.800	9.494
Rent boys	3.000	5.000	5%	20%	150	600	250	1.000	500
Clients of rent boys	90.091	150.152	0,5%	1%	450	901	751	1.502	901
Urban female low risk population (ANC data)	17.463.380	17.499.460	0,01%	0,02%	1.746	3.493	1.750	3.500	2.622
Rural female low risk population (ANC data)	2.019.505	2.217.269	0,01%	0,02%	202	404	222	443	318
Total					21.805			76.974	46.327

5.1.1 Sub-groups of PHR (Table 1)

- IDU: According to information from police and various institutions between 100.000 and 150.000 high-dependency drug users are involved in the high risk forms of drug taking like syringe exchange [106]. It came to an estimate of 61.000 (low) and of 102.500 (high) individuals because IDUSW (37.500 low estimate, 45.000 high estimate) and IDU rent boys (1500 low estimate, 2500 high estimate) were subtracted. According to the National Report 2002 [107] [108]and Kirschner [109] the HIV prevalence ranges from 4,6% to 18%. For this calculation it was assumed that the prevalence in general IDU is lower. Higher values were estimated for IDU sex workers and IDU rent boys. Low prevalence estimates were then 2%, high estimates 4% [110], which made an average of 2.453 individuals among IDU who are living with HIV/AIDS.
- MSM: Men who have sex with men were estimated to be 3 % to 5% of the general adult population (15-49 years) [111] [112] [113] [114] which makes 602.858 (low estimate) and 1.004.763 persons (high estimate). In this calculation the sub-group of MSM included homosexuals, bisexuals and call-boys and excluded rent boys (3.000 low estimate and 5.000 high estimate) and their clients (90.091 low estimate and 150.152 high estimate). Thus their final low population size estimate was 509.767, the high estimate was 849.611. Prevalence estimates were between 2% (low) and 4% (high) [115] which came to an average of 20.391 individuals among MSM who are actually living with HIV/AIDS.
- CSW: Generally the number of professional sex workers including migrant sex workers is assumed to range from 250.000 and 300.000 with an estimate of 50% migrant

[106] The situation in Germany http://www.ac-company.org/en/country_en/de_en/de_situation_en.html (accessed 2004-05-29)
[107] National report 2002 – Germany. http://www.emcdda.eu.int. (accessed 2004-04-06)
[108] Jahresbericht 2003: Stand der Drogenproblematik in der Europäischen Union und in Norwegen. Drogenbedingte Infektionskrankheiten. http://annualreport.emcdda.eu.int/de/page024-de.html. (accessed 2004--04-06)
[109] Kirschner W, Kunert M. Umgang und Struktur von i.v. Drogenabhängigen in Deutschland (1995) Anonymes Monitoring in den Praxen niedergelassener Ärzte. In: Empirie der Gesundheitswissenschaften. München, Wien: Profil-Verlag 1997, 37-71
[110] Kraus L, Augustin R et al. Repräsentativerhebung zum Gebrauch psychoaktiver Substanzen bei Erwachsenen in Deutschland. In: Sucht, 47. Jahrgang, Sonderheft 1, September 2001, 19-34
[111] Bochow M. Schichtspezifische Vulnerabilität: Zur besonderen HIV-Gefährdung von homosexuellen Männern der unteren Schichten. In: Brockmeyer N H et al (Hrsg). HIV-Infekt: Epidemiologie, Prävention, Pathogenese, Diagnostik, Therapie, Psycho-Soziologie. Berlin Heidelberg: Springer-Verlag 2000, 634-641
[112] Bochow M. Sozial- und sexualwissenschaftliche Erkenntnisse zur Homosexualität. Tagung: Gleichgeschlechtliche Lebensgemeinschaften in sozialethischer und rechtlicher Perspektive (26.-28.01.2001) Evangelische Akademie Bad Boll
[113] Deutsche AIDS-Stiftung, Bonn, personal communication 2004-05
[114] Lesben- und Schwulenverband in Deutschland e.V (LSVD), Köln., personal communication 2004-05
[115] Rainer Schilling, Deutsche AIDS-Hilfe (DAH) Berlin, personal communication 2004-07

sex workers among them [116] [117] [118] [119] [120] [121] [122] [123]. These estimates were taken and then the numbers of IDUSW (37.500 low and 45.00 high) and of IDU rent boys (1.500 low and 2.500 high) were subtracted because their prevalences were assumed to be higher. Thus the population size estimate of CSW amounted to 209.500 (low estimate) and 250.500 (high estimate) including migrant sex workers because their HIV prevalence was thought to be similar to that of the German CSW [124]. The HIV prevalence was assumed not to differ too much from that in the general population: 0,08% (low estimate) and 0,5% (high estimate) [125] [126] The average of PLWHA within this sub-group came to 667 individuals.

- CCSW: According to UNAIDS/WHO 5% to 20% of the male general population are estimated to enlist sexual services [127]. In this calculation 15% of the male general population was taken so that it came to a population size estimate of 2.009.525 (low estimate) and 4.019.050 (high estimate). The final population size came to 1.618.005 (low estimate) and 3.266.040 (high estimate) because the number of clients of IDUSW (361.991 low estimate and 723.982 high estimate) and clients of rent boys (90.091 low estimate and 150.152 high estimate) were subtracted. Their prevalence was estimated to be nearly similar to that of the general population, 0,04% (low estimate) to 0,08% (high estimate) (own estimates). The average of PLWHA among them amounted to 1.465 individuals.

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[116] Krüger M. Prostitution und Gesundheit. Gesundheitsrelevante Aspekte weiblicher Prostitutionstätigkeit. In: Degethoff de Campos (Hrsg.). Wissenschaftlerinnen-Forum an der TU Berlin, Hoffmann & Hoyer Verlag, Kirchlinteln 2001 Bd. 6 :29-33; 105-161

[117] Nitschke-Özbay H. HIV-Prävention für Migrantinnen in der Prostitution. Zentralblatt für Gynäkologie 1999, 121: 36-41

[118] Steffan E. Gesundheitsämter im Wandel – Die Arbeit der Beratungsstellen für STD- und AIDS vor dem Hintergrund des neuen Infektionsschutzgesetzes (IFSG). In: SPI Forschung gGmbh (Hrsg.). Sexuell übertragbare Krankheiten. Ein Lesebuch für die Beratungspraxis. Heidelberg und Kröning 2004, Asanger Verlag GmbH: 67-87

[119] Steffan E. Gesundheitsförderung für Prostituierte – notwendige öffentliche Aufgabe? In: SPI Forschung gGmbh (Hrsg.). Sexuell übertragbare Krankheiten. Ein Lesebuch für die Beratungspraxis. Heidelberg und Kröning 2004, Asanger Verlag GmbH: 337-341

[120] Valdivia C. MigrantInnen in der Prostitution. In: SPI Forschung gGmbh (Hrsg.). Sexuell übertragbare Krankheiten. Ein Lesebuch für die Beratungspraxis. Heidelberg und Kröning 2004, Asanger Verlag GmbH: 356-364

[121] Valdivia C. MigrantInnen in der Prostitution. In: Deutsche AIDS Hilfe e.V. (Hrsg.). Handbuch Migration für AIDS-Hilfen, AIDS-Fachkräfte und andere im AIDS-Bereich Tätige Berlin 1998: 379-388

[122] Hydra e.V., Berlin, personal communication 2004-05

[123] Veronica Munck, amnesty for women, Hamburg, personal communication 2004-07

[124] ibidem

[125] ibidem

[126] Hydra e.V., Berlin, personal communication 2004-05

[127] UNAIDS/WHO. Overview of making estimates of HIV/AIDS and its impact in countries with low-level or concentrated epidemics: The workbook method. The models and methodology of the UNAIDS/WHO approach to estimating and projecting national HIV/AIDS epidemics. The UNAIDS reference group on estimates, models and projections June 2003.
http://www.unaids.org/html/pub/Topics/Epidemi/WorkBookMethod_Manual_en_doc.ht 2003-10-08, 1-19. (accessed 2004-04-15)

- IDUSW: This sub-group was separated from CSW because their prevalence rate was assumed to be higher than that among CSW. 10% to 20 % of CSW are IDU [128] [129]. 15% of CSW were taken for calculation which made 37.500 persons for the low estimate and 45.000 individuals for the high estimate. The HIV prevalence estimates ranged from 5% to 15% [130]. The average of PLWHA in this group was 4.125 individuals.
- CIDUSW: 15% of CSW were assumed to use intravenous drugs. Also 15% of the CCSW were taken to estimate the number of clients of IDU sex workers [131] [132]. The low estimate was 301.429 and the high estimate was 602.859. HIV prevalence was estimated to be 0,5% (low estimate) and 1% (high estimate) [133]. The average of PLWHA among them was 3.391 individuals.
- Members of HPC: Their assumed number comes to 226.000 (low estimate) and 250.000 (high estimate) [134] [135]. The final population size was estimated to be 182.250 (low) and 197.500 (high) because HPC sex workers (43.750 low estimate and 52.500 high estimate) who provide 35% of migrant sex workers [136] [137] were assumed to have lower prevalences and thus were excluded and united with CSW. HIV prevalence was estimated to be 2% (low), 8% (high)[138]. The average of PLWHA within this group came to 9.494 persons.
- Rent boys: Rent boys were treated differently from MSM because their HIV prevalence was estimated to be higher than that of the general MSM. The low estimate of prevalence was thought to be 5%, the high one was 20%. Their population size was

[128] Veronica Munck, amnesty for women, Hamburg, personal communication 2004-07
[129] Ubben, LKA Hamburg, personal communication 2004-05
[130] Inken Jensen, Café Sperrgebiet, Hamburg, personal communication, 2004-07
[131] Veronica Munck, amnesty for women, Hamburg, personal communication 2004-07
[132] UNAIDS/WHO. Overview of making estimates of HIV/AIDS and its impact in countries with low-level or concentrated epidemics: The workbook method. The models and methodology of the UNAIDS/WHO approach to estimating and projecting national HIV/AIDS epidemics. The UNAIDS reference group on estimates, models and projections June 2003.
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estimated to be 3000 (low estimate) and 5000 (high estimate), which made an average of 500 individuals among them who live with HIV/AIDS [139] [140] [141] [142] [143] [144] [145] [146].

- Clients of rent boys: 15% of general MSM were assumed to enlist sexual services which made a population size of 90.091 (low estimate) and 150.152 (high estimate) [147]. The prevalence was estimated to be in a range from 0,5% to 1% (own estimates).

5.1.2 Sub-groups of PLR : (Table 1)

- Partners of IDU: The population size of partners of IDU was estimated to be 30.500 for the low estimate and 51.250 for the high estimate as 50% of IDU were assumed to live in partnerships [148]. Transmission probability was assumed to amount to 0,01 (low estimate) and 0,02 (high estimate). Thus the prevalence was estimated to be 1% (low estimate) and 2% (high estimate) [149] [150] [151] [152] [153]. The average of PLWHA then came to 613 individuals within this sub-group.

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- Female partners of MSM: 25% of MSM were assumed to have heterosexual partners so that the population size for this sub-group was estimated to be 127.629 (low estimate) and 212.715 (high estimate) [154] [155]. The transmission probability was assumed to come to 0,005 (low estimate) and 0,01 (high estimate). Then the prevalence was estimated to range from 0,5% to 1% [156] [157] [158] [159] [160]. The average of PLWHA within this sub-group came to 1.276.
- Female partners of CCSW: Asssumed that 66% of the clients of CSW live in stable partnerships the population size of this sub-group could be estimated to range from 1.067.883 to 2.155.586 [161]. The transmission probability was thought to be 0,0002 (low estimate) and 0,0004. The prevalence was estimated to be 0,01% (low estimate) and 0,02% (high estimate) [162] [163] [164] [165] [166]. The average of PLWHA within this sub-group came to 484 individuals.

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- Female partners of CIDUSW: In this sub-group the same assumption was taken as above so that the population size of partners of clients of IDU sex workers was estimated to be 198.943 (low estimate) and 397.886 (high estimate) [167]. The transmission probability was assumed to be 0,001 (low estimate) and 0,002 (high estimate). The HIV prevalence was estimated to be 0, 1% (low estimate) and 0,2% (high estimate) [168] [169] [170] [171] [172]. The average of PLWHA within this sub-group came to 448 individuals.
- Partners of members of HPC: The population size of partners of HPC was estimated to be 60.750 (low estimate) and 65.833 (high estimate) because 33% of HPC members were thought to live in a stable partnership [173] [174]. The transmission probability was assumed to amount to 0,001 (low estimate) and 0,002 (high estimate). The prevalence was estimated to be 0,1% (low estimate) and 0,2% (high estimate) [175] [176] [177] [178] [179]. The average of PLWHA within this sub-group came to 95.

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- Female partners of clients of rent boys: The population size of female partners of clients of rent boys was estimated to be 41.622 (low estimate) and 69.370 (high estimate) as 75% of the clients of rent boys are estimated to have heterosexual contacts and 66% are assumed to live in partnerships [180] [181] [182]. The transmission probability was assumed to come to 0,001 (low estimate) and 0,002 (high estimate) and the prevalence was estimated to be 0,1% (low estimate) and 0,2% (high estimate) [183] [184] [185] [186] [187]. The average of PLWHA within this sub-group came to 83.

5.1.3 PLR consisting of ANC women (Table 2):

The size of urban female low risk population (ANC data) was 17.463.380 (low estimate) and 17.499.460 (high estimate). The number of rural female low population came to 2.019.505 (low estimate) and 2.217.269 (high estimate) by programme calculation [188]. The prevalence stem from results of sentinel surveillance in unlinked anonymous testing (UAT)

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from two federal states in the years 1993-1997. The average prevalence was 0,057% in the urban area Berlin and 0,014% in the rural area Lower Saxony [189] [190] [191].

The final HIV prevalence was adjusted to the HIV prevalence estimate of the rural women as the unadjusted value was thought to overestimate the prevalence. In countries with a low level epidemic pregnant women of populations of high risk can alter the prevalence among pregnant women of the general population substantially [192]. Thus the HIV prevalence among ANC women was estimated to be 0,01 (low estimate) and 0,02% (high estimate) (see also Chapters 4.1. and 4.1.1.2).

5.2 Polish point prevalence estimate 2003

According to UNPOP the number of adults (15-49) comes to 20.685.200 at the end of 2003 with 64% urban population [193] [194]. By applying the national point prevalence estimate also for Poland two calculation possibilities were carried out. First, the population at lower risk (PLR) constisted of partners of people at higher risk (PHR). The results for the estimated number of PLWHA came to 16.150 (low estimate 6.593; high estimate 30.231) (Table 3) and the adult prevalence (15-49 years) came to 0,08%. Among them were 3.758 women (23,3%) (1.240 low estimate and 7.871 high estimate). Second, the PLR was represented by pregnant women (15-49) who attended antenatal clinics (ANC). The average number of PLWHA then amounted to 16.278 (6.948 low estimate and 29.859 high estimate) (Table 4) with an adult prevalence (15-49 years) of 0,08. The number of women among them amounted to 4.097 (25,2%) (low estimate 1.711, high estimate 7.829). According to UNAIDS/WHO Poland's estimated number is 2003 14.000 at the end of the year 2003 with a low estimate of 8.000 and a high estimate of 20.000 and an adult prevalence (15-49 years) of 0,1%. Most of the infections are seen in Warsaw, Gdansk region and Kattowice [195].

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In the following the population sizes of each sub-groups (PHR and PLR) (low and high estimate), the HIV prevalence (low and high estimate) among them and the average number of PLWHA in each sub-group and in total are presented (Tables 3 and 4) as well as their references (Chapters 5.2.1 and 5.2.2).

Poland 2003	Population size estimates		Prevalence estimates %		Estimates of People living with HIV/AIDS (PLWHA)				Average of PLWHA
	Low	High	Low	High	(Low Pop. X Low Prev.)	(Low Pop. X High Prev.)	(High Pop. X Low Prev.)	(High Pop. X High Prev.)	
Adult population (15-49 years)	20.685.200								
% Urban Population	64%								
IDU	38.800	55.000	4%	5%	1.552	1.940	2.200	2.750	2.111
MSM	185.167	370.334	1%	3%	1.852	5.555	3.703	11.110	5.555
CSW	5.840	55.000	0,08%	1%	5	58	44	550	164
Clients of CSW	672.269	1.344.538	0,05%	0,08%	336	538	672	1.076	655
IDUSW	5.160	43.000	5%	10%	258	516	2.150	4.300	1.806
Clients of IDUSW	361.991	723.982	0,5%	1%	1.810	3.620	3.620	7.240	4.072
Rent boys	1.000	2.000	5%	20%	50	200	100	400	188
Clients of rent boys	20.685	41.370	0,5%	1%	103	207	207	414	233
Partners of IDU	19.400	27.500	1%	2%	194	388	275	550	352
Female Partners of MSM	57.402	114.804	0,2%	0,5%	115	287	230	574	301
Partners of clients of CSW	682.612	1.365.223	0,02%	0,04%	137	273	273	546	200
Partners of clients of IDUSW	170.653	341.306	0,1%	0,2%	171	341	341	683	538
Female partners of clients of rent boys	9.557	19.113	0,1%	0,2%	10	19	19	38	22
Total					6.593			30.231	16.150

Table 3: Polish point prevalence estimate with partners of PHR as PLR

Table 4: Polish point prevalence estimate with ANC women as PLR

Poland 2003	Population size estimates		Prevalence estimates %		Estimates of People living with HIV/AIDS (PLWHA)				Average of PLWHA
	Low	High	Low	High	(Low Pop. X Low Prev.)	(Low Pop. X High Prev.)	(High Pop. X Low Prev.)	(High Pop. X High Prev.)	
Adult population (15-49 years)	20.685.200								
% Urban Population	64%								
IDU	38.800	55.000	4%	5%	1.552	1.940	2.200	2.750	2.111
MSM	185.167	370.334	1%	3%	1.852	5.555	3.703	11.110	5.555
CSW	5.840	55.000	0,08%	1%	5	58	44	550	164
Clients of CSW	672.269	1.344.538	0,05%	0,08%	336	538	672	1.076	655
IDUSW	5.160	43.000	5%	10%	258	516	2.150	4.300	1.806
Clients of IDUSW	361.991	723.982	0,5%	1%	1.810	3.620	3.620	7.240	4.072
Rent boys	1.000	2.000	5%	20%	50	200	100	400	188
Clients of rent boys	20.685	41.370	0,5%	1%	103	207	207	414	233
Urban female low risk population (ANC data)	6.584.064	6.615.526	0,01%	0,02%	658	1.317	662	1.323	990
Rural female low risk population (ANC data)	3.239.302	3.481.319	0,01%	0,02%	324	648	348	696	504
Total					6.948			29.859	16.278

5.2.1 Sub-groups of PHR (Table 3)

- IDU: The population size of IDU was estimated to be 40.000 (low estimate) and 65.000 (high estimate) [196] [197] [198] [199]. 38.800 (low estimate) and 55.000 (high estimate) individuals were taken for calculation because IDUSW were subtracted (1.200 low estimate, 10.000 high estimate). The HIV prevalence was estimated to be 4% (low estimate) and 5% (high estimate) [200] [201] [202]. The average of PLWHA within this sub-group came to 2.111.
- MSM: 2% to 4% of the male general population are estimated to have sex with men [203] [204] so that the population size of MSM was estimated to be 206.852 (low estimate) and 413.704 (high estimate). The final population size came to 185.167 (low estimate) and 370.334 (high estimate) because the number of rent boys (1000 low estimate and 2000 high estimate) and the number of clients of rent boys (20.685 low estimate and 41.370 high estimate) was subtracted. The prevalence was estimated to be 1% (low estimate) and 3% (high estimate) [205] [206]. The average of PLWHA within this sub-group came to 5.555 persons.
- CSW: The population size CSW was estimated to be 12.000 (low estimate) and 100.000 (high estimate) [207] [208]. 5.840 (low estimate) and 55.000 (high estimate) were taken for calculation because IDU/migrant sex workers (5.160 low estimate and 43.000 high estimate) and rent boys (1000 low estimate and 2000 high estimate) were excluded. The

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prevalence was estimated to be 0, 08% (low estimate) and 1% (high estimate) [209] [210] [211] [212] [213]88;. The average of PLWHA within this sub-group came to 164 individuals.

- Clients of CSW: For the number of CCSW 15% of the general male adult population (15-49 years) was assumed [214] so that the population size was estimated to be 1.034.260 (low estimate) and 2.068.520 (high estimate). For calculation a low estimate of 672.269 and a high estimate of 1.344.538 was taken because the clients of IDU/migrant sex workers (361.991 low and 723.982 high estimate) were excluded. The prevalence was estimated to be 0,05% (low estimate) and 0,08% (high estimate) (own estimate). The average of PLWHA within this sub-group came to 655 persons.
- IDU/migrant sex workers: Among the CSW roughly 33% were assumed to be migrants (Russians) and 10% were thought to use intravenous drugs [215] [216] [217] [218]. The population size of IDU/migrant sex workers was then estimated to be 5.160 (low estimate) and 43.000 (high estimate). Prevalence was estimated to be 5% (low estimate) and 10% (high estimate) [219] [220] [221] [222]. The average of PLWHA within this sub-group came to 1.806 persons.

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[214] UNAIDS/WHO. Overview of making estimates of HIV/AIDS and its impact in countries with low-level or concentrated epidemics: The workbook method. The models and methodology of the UNAIDS/WHO approach to estimating and projecting national HIV/AIDS epidemics. The UNAIDS reference group on estimates, models and projections June 2003. http://www.unaids.org/html/pub/Topics/Epidemi/WorkBookMethod_Manual_en_doc.ht 2003-10-08, 1-19. (accessed 2004-04-15)

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[216] Beata Sierocka, umbrella project coordinator, Cracow, personal communication 2004-06

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[218] Robinson N J. HIV infection in Poland (1985-96). In: Revue d' Epidemiologie et de Sante´Publique 2000, 48: 17-31

[219] Joanna Dec, University of Zielona Gora, personal communication 2004-05

[220] Beata Sierocka, umbrella project coordinator, Cracow, personal communication 2004-06

[221] EuroHIV. European Centre for the Epidemiological Monitoring of AIDS. HIV/AIDS surveillance in Europe. End-year report 2002/2003, No. 68. www.eurohiv.org. (accessed 2004-05-15)

[222] The HIV/AIDS epidemic in the WHO European Region. HIV prevalence among sex workers. Update 31 December 2002. EuroHIV. www.euroHIV.org (accessed 2004-05-11)

- Clients of IDU sex workers: The population size of clients of IDU sex workers was rough estimated to be 35% of the CCSW which amounted to 361.991 (low estimate) and 723.982 (high estimate) [223]. Prevalence was estimated to be 0,5% (low estimate) and 1% (high estimate) (own estimate). The average of PLWHA within this sub-group came to 4.072 individuals.
- Rent boys: The population size of rent boys was estimated to be 1.000 (low estimate) and 2.000 (high estimate). Prevalence was estimated to be 5% (low estimate) and 20% (high estimate) [224]. The average of PLWHA within this sub-group came to 188 individuals.
- Clients of rent boys: 15% of general MSM were assumed to buy sexual services which made an estimated population size of 20.685 (low estimate) and 41.370 (high estimate) within this sub-group [225]. The prevalence was estimated to be 0,5% (low estimate) and 1% (high estimate) (own estimates). The average of PLWHA within this sub-group came to 233 persons.

5.2.2 Sub-groups of PLR (Table 3)

- Partners of IDU: As national estimates were not available similar assumptions as those made for Germany were taken. 50% of IDU were assumed to live in partnerships and the population size of partners of IDU was estimated to be 19.400 (low estimate) and 27.500 (high estimate) [226]. The transmission probability was assumed to be 0,01 (low estimate) and 0,02 (high estimate) and the prevalence was estimated to be 1% (low estimate) and 2% (high estimate) [227] [228] [229] [230] [231]. The average of PLWHA within this sub-group came to 352 persons.

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[223] UNAIDS/WHO. Overview of making estimates of HIV/AIDS and its impact in countries with low-level or concentrated epidemics: The workbook method. The models and methodology of the UNAIDS/WHO approach to estimating and projecting national HIV/AIDS epidemics. The UNAIDS reference group on estimates, models and projections June 2003.
http://www.unaids.org/html/pub/Topics/Epidemi/WorkBookMethod_Manual_en_doc.ht 2003-10-08, 1-19. (accessed 2004-04-15)

[224] Own estimates and comparisons with German numbers based on Sergiu Grimalschi, SUB/WAY berlin e. V., personal communication 2004-07

[225] UNAIDS/WHO. Overview of making estimates of HIV/AIDS and its impact in countries with low-level or concentrated epidemics: The workbook method. The models and methodology of the UNAIDS/WHO approach to estimating and projecting national HIV/AIDS epidemics. The UNAIDS reference group on estimates, models and projections June 2003.
http://www.unaids.org/html/pub/Topics/Epidemi/WorkBookMethod_Manual_en_doc.ht 2003-10-08, 1-19. (accessed 2004-04-15)

[226] Herrmann U. Wünsche und Bedürfnisse von Frauen mit HIV und AIDS. Eine empirische Studie über die Versorgungssituation HIV-infizierter Frauen in der Bundesrepublik Deutschland. In: Deutsche AIDS-Hilfe e.V. Berlin 1995, 7-104

[227] UNAIDS/WHO. Overview of making estimates of HIV/AIDS and its impact in countries with low-level or concentrated epidemics: The workbook method. The models and methodology of the UNAIDS/WHO

- Female partners of MSM: Because of the lack of estimates a mean value of German and Russian estimates was applied. The German suggestion assumed 25% of MSM to have heterosexual partners [232] [233]. In a Russian study undertaken in St. Petersburg in 2000 37% of MSM reported to have had recent bisexual behaviour [234]. Assuming now that an average of 31% of MSM have female partners the estimates came to 57.402 (low estimate) and 114.804 (high estimate). The transmission probability was assumed to be 0,002 (low estimate) and 0,005 (high estimate) and the prevalence was estimated to be 0,2% (low estimate) and 0,5% (high estimate) [235] [236] [237] [238] [239]. The average of PLWHA within this sub-group came to 301 individuals.
- Female partners of clients of CSW: National estimates were not available so that the German asssumption of 66% of the clients of CSW living in stable partnerships was taken to estimate the population size of this sub-group [240]. Thus it came to 682.612 (low estimate) and 1.365.223 (high estimate). The tranmsission probability was assumed to

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approach to estimating and projecting national HIV/AIDS epidemics. The UNAIDS reference group on estimates, models and projections June 2003.
http://www.unaids.org/html/pub/Topics/Epidemi/WorkBookMethod_Manual_en_doc.ht 2003-10-08, 1-19

[228] Downs A M, De Vincenzi. Probability of heterosexual transmission of HIV: relationship of the number of unprotected sexual contacts. In: Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology. Philadelphia: Lippincott-Raven Publishers, 1996, 11: 388-395

[229] Gray R H et al. Probability of HIV-1 transmission per coital act in monogamous heterosexual, HIV-1-discordant couples in Rakai, Uganda. In: The Lancet 2001, 357: 1149-1153

[230] Mastro T D et al. Probability of female-to-male transmission of HIV-1 in Thailand. In: The Lancet 1994, 343: 204-207

[231] Mastro T D, De Vincenzi I. Probabilities of sexual HIV-1 transmission. In: AIDS 1996, 10: 75-82

[232] Feldhorst A. Zwischen Familie und Rastplatz – sich bisexuell verhaltende Männer. In: Feldhorst A. (Hrsg.) Bisexualitäten. AIDS-Forum DAH 1996 Band 11: 95-102

[233] Honnens B. Partnerinnen bisexueller Männer. In: Feldhorst A. (Hrsg.) Bisexualitäten. AIDS-Forum DAH 1996 Band 11: 83-93

[234] Kelly J A, Amirkhanian Y A. The newest epidemic: a review of HIV/AIDS in Central and Eastern Europe. In: International Journal of STD & AIDS 2003, 14: 361-371

[235] UNAIDS/WHO. Overview of making estimates of HIV/AIDS and its impact in countries with low-level or concentrated epidemics: The workbook method. The models and methodology of the UNAIDS/WHO approach to estimating and projecting national HIV/AIDS epidemics. The UNAIDS reference group on estimates, models and projections June 2003.
http://www.unaids.org/html/pub/Topics/Epidemi/WorkBookMethod_Manual_en_doc.ht 2003-10-08, 1-19. (accessed 2004-04-15)

[236] Downs A M, De Vincenzi. Probability of heterosexual transmission of HIV: relationship of the number of unprotected sexual contacts. In: Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology. Philadelphia: Lippincott-Raven Publishers, 1996, 11: 388-395

[237] Gray R H et al. Probability of HIV-1 transmission per coital act in monogamous heterosexual, HIV-1-discordant couples in Rakai, Uganda. In: The Lancet 2001, 357: 1149-1153

[238] Mastro T D et al. Probability of female-to-male transmission of HIV-1 in Thailand. In: The Lancet 1994, 343: 204-207

[239] Mastro T D, De Vincenzi I. Probabilities of sexual HIV-1 transmission. In: AIDS 1996, 10: 75-82

[240] Steffan E. Der Freier, das unbekannte Wesen. In: SPI Forschung gGmbh (Hrsg.). Sexuell übertragbare Krankheiten. Ein Lesebuch für die Beratungspraxis. Heidelberg und Kröning 2004, Asanger Verlag GmbH: 365-371

come to 0,0002 (low estimate) and 0,0004 (high estimate) and the prevalence was estimated to be 0,02% (low estimate) and 0,04% (high estimate) [241] [242] [243] [244] [245]. The average of PLWHA came to 307 persons.

- Female partners of clients of IDU/migrant sex workers: In this sub-group the same assumption as in female partners of clients of CSW above, i. e. 66% among clients of CSW live in partnerships, was taken so that the population size of partners of IDU sex workers was estimated to be 170.653 (low estimate) and 341.306 (high estimate). The transmission probability was assumed to be 0,001 (low estimate) and 0,002 (high estimate) and the prevalence was estimated to be 0,1% (low estimate) and 0,2% (high estimate) [246] [247]. The average of PLWHA came to 384 individuals within this sub-group.
- Female partners of clients of rent boys: In this sub-group again the German asssumption that 66% of the clients of CSW live in stable partnerships was taken as well as the assumption that 70% of clients of rent boys have bisexual behaviour [248] [249] [250]. Thus the population size was estimated to be 4.232 (low estimate) and 8.464 (high estimate). The transmission probability was assumed to be 0,001 (low estimate) and 0,002 (high estimate)

[241] UNAIDS/WHO. Overview of making estimates of HIV/AIDS and its impact in countries with low-level or concentrated epidemics: The workbook method. The models and methodology of the UNAIDS/WHO approach to estimating and projecting national HIV/AIDS epidemics. The UNAIDS reference group on estimates, models and projections June 2003.
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[243] Gray R H et al. Probability of HIV-1 transmission per coital act in monogamous heterosexual, HIV-1-discordant couples in Rakai, Uganda. In: The Lancet 2001, 357: 1149-1153

[244] Mastro T D et al. Probability of female-to-male transmission of HIV-1 in Thailand. In: The Lancet 1994, 343: 204-207

[245] Mastro T D, De Vincenzi I. Probabilities of sexual HIV-1 transmission. In: AIDS 1996, 10: 75-82

[246] ibidem

[247] UNAIDS/WHO. Overview of making estimates of HIV/AIDS and its impact in countries with low-level or concentrated epidemics: The workbook method. The models and methodology of the UNAIDS/WHO approach to estimating and projecting national HIV/AIDS epidemics. The UNAIDS reference group on estimates, models and projections June 2003.
http://www.unaids.org/html/pub/Topics/Epidemi/WorkBookMethod_Manual_en_doc.ht 2003-10-08, 1-19. (accessed 2004-04-15)

[248] Feldhorst A. Zwischen Familie und Rastplatz – sich bisexuell verhaltende Männer. In: Feldhorst A. (Hrsg.) Bisexualitäten. AIDS-Forum DAH 1996 Band 11: 95-102

[249] Honnens B. Partnerinnen bisexueller Männer. In: Feldhorst A. (Hrsg.) Bisexualitäten. AIDS-Forum DAH 1996 Band 11: 83-93

[250] Steffan E. Der Freier, das unbekannte Wesen. In: SPI Forschung gGmbh (Hrsg.). Sexuell übertragbare Krankheiten. Ein Lesebuch für die Beratungspraxis. Heidelberg und Kröning 2004, Asanger Verlag GmbH: 365-371

and the prevalence was estimated to be 0,1% (low estimate) and 0,2% (high estimate) [251] [252]. The average of PLWHA came to 22 persons within this sub-group.

5.2.3 PLR consisting of ANC women (Table 4):

The size of urban female low risk population (ANC data) was 6.584.064 (low estimate) and 6.615.526 (high estimate). The size of rural female low population came to 3.239.302 (low estimate) and 3.481.319 (high estimate) by programme calculation [253]. The prevalence estimates stem from results of sentinel surveillance in unlinked anonymous testing (UAT) from two federal states in the years 1993-1997 because Polish data were not available. The average prevalence was 0,057% in the urban area Berlin and 0,014% in the rural area Lower Saxony [254] [255] [256].

As in the German calculation the final HIV prevalence was adjusted to the estimate of the rural women as the unadjusted value was thought to overestimate the prevalence [257]. Thus the HIV prevalence among ANC women was estimated to be 0,01 (low estimate) and 0,02% (high estimate) (see also Chapters 4.1 and 4.1.1.2).

5.3 Comparison between between the findings of Germany and Poland

Within both countries there were no remarkable differences in results if the PLR consisted of partners of PHR or ANC women. Comparing both countries the number of PLWHA at the end of the year 2003 were higher in Germany (46.386 and 46.327 respectively PLWHA) than in Poland (16.150 and 16.278 PWLHA respectively) in relation to the general adult population (15-49 years) (40.190.500 individuals in Germany and 20.685.200 persons in Poland) (Tables 1, 2,3 and 4). The same goes for the national adult prevalence

[251] Gray R H et al. Probability of HIV-1 transmission per coital act in monogamous heterosexual, HIV-1-discordant couples in Rakai, Uganda. In: The Lancet 2001, 357: 1149-1153

[252] UNAIDS/WHO. Overview of making estimates of HIV/AIDS and its impact in countries with low-level or concentrated epidemics: The workbook method. The models and methodology of the UNAIDS/WHO approach to estimating and projecting national HIV/AIDS epidemics. The UNAIDS reference group on estimates, models and projections June 2003.
http://www.unaids.org/html/pub/Topics/Epidemi/WorkBookMethod_Manual_en_doc.ht 2003-10-08, 1-19. (accessed 2004-04-15)

[253] ibidem

[254] Hamouda O. HIV/AIDS surveillance in Germany. In: Journal of Acquired Immune Deficiency Syndromes 2003, 32: 49-54

[255] Petzold D et al. Sexually transmitted diseases in Germany. In: International Journal of STD & AIDS 2002, 13: 246-253

[256] Vettermann W et al. Spread of HIV infection in the general population in Germany. In: AIDS 2000, 14 (18): 2949-2951

[257] Walker N et al. Methods and prodedures for estimating HIV/AIDS and its impact: The UNAIDS/WHO estimates for end of 2001, 6-9

(0,12% in Germany and 0,08% in Poland). The most obvious differences were found in the PHR sub-groups of IDU, MSM and clients of IDU sex workers. The average number of PLWHA among IDU was high in Poland (2.111 individuals) (Tables 3 and 4) in relation to those in Germany (2.453 individuals) (Tables 1 and 2), whereas the number of PLWHA among MSM was relatively high in Germany (20.391) (Table 1 and 2) compared to the Polish number of 5.555 individuals (Table 3 and 4). The average number of PLWHA among clients of IDU sex workers was higher in Poland (4.072 individuals) (Tables 3 and 4) in relation to the general adult population (15-49 years) than in Germany (3.391 individuals) (Tables 1 and 2). According to EuroHIV western Europe suffers from a concentrated mature HIV epidemic whereas in the Centre of Europe the epidemic still remains on a low level [258].

5.4 German Projection versions

The projection method was carried out based on the population size estimates and the HIV prevalence estimates of the sub-groups and the findings for the German adult prevalence of the end of the year 2003 from the German point prevalence estimate (Chapter 5.1). 4 scenarios were assumed and thus 4 versions were calculated. For each sub-group an annual growth rate was estimated. When the assumed annual growth rates differed from that of the general population generally an annual growth of 1% or –1% until 2010 was assumed in the corresponding sub-group (see also Chapter 4.2). In this calculation the year 2010 was taken as HIV prevalence saturation level for all sub-groups and all versions because long-term predictions until 2030 were assumed to be difficult to make and to comprise uncertainties. Besides, more detailed prognosis were not available. In the following the results of the different versions are presented (Chapters 5.3.1-5.3.4; Fig. 1-4 and Tables 5-8).

5.4.1 The German version of stability with partners of PHR as PLR

This version assumed that the annual growth rate in each sub-group stays similar to the annual growth rate of the general population (-0,1%) and new infections in the sub-groups remain stable [259] [260] (Table 5). The year of saturation for the HIV prevalences was assumed

[258] The HIV/AIDS epidemic in the WHO European Region. Update 31 December 2002. EuroHIV. www.euroHIV.org (accessed 2004-05-11)
[259] Marcus U, Hamouda O. Epidemiologie der HIV-Neuinfektionen in den verschiedenen Risikogruppen. In: Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz. Berlin: Springer-Verlag, 2000, 43: 3-8
[260] Rainer Schilling, DAH, Berlin, personal communication 2004-07

to be 2010. Thus the following national adult HIV prevalence (15-49 years) results were calculated by inserting the adult prevalence estimates of 0,08% in the year 1997 [261] and 0,12% at the end of the base year 2003 into the programme:

- 0,11% in the year 2005
- 0,14% in the year 2010
- 0,12% in the year 2020
- 0,25% in the year 2030 (Fig. 1).

The percentage of PLWHA who come from the PLR will

- increase from 6,5% at the end of the year 2003
- to 8,6% in the year 2005
- and will reach 9,8% in the year 2010 (data not shown) according to the programme calculation.

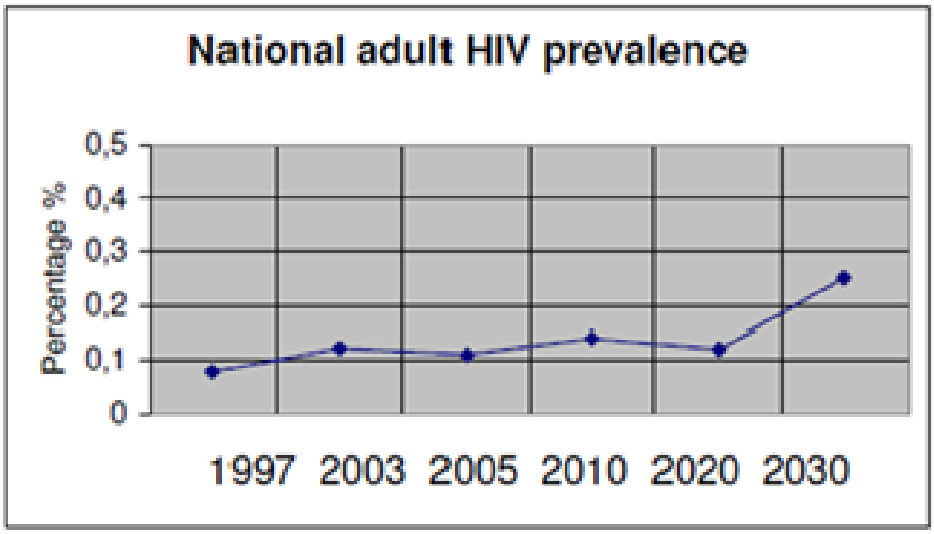

Fig. 1: German version of stability with partners of PHR as PLR

[261] UNAIDS/WHO. Germany. Epidemiological Fact Sheets on HIV/AIDS and sexually transmitted infections. Updated 4 February 2004

Table 5: German version of stability with partners of PHR as PLR

Pop.-group	Pop.-size in base year 2003		Annual growth rate %				Prevalence base year		Saturation prev.	Year of saturation
	Low	High	2000-2005	2005-2010	2010-2020	2020-2030	Low	High		
Adult pop. (15-49 years)	40.190.500		-0,1%	-0,1%	-0,1%	-0,1%				
IDU	61.000	102.500	-0,1%	-0,1%	-0,1%	-0,1%	2%	4%	3%	2010
MSM	599.858	999.763	-0,1%	-0,1%	-0,1%	-0,1%	2%	4%	3%	2010
CSW	209500	250.500	-0,1%	-0,1%	-0,1%	-0,1%	0,08%	0,5%	0,2%	2010
Clients of CSW	1.618.005	3.266.040	-0,1%	-0,1%	-0,1%	-0,1%	0, 04%	0,08%	0,1%	2010
IDU sex workers	37.500	45.000	-0,1%	-0,1%	-0,1%	-0,1%	5%	15%	10%	2010
Clients of IDU sex workers	301.429	602.859	-0,1%	-0,1%	-0,1%	-0,1%	0,5%	1%	1%	2010
Members of HPC	182.250	197.500	-0,1%	-0,1%	-0,1%	-0,1%	2%	8%	5%	2010
Rent boys	3.000	5.000	-0,1%	-0,1%	-0,1%	-0,1%	10%	20%	15%	2010
Partners of IDU	30.500	51.250	-0,1%	-0,1%	-0,1%	-0,1%	1%	2%	1,5%	2010
Female Partners of MSM	127.629	212.715	-0,1%	-0,1%	-0,1%	-0,1%	0,5%	1%	1%	2010
Partners of clients of CSW	1.067.883	2.155.586	-0,1%	-0,1%	-0,1%	-0,1%	0,02%	0,04%	0,1%	2010
Partners of clients of IDU sex workers	198.943	397.886	-0,1%	-0,1%	-0,1%	-0,1%	0,1%	0,2%	0,2%	2010
Partners of members of HPC	60.750	65.833	-0,1%	-0,1%	-0,1%	-0,1%	0,1%	0,2%	0,2%	2010
Female partners of clients of rent boys	41.622	69.370	-0,1%	-0,1%	-0,1%	-0,1%	0,1%	0,2%	0,2%	2010

5.4.2 The German version of stability with ANC women as PLR

This version assumed that the annual growth rate in each sub-group is similar to the annual growth rate of the general population (-0,1%) and new infections in the sub-groups remain stable [262] [263] (Table 6). The year of saturation for the HIV prevalences was assumed to be 2010. Thus the following national adult HIV prevalence (15-49 years) results were calculated by inserting the adult prevalence estimates of 0,08% in the year 1997 [264] and 0,12% at the end of the base year 2003 into the programme:

- 0,11% in the year 2005
- 0,13% in the year 2010
- 0,12% in the year 2020
- 0,24% in the year 2030 (Fig. 2).

The percentage of PLWHA who come from the PLR will

- increase from 6,4% at the end of the year 2003
- to 8% in the year 2005
- and will reach 8,1% in the year 2010 (data not shown) according to the programme calculation.

[262] Marcus U, Hamouda O. Epidemiologie der HIV-Neuinfektionen in den verschiedenen Risikogruppen. In: Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz. Berlin: Springer-Verlag, 2000, 43: 3-8

[263] Rainer Schilling, DAH, Berlin, personal communication 2004-07

[264] UNAIDS/WHO. Germany. Epidemiological Fact Sheets on HIV/AIDS and sexually transmitted infections. Updated 4 February 2004

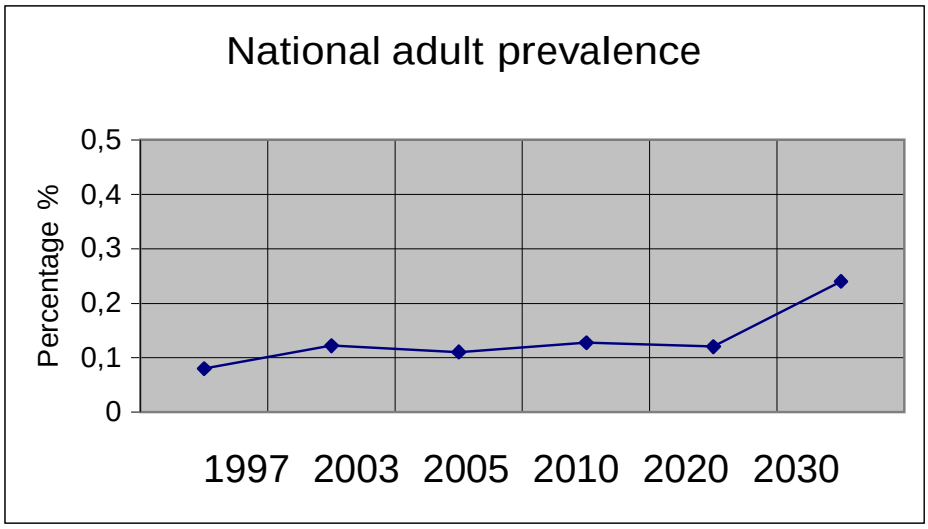

Fig. 2: German version of stability with ANC women as PLR

Table 6: German version of stability with ANC women as PLR

Pop.-group	Pop.-size in base year 2003		Annual growth rate %				Prevalence base year		Saturation prev.	Year of saturation
	Low	High	2000-2005	2005-2010	2010-2020	2020-2030	Low	High		
Adult pop. (15-49 years)	40.190.500		-0,1%	-0,1%	-0,1%	-0,1%				
IDU	61.000	102.500	-0,1%	-0,1%	-0,1%	-0,1%	2%	4%	3%	2010
MSM	599.858	999.763	-0,1%	-0,1%	-0,1%	-0,1%	2%	4%	3%	2010
CSW	209500	250.500	-0,1%	-0,1%	-0,1%	-0,1%	0,08%	0,5%	0,2%	2010
Clients of CSW	1.618.005	3.266.040	-0,1%	-0,1%	-0,1%	-0,1%	0,04%	0,08%	0,1%	2010
IDU sex workers	37.500	45.000	-0,1%	-0,1%	-0,1%	-0,1%	5%	15%	10%	2010
Clients of IDU sex workers	301.429	602.859	-0,1%	-0,1%	-0,1%	-0,1%	0,5%	1%	1%	2010
Members of HPC	182.250	197.500	-0,1%	-0,1%	-0,1%	-0,1%	2%	8%	5%	2010
Rent boys	3.000	5.000	-0,1%	-0,1%	-0,1%	-0,1%	10%	20%	15%	2010
Urban female low risk population (ANC data)	17.463.380	17.499.460	-0,1%	-0,1%	-0,1%	-0,1%	0,01%	0,02%	0,02%	2010
Rural female low risk population (ANC data)	2.019.505	2.217.269	-0,1%	-0,1%	-0,1%	-0,1%	0,01%	0,02%	0,02%	2010

5.4.3 The German version of increase with partners of PHR as PLR

This version assumed that the population size and the HIV prevalence of all sub-groups will increase and the spread of the HIV infection into the general population will grow [265] [266] [267] [268] [269] (Table 7). The year of saturation for the HIV prevalences was assumed to be 2010. Thus the following national adult HIV prevalence (15-49 years) results were calculated by inserting the adult prevalence estimates of 0,08% in the year 1997 [270] and 0,12% at the end of the base year 2003 into the programme:

- 0,16% in the year 2005
- 0,22% in the year 2010
- 0,25% in the year 2020
- 0,35% in the year 2030 (Fig. 3).

The percentage of PLWHA who come from the PLR

- will increase from 6,5% at the end of the year 2003
- to 11% in the year 2005
- and will reach 16% in the year 2010 (data not shown) according to the programme calculation.

[265] Bornemann R, Krämer A. HIV-Ausbreitung bei i.v.-Drogenkonsumenten (IDU) in Mittel- und Osteuropa: Konsequenzen für Epidemiologie und Prävention in Deutschland. In: Brockmeyer N H et al (Hrsg). HIV-Infekt: Epidemiologie, Prävention, Pathogenese, Diagnostik, Therapie, Psycho-Soziologie. Berlin Heidelberg: Springer-Verlag 2000, 141-148

[266] Marcus U, Hamouda O. Epidemiologie der HIV-Neuinfektionen in den verschiedenen Risikogruppen. In: Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz. Berlin: Springer-Verlag, 2000, 43: 3-8

[267] Marcus U. Zunahme von sexuellem Risikoverhalten und sexuell übertragbaren Infektionen bei homosexuellen Männern. In: Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz. Berlin: Springer-Verlag, 2002, 40-45

[268] Gemeinsame Presseerklärung des Robert Koch Instituts und der Bundeszentrale für Gesundheitliche Aufklärung. 24.03. 2004. AIDS-Situtation in Deutschland.
http://www.rki.de/PRESSE/PD/PD2004/PD04_06.HTM (accessed 2004-07-17)

[269] Sergiu Grimalschi, SUB/WAY berlin e. V., personal communication 2004-07

[270] UNAIDS/WHO. Germany. Epidemiological Fact Sheets on HIV/AIDS and sexually transmitted infections. Updated 4 February 2004

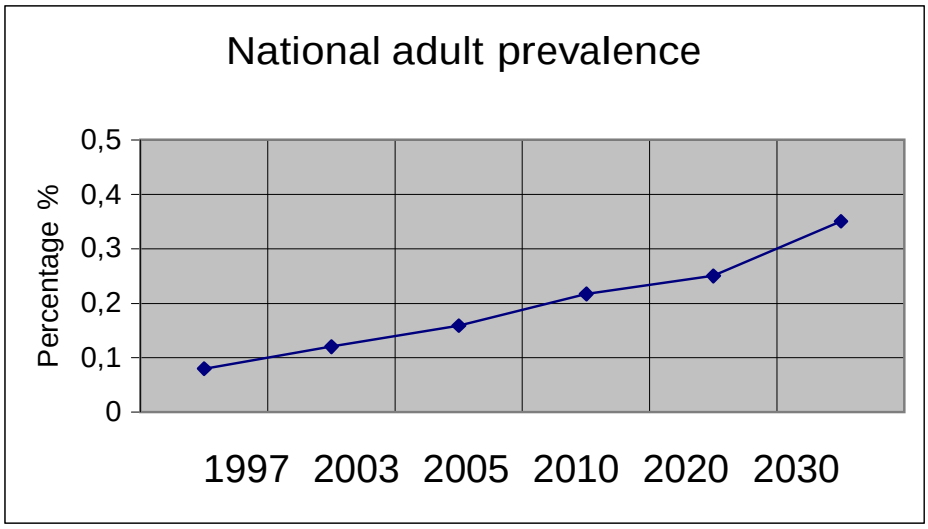

Fig. 3: German version of increase with partners of PHR as PLR

Table 7: German version of increase with partners of PHR as PLR

Pop.-group	Pop.-size in base year		Annual growth rate %				Prevalence base year		Saturation prev.	Year of saturation
	Low	High	2000-2005	2005-2010	2010-2020	2020-2030	Low	High		
Adult pop. (15-49 years)	40.190.500		-0,1%	-0,1%	-0,1%	-0,1%				
IDU	61.000	102.500	1%	1%	-0,1%	-0,1%	2%	4%	5%	2010
MSM	599.858	999.763	1%	1%	-0,1%	-0,1%	2%	4%	4%	2010
CSW	209500	250.500	1%	1%	-0,1%	-0,1%	0,08%	0,5%	1%	2010
Clients of CSW	1.618.005	3.266.040	1%	1%	-0,1%	-0,1%	0,04%	0,08%	0,5%	2010
IDU sex workers	37.500	45.000	1%	1%	-0,1%	-0,1%	5%	15%	10%	2010
Clients of IDU sex workers	301.429	602.859	1%	1%	-0,1%	-0,1%	0,5%	1%	2%	2010
Members of HPC	182.250	197.500	1%	1%	-0,1%	-0,1%	2%	8%	8%	2010
Rent boys	3.000	5.000	1%	1%	-0,1%	-0,1%	10%	20%	15%	2010
Partners of IDU	30.500	51.250	1%	1%	-0,1%	-0,1%	1%	2%	2%	2010
Female Partners of MSM	127.629	212.715	1%	1%	-0,1%	-0,1%	0,5%	1%	1%	2010
Partners of clients of CSW	1.067.883	2.155.586	1%	1%	-0,1%	-0,1%	0,02%	0,04%	0,5%	2010
Partners of clients of IDU sex workers	198.943	397.886	1%	1%	-0,1%	-0,1%	0,1%	0,2%	0,5%	2010
Partners of members of HPC	60.750	65.833	1%	1%	-0,1%	-0,1%	0,1%	0,2%	0,5%	2010
Female partners of clients of rent boys	41.622	69.370	1%	1%	-0,1%	-0,1%	0,1%	0,2%	0,5%	2010

5.4.4 The German version of increase with ANC women as PLR

This version assumed that the population size and the HIV prevalence of all sub-groups will increase. The population size of ANC women will not differ from that of the general population (-0,1%), the HIV prevalence among them will increase until 2010 so that the spread of the HIV infection into the general population will grow [271] [272] [273] [274] [275]. The year of saturation for the HIV prevalences was assumed to be 2010 (Table 8). Thus the following national adult HIV prevalence (15-49 years) results were calculated by inserting the adult prevalence estimates of 0,08% in the year 1997 [276] and 0,12% at the end of the base year 2003 into the programme:

- 0,16% in the year 2005
- 0,23% in the year 2010
- 0,24% in the year 2020
- 0,34% in the year 2030 (Fig. 4).

The percentage of PLWHA who come from the PLR

- will increase from 6,4% at the end of the year 2003
- to 12,4% in the year 2005
- and will reach 11,3% in the year 2010 (data not shown) according to the programme calculation.

[271] Bornemann R, Krämer A. HIV-Ausbreitung bei i.v.-Drogenkonsumenten (IDU) in Mittel- und Osteuropa: Konsequenzen für Epidemiologie und Prävention in Deutschland. In: Brockmeyer N H et al (Hrsg). HIV-Infekt: Epidemiologie, Prävention, Pathogenese, Diagnostik, Therapie, Psycho-Soziologie. Berlin Heidelberg: Springer-Verlag 2000, 141-148

[272] Marcus U, Hamouda O. Epidemiologie der HIV-Neuinfektionen in den verschiedenen Risikogruppen. In: Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz. Berlin: Springer-Verlag, 2000, 43: 3-8

[273] Marcus U. Zunahme von sexuellem Risikoverhalten und sexuell übertragbaren Infektionen bei homosexuellen Männern. In: Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz. Berlin: Springer-Verlag, 2002, 40-45

[274] Gemeinsame Presseerklärung des Robert Koch Instituts und der Bundeszentrale für Gesundheitliche Aufklärung. 24.03. 2004. AIDS-Situtation in Deutschland. http://www.rki.de/PRESSE/PD/PD2004/PD04_06.HTM (accessed 2004-07-17)

[275] Sergiu Grimalschi, SUB/WAY berlin e. V., personal communication 2004-07

[276] UNAIDS/WHO. Germany. Epidemiological Fact Sheets on HIV/AIDS and sexually transmitted infections. Updated 4 February 2004

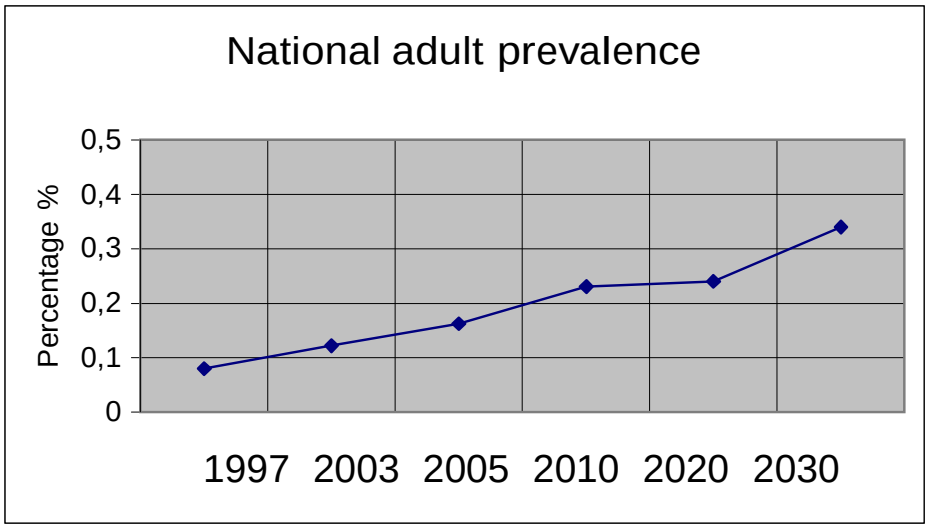

Fig. 4: German version of increase with ANC women as PLR

Table 8: German version of increase with ANC women as PLR

Pop.-group	Pop.-size in base year		Annual growth rate %				Prevalence base year		Saturation prev.	Year of saturation
	Low	High	2000-2005	2005-2010	2010-2020	2020-2030	Low	High		
Adult pop. (15-49 ys)	40.190.500		-0,1%	-0,1%	-0,1%	-0,1%				
IDU	61.000	102.500	1%	1%	-0,1%	-0,1%	2%	4%	5%	2010
MSM	599.858	999.763	1%	1%	-0,1%	-0,1%	2%	4%	4%	2010
CSW	209500	250.500	1%	1%	-0,1%	-0,1%	0,08%	0,5%	1%	2010
Clients of CSW	1.618.005	3.266.040	1%	1%	-0,1%	-0,1%	0,04%	0,08%	0,5%	2010
IDU sex workers	37.500	45.000	1%	1%	-0,1%	-0,1%	5%	15%	10%	2010
Clients of IDU sex workers	301.429	602.859	1%	1%	-0,1%	-0,1%	0,5%	1%	2%	2010
Members of HPC	182.250	197.500	1%	1%	-0,1%	-0,1%	2%	8%	8%	2010
Rent boys	3.000	5.000	1%	1%	-0,1%	-0,1%	10%	20%	15%	2010
Urban female low risk population (ANC data)	17.463.380	17.499.460	-0,1%	-0,1%	-0,1%	-0,1%	0,01%	0,02%	0,05%	2010
Rural female low risk population (ANC data)	2.019.505	2.217.269	-0,1%	-0,1%	-0,1%	-0,1%	0,01%	0,02%	0,05%	2010

5.5 Polish projection versions

Also for Poland the projection method was carried out based on the population size estimates and the HIV prevalence estimates of the sub-groups and the findings for the Polish adult prevalence of the end of the year 2003 from the Polish point prevalence estimate (Chapter 5.2). 4 scenarios were assumed and thus 4 versions were carried out. Again for each sub-group an annual growth rate was estimated. When the assumed annual growth rates differed from that of the general population an annual growth of 1% or –1% until 2010 was assumed. The year 2010 was taken as HIV prevalence saturation level for all sub-groups and all versions because, as already mentioned in the chapters 4.2 and 5.3, long-term predictions were assumed to be difficult to make, to comprise uncertainties and more detailed prognosis were not available.

In the following the results of the different versions are presented (Chapters 5.4.1-5.4.4; Fig. 5-8 and Tables 9-12).

5.5.1 The Polish version of slight movement with partners of PHR as PLR

This version assumed that the number of CSW and of rent boys and the HIV prevalence among them increase slightly, the number of IDU/migrant sex workers decreases and a slight increase in HIV prevalence in PLR will be observed [277] [278] [279] [280] [281] [282]. The year of saturation for the HIV prevalences was assumed to be 2010 (Table 9). Thus the following national adult HIV prevalence (15-49 years) results were calculated by inserting the adult prevalence estimates of 0,06% in the year 1997 [283] and 0,08% at the end of the year 2003 into the programme:

- 0,09% in the year 2005
- 0,16% in the year 2010
- 0,11% in the year 2020
- 0,11% in the year 2030 (Fig. 5).

[277] Joanna Dec, University of Zielona Gora, personal communication 2004-05
[278] Sergiu Grimalschi, SUB/WAY berlin e. V. personal communication 2004-07
[279] Anna Marzec-Boguslawska, National AIDS Center Warsaw, personal communication 2004-09
[280] Magdalena Rosinska, National Hygiene Institute Warsaw, personal communication 2004-08
[281] Beata Sierocka, umbrella project coordinator, personal communication 2004-06
[282] Pawel Swiecki, National Bureau for Drug Prevention, Warsaw, personal communication 2004-09
[283] UNAIDS/WHO. Poland. Epidemiological Fact Sheets on HIV/AIDS and sexually transmitted infections. Updated 4 February 2004

The percentage of PLWHA who come from the PLR

- will increase from 9,2% at the end of the year 2003
- to 10,4% in the year 2005
- and will reach 12% in the year 2010 (data not shown) according to the programme calculation.

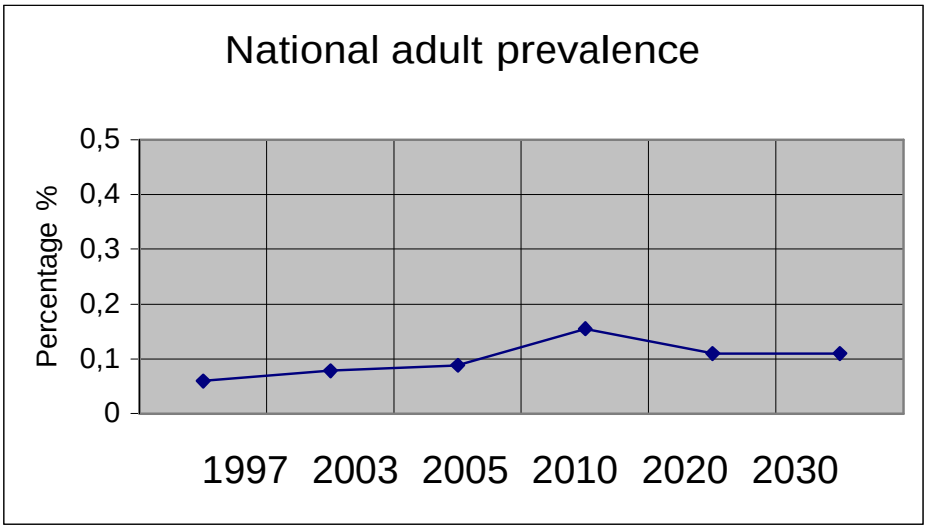

Fig. 5: Polish version of slight movement with partners of PHR as PLR

Table 9: Polish version of slight movement with partners of PHR as PLR

Pop.-group	Pop.-size in base year		Annual growth rate %				Prevalence base year		Saturation prev.	Year of saturation
	Low	High	2000-2005	2005-2010	2010-2020	2020-2030	Low	High		
Adult pop. (15-49 years)	20.685.200		-0,3%	-0,3%	-0,3%	-0,3%				
IDU	38.800	55.000	-0,3%	-0,3%	-0,3%	-0,3%	4%	5%	4,5%	2010
MSM	185.167	370.334	-0,3%	-0,3%	-0,3%	-0,3%	1%	3%	3%	2010
CSW	5.840	55.000	1%	1%	-0,3%	-0,3%	0,08%	1%	2%	2010
Clients of CSW	672.269	1.344.538	-0,3%	-0,3%	-0,3%	-0,3%	0,05%	0,08%	0,1%	2010
IDU/migrant sex workers	5.160	43.000	-1%	-1%	-0,3%	-0,3%	5%	10%	10%	2010
Clients of IDU/migrant sex workers	361.991	723.982	-0,3%	-0,3%	-0,3%	-0,3%	0,5%	1%	1%	2010
Rent boys	1.000	2.000	1%	1%	-0,3%	-0,3%	5%	20%	15%	2010
Clients of rent boys	20.685	41.370	-0,3%	-0,3%	-0,3%	-0,3%	0,5%	1%	1%	2010
Partners of IDU	19.400	27.500	-0,3%	-0,3%	-0,3%	-0,3%	1%	2%	2%	2010
Female partners of MSM	57.402	114.804	-0,3%	-0,3%	-0,3%	-0,3%	0,2%	0,5%	0,5%	2010
Partners of clients of sex workers	682.612	1.365.223	-0,3%	-0,3%	-0,3%	-0,3%	0,02%	0,04%	0,1%	2010
Partners of clients of IDU/migrant sex workers	170.653	341.306	-0,3%	-0,3%	-0,3%	-0,3%	0,1%	0,2%	0,2%	2010
Female partners of clients of rent boys	9.557	19.113	-0,3%	-0,3%	-0,3%	-0,3%	0,1%	0,2%	0,2%	2010

5.5.2 The Polish version of slight movement with ANC women as PLR

This version assumed that the number of CSW and of rent boys and the HIV prevalence among them increase slightly and the number of IDU/migrant sex workers decreases. The number of ANC women stays similar to that of the general population (-0,3%) and a slight increase in their HIV prevalence will be observed [284] [285] [286] [287] [288] [289]. The year of saturation for the HIV prevalences was assumed to be 2010 (Table 10). Thus the following national adult HIV prevalence (15-49 years) results were calculated by

[284] Joanna Dec, University of Zielona Gora, personal communication 2004-05
[285] Sergiu Grimalschi, SUB/WAY BERLIN E. V. berlin e.V. personal communication 2004-07
[286] Anna Marzec-Boguslawska, National AIDS Center Warsaw, personal communication 2004-09
[287] Magdalena Rosinska, National Hygiene Institute Warsaw, personal communication 2004-08
[288] Beata Sierocka, umbrella project coordinator, Cracow, personal communication 2004-06
[289] Pawel Swiecki, National Bureau for Drug Prevention, Warsaw, personal communication 2004-09

inserting the adult prevalence estimates of 0,06% in the year 1997 [290] and 0,08% at the end of the year 2003 into the programme:

- 0,09% in the year 2005
- 0,11% in the year 2010
- 0,11% in the year 2020
- 0,11% in the year 2030 (Fig. 6).

The percentage of PLWHA who come from the PLR

- will decrease from 10,1% at the end of the year 2003
- to 10% in the year 2005
- and will reach 9,8% in the year 2010 (data not shown) according to the programme calculation.

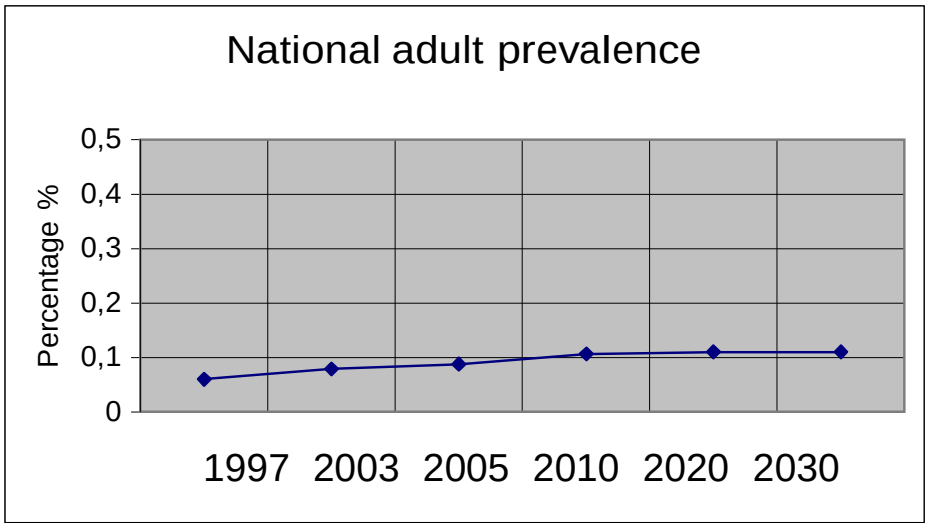

Fig. 6: Polish version of slight movement with ANC women as PLR

[290] UNAIDS/WHO. Poland. Epidemiological Fact Sheets on HIV/AIDS and sexually transmitted infections. Updated 4 February 2004

Table 10: Polish version of slight movement with ANC women as PLR

Pop.-group	Pop.-size in base year		Annual growth rate %				Prevalence base year		Saturation prev.	Year of saturation
	Low	High	2000-2005	2005-2010	2010-2020	2020-2030	Low	High		
Adult pop. (15-49 years)	20.685.200		-0,3%	-0,3%	-0,3%	-0,3%				
IDU	38.800	55.000	-0,3%	-0,3%	-0,3%	-0,3%	4%	5%	4,5%	2010
MSM	185.167	370.334	-0,3%	-0,3%	-0,3%	-0,3%	1%	3%	3%	2010
CSW	5.840	55.000	1%	1%	-0,3%	-0,3%	0,08%	1%	2%	2010
Clients of CSW	672.269	1.344.538	-0,3%	-0,3%	-0,3%	-0,3%	0,05%	0,08%	0,1%	2010
IDU/migrant sex workers	5.160	43.000	-1%	-1%	-0,3%	-0,3%	5%	10%	10%	2010
Clients of IDU/migrant sex workers	361.991	723.982	-0,3%	-0,3%	-0,3%	-0,3%	0,5%	1%	1%	2010
Rent boys	1.000	2.000	1%	1%	-0,3%	-0,3%	5%	20%	15%	2010
Clients of rent boys	20.685	41.370	-0,3%	-0,3%	-0,3%	-0,3%	0,5%	1%	1%	2010
Urban female low risk population (ANC data)	6.584.064	6.615.526	-0,3%	-0,3%	-0,3%	-0,3%	0,01%	0,02%	0,02%	2010
Rural female low risk population (ANC data)	3.239.302	3.481.319	-0,3%	-0,3%	-0,3%	-0,3%	0,01%	0,02%	0,02%	2010

5.5.3 The Polish version of increase with partners of PHR as PLR

- This version assumed that additionally, the number and HIV prevalence of IDU and the HIV prevalence among MSM will increase and a growth in HIV prevalence in PLR will be noted [291] [292] [293] [294] [295] (Table 11). Thus the following national adult HIV prevalence (15-49 years) results were calculated by inserting the adult prevalence estimates of 0,06% in the year 1997 [296] and 0,08% at the end of the year 2003 into the programme:
- 0,1% in the year 2005
- 0,19% in the year 2010
- 0,15% in the year 2020
- 0,15% in the year 2030 (Fig. 7).

The percentage of PLWHA who come from the PLR

- will increase from of 9,2% at the end of the year 2003
- to 13,1% in the year 2005
- and will reach 17,1% in the year 2010 (data not shown) according to the programme calculation.

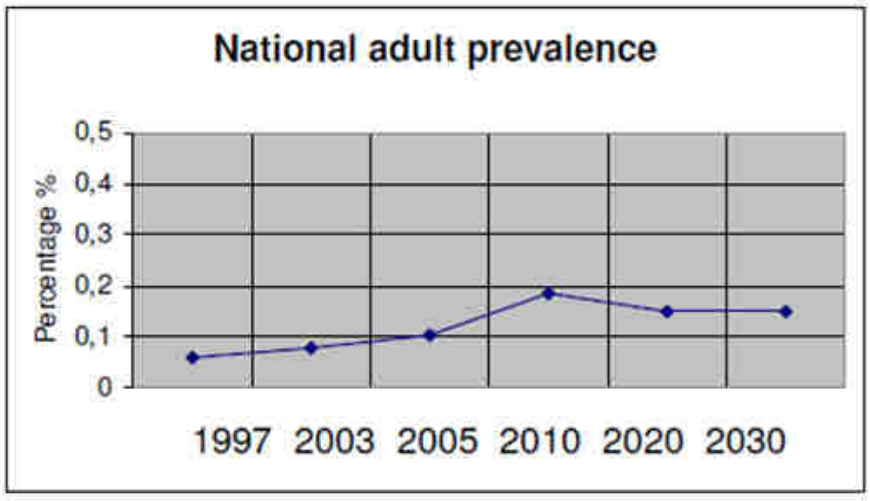

Fig. 7: Polish version of increase with partners of PHR as PLR

[291] Joanna Dec, University of Zielona Gora, personal communication 2004-05
[292] Sergiu Grimalschi, SUB/WAY berlin e.V. personal communication 2004-07
[293] Anna Marzec-Boguslawska, National AIDS Center Warsaw, personal communication 2004-09
[294] Jacek Moskalewicz, Ministry of Health, Warsaw, personal communication 2004-09
[295] Magdalena Rosinska, National Hygiene Institute, Warsaw, personal communication 2004-08
[296] UNAIDS/WHO. Poland. Epidemiological Fact Sheets on HIV/AIDS and sexually transmitted infections. Updated 4 February 2004

Table 11: Polish version of increase with partners of PHR as PLR

Pop.-group	Pop.-size in base year		Annual growth rate %				Prevalence base year		Saturation prev.	Year of saturation
	Low	High	2000-2005	2005-2010	2010-2020	2020-2030	Low	High		
Adult pop. (15-49 years)	20.685.200		-0,3%	-0,3%	-0,3%	-0,3%				
IDU	38.800	55.000	1%	1%	-0,3%	-0,3%	4%	5%	6%	2010
MSM	185.167	370.334	-0,3%	-0,3%	-0,3%	-0,3%	1%	3%	5%	2010
CSW	5.840	55.000	1%	1%	-0,3%	-0,3%	0,08%	1%	2%	2010
Clients of CSW	672.269	1.344.538	-0,3%	-0,3%	-0,3%	-0,3%	0,05%	0,08%	0,1%	2010
IDU/migrant sex workers	5.160	43.000	-1%	-1%	-0,3%	-0,3%	5%	10%	10%	2010
Clients of IDU/migrant sex workers	361.991	723.982	-0,3%	-0,3%	-0,3%	-0,3%	0,5%	1%	1%	2010
Rent boys	1.000	2.000	1%	1%	-0,3%	-0,3%	5%	20%	20%	2010
Clients of rent boys	20.685	41.370	-0,3%	-0,3%	-0,3%	-0,3%	0,5%	1%	1%	2010
Partners of IDU	19.400	27.500	-0,3%	-0,3%	-0,3%	-0,3%	1%	2%	2%	2010
Female partners of MSM	57.402	114.804	-0,3%	-0,3%	-0,3%	-0,3%	0,2%	0,5%	1%	2010
Partners of clients of sex workers	682.612	1.365.223	-0,3%	-0,3%	-0,3%	-0,3%	0,02%	0,04%	0,2%	2010
Partners of clients of IDU/migrant sex workers	170.653	341.306	-0,3%	-0,3%	-0,3%	-0,3%	0,1%	0,2%	0,5%	2010
Female partners of clients of rent boys	9.557	19.113	-0,3%	-0,3%	-0,3%	-0,3%	0,1%	0,2%	0,5%	2010

5.5.4 The Polish version of increase with ANC women as PLR

This version assumed that additionally, the number and HIV prevalence of IDU and the HIV prevalence among MSM will increase and a growth in HIV prevalence in PLR will be noted [297] [298] [299] [300] [301] (Table 12). Thus the following national adult HIV prevalence (15-49 years) results were calculated by inserting the adult prevalence estimates of 0,06% in the year 1997 [302] and 0,08% at the end of the year 2003 into the programme:

- 0,11% in the year 2005
- 0,15% in the year 2010
- 0,16% in the year 2020
- 0,15% in the year 2030 (Fig. 8)

The percentage of PLWHA who come from the PLR

- will increase from 10,1% at the end of the year 2003
- to 19,4% in the year 2005
- and will decrease to 18,1% in the year 2010 (data not shown) according to the programme calculation.

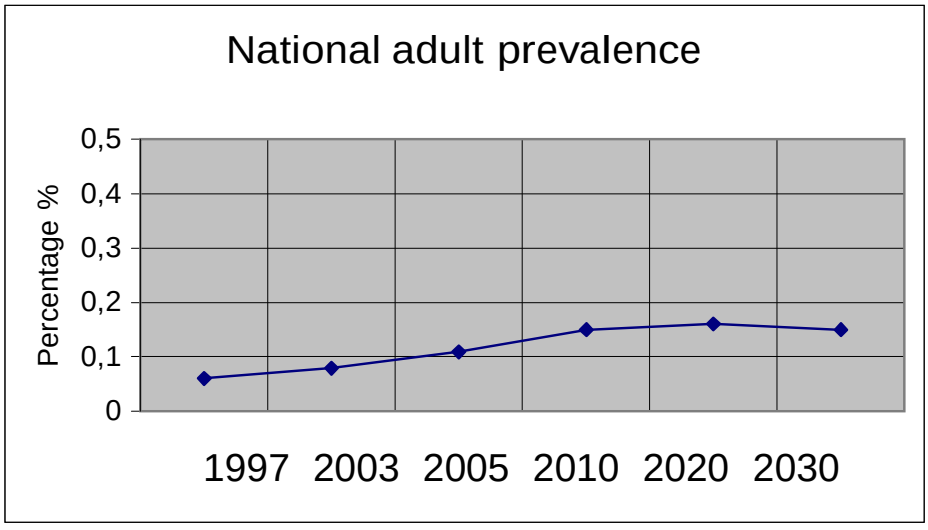

Fig. 8: Polish version of increase with ANC women as PLR

[297] Joanna Dec, University of Zielona Gora, personal communication 2004-05
[298] Sergiu Grimalschi, SUB/WAY berlin e.V. personal communication 2004-07
[299] Anna Marzec-Boguslawska, National AIDS Center Warsaw, personal communication 2004-09
[300] Jacek Moskalewicz, Ministry of Health, Warsaw, personal communication 2004-09
[301] Magdalena Rosinska, National Hygiene Institute, Warsaw, personal communication 2004-08
[302] UNAIDS/WHO. Poland. Epidemiological Fact Sheets on HIV/AIDS and sexually transmitted infections. Updated 4 February 2004

Table 12: Polish version of increase with ANC women as PLR:

Pop.-group	Pop.-size in base year		Annual growth rate %				Prevalence base year		Saturation prev.	Year of saturation
	Low	High	2000-2005	2005-2010	2010-2020	2020-2030	Low	High		
Adult pop. (15-49 years)	20.685.200		-0,3%	-0,3%	-0,3%	-0,3%				
IDU	38.800	55.000	1%	1%	-0,3%	-0,3%	4%	5%	6%	2010
MSM	185.167	370.334	-0,3%	-0,3%	-0,3%	-0,3%	1%	3%	5%	2010
CSW	5.840	55.000	1%	1%	-0,3%	-0,3%	0,08%	1%	2%	2010
Clients of CSW	672.269	1.344.538	-0,3%	-0,3%	-0,3%	-0,3%	0,05%	0,08%	0,1%	2010
IDU/migrant sex workers	5.160	43.000	-1%	-1%	-0,3%	-0,3%	5%	10%	10%	2010
Clients of IDU/migrant sex workers	361.991	723.982	-0,3%	-0,3%	-0,3%	-0,3%	0,5%	1%	1%	2010
Rent boys	1.000	2.000	1%	1%	-0,3%	-0,3%	5%	20%	20%	2010
Clients of rent boys	20.685	41.370	-0,3%	-0,3%	-0,3%	-0,3%	0,5%	1%	1%	2010
Urban female low risk population (ANC data)	6.584.064	6.615.526	-0,3%	-0,3%	-0,3%	-0,3%	0,01%	0,02%	0,05%	2010
Rural female low risk population (ANC data)	3.239.302	3.481.319	-0,3%	-0,3%	-0,3%	-0,3%	0,01%	0,02%	0,05%	2010

5.6 Comparison between the findings of Germany and Poland

For Germany, generally both German versions (stability and increase with both PLR-versions) show an increase in the national adult prevalence until the year 2030.

In the both versions of stability (partners of PLR and ANC women as PLR) the curves show a weak decrease in the year 2005, a slight peak in the year 2010, a slight decrease again in the year 2020 and a clear increase in the year 2030. The peak and the following decrease is weaker in the ANC version (Chapters 5.3.1 and 5.3.2; Fig. 1 and 2).

In both versions of increase the curves show a constant increase until the year 2030. Additionally and in contrast to all versions with partners of PHR as PLR, in the version of ANC women as PLR the percentage of PLWHA who come from the PLR doubles from the year 2003 until 2005 and decreases slightly by 1% until the year 2010 (Chapters 5.3.3 and 5.3.4; Fig. 3 and 4).

For Poland, in the version of slight movement with partners of PHR as PLR the curve peaks in the year 2010 and falls slightly until the year 2020 and stays stable until the year

2030. When the PLR consisted of ANC women the curve increases very slightly until the year 2030 and the percentage of PLWHA who come from the PLR stays in the year 2005 nearly similar to that at the end of the year 2003 and decreases very slightly in the year 2010 (Chapters 5.4.1 and 5.4.2; Fig. 5 and 6).

In the version of increase with partners of PHR as PLR the curve peaks in the year 2010, decreases until 2020 and remains stable until the year 2030.

In the version of increase with ANC women as PLR the curve increases until the year 2020 and decreases very slightly until the year 2030. Additionally, the percentage of PLWHA who come from the PLR doubles nearly from 2003 until 2005 and decreases at about 1% until the year 2010, similar to the German version (Chapters 5.4.3 and 5.4.4; Fig. 7 and 8).

The national adult prevalence and the level of the epidemic seems to stay lower and to even decrease in Poland than in Germany.

6. Discussion:

The applied method was invented by UNAIDS/WHO in order to obtain a rough estimate concerning HIV prevalence and projection predictions. It is thought to provide an impression in countries where estimates and numbers are not easily available but a general idea is quickly demanded in order to improve further surveillance actions and to develop adequate prevention measures. The applied method was not thought to be applied in industrialized countries where HAART is already feasible for most of the persons affected. The treatment by HAART hinders the epidemic in its natural development [303]. Additionally, the HIV prevalence among children cannot be estimated by the national point prevalence estimate method.

6.1 The national point prevalence estimate method

The results found by this method confirm the findings made by UNAIDS/WHO.

The method offers limited options for inserting the sub-groups of PHR and PLR. This could lead to uncertainties because e. g. homosexual men differ from rent boys, call boys or bisexual men as well as CSW vary from IDU and migrant sex workers concerning their life style, population size, sexual risk behaviour and HIV prevalence. Also a distinction between both sexes would improve the findings. The more diffentiated the sub-groups can

[303] Schwartländer B et al. Country-specific estimates and models of HIV and AIDS: methods and limitations. In: AIDS 1999, 13 (17): 2445-2458

be subdivided the more detailed and precise estimates can be achieved. Besides, MSM and CSW are defaulted and demanded to be inserted into the programme as in many developing countries these sub-groups belong to PHR. This situation does not correspond necassarily to that in industrialized regions.

6.1.1 German and Polish point prevalence estimates

For Germany and for Poland estimates concerning the population size and HIV prevalence in several sub-groups, especially rent boys and IDU sex workers, were difficult to obtain as these persons belong to hard-to reach-populations and suffer from stigmatization. They often come from broken homes, many of them are homeless and rent boys are mainly IDU. The proportion of migrants mainly from central and eastern Europe among rent boys is high [304] [305] [306] [307] [308] [309]. If they enlist consultation in advice centres such as SUB/WAY berlin e. V. this contact is guaranteed to be anonymous as otherwize a confidential level is impossible to be developed. HIV prevalence tests are not offered from SUB/WAY berlin e. V. because the rent boys are already traumatised. A positive result of HIV testing could upset a person without social support and it is uncertain if the knowledge about the HIV status is senseful because often regular HAART treatment is not enlisted, especially if the person is IDU. The members of SUB/WAY berlin e. V. prepare their clients soundly if the wish to HIV testing exists. Besides, rent boys belong to a population among which the frequency of moving between cities or country borders is very high so that their true number is difficult or nearly impossible to capture [310].The same goes for IDU/migrant sex workers and for several CSW. Many among them work clandestine without the right of residence. They may be easily extorted by clients to practise risky sexual behaviour due to their illegal situation. This is also true for IDU sex workers due to their drug addiction and

[304] Bochow M. Die Lebenswelten von Strichern: Interviews aus der Szene. In: Wright M T (Hrsg.). Prostitution, Prävention und Gesundheitsförderung. Teil 1: Männer. AIDS-Forum DAH 2003, Bd. 45: 25-48

[305] Werner W, Grimalschi S. Arbeit mit ausländischen Strichern am Beispiel des Stricherprojekts SUB/WAY berlin e.V. In: Deutsche AIDS Hilfe e.V. (Hrsg.). Handbuch Migration für AIDS-Hilfen, AIDS-Fachkräfte und andere im AIDS-Bereich Tätige Berlin 1998: 391-404

[306] Wright M T. Die Beratung und Betreuung von Strichern. In: SPI Forschung gGmbh (Hrsg.). Sexuell übertragbare Krankheiten. Ein Lesebuch für die Beratungspraxis. Heidelberg und Kröning 2004, Asanger Verlag GmbH: 342-351

[307] Wright M T. Stricher und Stricherarbeit: Erkenntnisse aus Wissenschaft und Praxis. In: Wright M T (Hrsg.). Prostitution, Prävention und Gesundheitsförderung. Teil 1: Männer. AIDS-Forum DAH 2003, Bd. 45: 11-23

[308] Wright M T Die Lebenslage von Strichern in Köln, Düsseldorf und im Ruhrgebiet. Zur Feststellung der Gesundheitsrisiken einer besonders gefährdeten und schwer erreichbaren Zielgruppe. In: Wright M T (Hrsg.). Prostitution, Prävention und Gesundheitsförderung. Teil 1: Männer. AIDS-Forum DAH 2003, Bd. 45: 57-82

[309] Sergiu Grimalschi, SUB/WAY berlin e. V., personal communication 2004-07

[310] Wolfgang Werner, SUB/WAY berlin e. V., personal communication 2004-07

their drug-related sex work [311] [312] [313] [314] [315]. Clients of rent boys, IDU sex workers and CSW in general are hard to reach. For this reason the programme assumption suggestions were applied in order to obtain at least approximate estimates.

In this investigation the population sizes of PLR as partners of PHR were based on the assumption of stable monogamous partnerships [316] which does not represent the whole reality. Part-time and multiple partners were neglected. The partner population size estimates were mainly based on interviews of sample surveys which hold weakness regarding representation of the corresponding general partner population, e.g. the sample size of female partners of MSM was small with the participation of only 50 women [317]. The investigation among partners of IDU was carried out among 134 women in the year 1993 which is not quite reliable because the participants were exclusively women and the results are 10 years old [318].

Partner prevalences for both countries were not available and thus estimated by a programme suggestion [319] of transmission probability per sex act per year. This method was experienced as being vague because the propositions concerning the values of transmission probability and the frequencies of sex acts were very rough so that these assumptions remained open to the programme user. Therefore, additionally, the results were combined and aligned with own estimates compared to the HIV prevalence in the

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[312] Nitschke-Özbay H. HIV-Prävention für Migrantinnen in der Prostitution. Zentralblatt für Gynäkologie 1999, 121: 36-41

[313] Steffan E, Krauss M. Das UMBRELLA Network-HIV/AIDS-und STD im grenzüberschreitenden Raum. In: Brockmeyer N H et al (Hrsg). HIV-Infekt: Epidemiologie, Prävention, Pathogenese, Diagnostik, Therapie, Psycho-Soziologie. Berlin Heidelberg: Springer-Verlag 2000, 641-649

[314] Valdivia C. MigrantInnen in der Prostitution. In: SPI Forschung gGmbh (Hrsg.). Sexuell übertragbare Krankheiten. Ein Lesebuch für die Beratungspraxis. Heidelberg und Kröning 2004, Asanger Verlag GmbH: 356-364

[315] Valdivia C. MigrantInnen in der Prostitution. In: Deutsche AIDS Hilfe e.V. (Hrsg.). Handbuch Migration für AIDS-Hilfen, AIDS-Fachkräfte und andere im AIDS-Bereich Tätige Berlin 1998: 379-388

[316] UNAIDS/WHO. Overview of making estimates of HIV/AIDS and its impact in countries with low-level or concentrated epidemics: The workbook method. The models and methodology of the UNAIDS/WHO approach to estimating and projecting national HIV/AIDS epidemics. The UNAIDS reference group on estimates, models and projections June 2003.
http://www.unaids.org/html/pub/Topics/Epidemi/WorkBookMethod_Manual_en_doc.ht 2003-10-08, 1-19. (accessed 2004-04-15)

[317] Honnens B. Partnerinnen bisexueller Männer. In: Feldhorst A. (Hrsg.) Bisexualitäten. AIDS-Forum DAH 1996 Band 11: 83-93

[318] Herrmann U. Wünsche und Bedürfnisse von Frauen mit HIV und AIDS. Eine empirische Studie über die Versorgungssituation HIV-infizierter Frauen in der Bundesrepublik Deutschland. In: Deutsche AIDS-Hilfe e.V. Berlin 1995, 7-104

[319] ibidem

general population. In advanced stages of infection the risk of transmission is higher but it is nearly impossible to give a reliable statement about the infectiousness for single individuals. As no models for sexual transmission of HIV exist a direct quantity of HIV infectiousness is difficult to produce. The required minimal dose for sexual transmission is unknown so that transmission could take place even if the viral load is not evident anymore [320]. Condom use, date and phase of the high risk partner's infection, probable treatment by HAART which influences the viral load by reducing the infectiousness and probable co-factors like sexually transmitted diseases (STD) which favour the transmission of HIV [321] are not taken into account by the programme. Consequently the assumed prevalence estimates are susceptible for uncertainties.

6.1.2 Exceptionals for Poland

Homosexuality and Bisexuality as well as male prostitution are still stigmatized in Poland though permitted. The available estimates regarding the size and the HIV prevalence among these PHR were rare, maybe underestimated or not existent. Numbers of partners of the PHR were not available. As sentinel surveillance among pregnant women is not carried out in Poland Polish HIV prevalences of ANC women could not be applied. All these missing estimates were adopted from Germany for calculation.

6.2 Projection Method

The projection method is thought to predict until the year 2030 which is a long period of time and consequently the results are susceptible for uncertainties. The method includes the annual growth rate of the general population and of each risk group, the saturation of the prevalence in each risk group and the year when the saturation level is reached. No consistency check concerning the annual growth rate in the sub-groups was offered by the programme. These estimates were up to the programme user. When the assumed annual growth rates differed from that of the general population generally an annual growth of 1% or –1% until 2010 was assumed for both countries for calculation based own assumptions which might not reflect the reality. Programme suggestions for saturation levels of the HIV prevalences and years of saturation were aligned with values applicable for generalized

[320] Vernazza P L et al. Sexual transmission of HIV: infectiousness and prevention. In: AIDS 1999, 13: 155-166

[321] Marcus U. Risiken und Wege der HIV-Übertragung. Auswirkungen auf Epidemiologie und Prävention der HIV- Infektion. In: Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz. Berlin: Springer-Verlag, 2000, 43: 449-458

epidemics. So these estimates again remained open to the programme user. The fact that for the calculation generally the year 2010 was used as the year of saturation is certainly a weak point but this choice was determined by the wish of comprehensibility regarding future prognosis. The same goes for the saturation level of the HIV prevalences which stem from own estimates based on expert enquiries.

As far as is concerned the the future development of the HIV epidemic circumstances like the effect of HAART, probable resistances against the drug treatment, probable future vaccination possibilities, probable changes in sexual behaviour, in prevention capacities and in political matters are not taken into account by the projection method programme.

6.2.1 The German version of stability

An independent epidemic among the general heterosexual population has not yet developed and is not expected to break out as conditions and risk factors like e.g. high prevalence in other STD than HIV or small condom use rate among prostitutes is not remarkably marked [322]. The number of potentially infectious contacts (number of sex partners, number of contacts per partner) of an infected heterosexual person during times of high infectiousness are not sufficient in Germany to exceed the critical value for an independent reproduction of the HIV epidemic. This assessment is confirmed by the results of anonymous unlinked testing (AUT) in newborns and in investigations among blood donors [323]. Actually 300-400 new infections per year are found among IDU [324]. If syringe exchange programmes will continue to be offered and the closing of so called "Fixerstuben" will not grow into a habit the HIV rate among IDU has the chance to stay stable [325]. Despite of prevention efforts among bi-homosexual men it comes to 1200-1500 new infections per year within this sub-group. New infections may increase because after the introduction of HAART in the middle of the 1990s growing risky sexual behaviour could be observed. At first a balance between new infections due to risky sexual behaviour and reduction of new infections due to the decrease of the virus load may take place [326] [327] [328] [329].

[322] Marcus U, Hamouda O. Epidemiologie der HIV-Neuinfektionen in den verschiedenen Risikogruppen. In: Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz. Berlin: Springer-Verlag, 2000, 43: 3-8

[323] ibidem

[324] ibidem

[325] Rainer Schilling, DAH, Berlin, personal communication 2004-07

[326] Bochow M. AIDS – wie leben schwule Männer heute? Kurzfassung der Ergebnisse der Befragung 1999. In: Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz. Berlin: Springer-Verlag, 2000, 43: 677-682

Starting out from the above mentioned considerations the scenario could be assumed that the annual growth rate in each sub-group is similar to the annual growth rate of the general population and new infections in the sub-groups remain stable.

6.2.2 The German version of increase

There are already indications to the increase of new infections among MSM [330].

Outside the sub-group MSM a diminution of safe sex practises has been observed according to a common press release by the Robert-Koch Institut (RKI) and the Bundeszentrale für gesundheitliche Aufklärung (BZGA) in April 2004 [331].

Since the EU opening to eastern European countries an increase of IDU and rent boys from central and eastern Europe is possible as well as migration of clients from west to east [332].

The EU expansion will lead to a reduction of political and economical borders with an increase of passenger and product services. Germany will be the center of an increasing east-west-trade because of its economical power and its geographical situation. Thus drug trade will be more easy between central Asia / eastern Europe and the rest of Europe. Also migration among IDU is observed. As a consequence the IDU sex workers are expected to orientate themselves to the west and help to spread the HIV infection into the general population [333].

In many regions of eastern Europe an extended heterosexual spread of HIV is threatening together with an dramatical increase of STI. This could be a sign for unprotected intercourse as well as a worsening of the medical supply. Thus east-European non-IDU sex

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[327] Marcus U, Hamouda O. Epidemiologie der HIV-Neuinfektionen in den verschiedenen Risikogruppen. In: Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz. Berlin: Springer-Verlag, 2000, 43: 3-8

[328] Marcus U. Zunahme von sexuellem Risikoverhalten und sexuell übertragbaren Infektionen bei homosexuellen Männern. In: Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz. Berlin: Springer-Verlag, 2002, 40-45

[329] Rainer Schilling, DAH, Berlin, personal communication 2004-07

[330] Marcus U. Zunahme von sexuellem Risikoverhalten und sexuell übertragbaren Infektionen bei homosexuellen Männern. In: Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz. Berlin: Springer-Verlag, 2002, 40-45

[331] Gemeinsame Presseerklärung des Robert Koch Instituts und der Bundeszentrale für Gesundheitliche Aufklärung. 24. 03. 2004. AIDS-Situation in Deutschland. http://www.rki.de/PRESSE/PD/PD2004/PD04_06.HTM (accessed 2004-07-17)

[332] Sergiu Grimalschi, SUB/WAY berlin e. V., personal communication 2004-07

[333] Bornemann R, Krämer A. HIV-Ausbreitung bei i.v.-Drogenkonsumenten (IDU) in Mittel- und Osteuropa: Konsequenzen für Epidemiologie und Prävention in Deutschland. In: Brockmeyer N H et al (Hrsg). HIV-Infekt: Epidemiologie, Prävention, Pathogenese, Diagnostik, Therapie, Psycho-Soziologie. Berlin Heidelberg: Springer-Verlag 2000, 141-148

workers could increasingly be HIV infected in future. These sex workers already work at German borders and in German cities [334].

Among heterosexual sub-groups 300-400 new infection per year are expected. An increase of prevalence in these risk groups can be predicted during the next years because of secondary infections in partners [335]. IDU, CSW, IDUSW and rent boys often infect themselves in private unprotected sexual contacts not in commercial contacts [336] [337]. In the 1980s the majority of HIV infected women consisted of IDU women whereas nowadays female migrants and heterosexually infected women form the majority of HIV primary diagnoses [338]. The migration of members of HPC will continue and support the spread of HIV into the general population. These migrants are thought to have acquired their HIV infection in their country of origin [339].

Due to HAART the AIDS incidence and mortality decrease and as a consequence the number of PLWHA will grow. In addition through an increasing number of HAART-HIV-infected individuals resistances against the used medicine will be developed and the effectiveness of the therapies will diminish so that a clinical progress of the HIV infection could be feared if no new effective treatment options are disposable [340].

Based on the above explained expectations the scenario could be assumed that the population size and the HIV prevalence of all sub-groups will increase and the spread of the HIV infection into the general population will grow.

[334] ibidem

[335] Marcus U, Hamouda O. Epidemiologie der HIV-Neuinfektionen in den verschiedenen Risikogruppen. In: Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz. Berlin: Springer-Verlag, 2000, 43: 3-8

[336] Rainer Schilling, DAH, Berlin, personal communicaton 2004-07

[337] Sergiu Grimalschi, SUB/WAY berlin e. V., personal communication 2004-07

[338] Marcus U, Hamouda O. Epidemiologie der HIV-Neuinfektionen in den verschiedenen Risikogruppen. In: Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz. Berlin: Springer-Verlag, 2000, 43: 3-8

[339] Robert Koch Institut. HIV Infektionen und AIDS-erkrankungen in Deutschland aktuelle epidemiologische daten (Stand vom 30.06.2003). Epidemiologisches Bulletin 2003; B/2003; 1-16. http://www.rki.de/INFEKT/EPIBULL/2003/B_03.PDF (accessed 2004-06-16)

[340] Marcus U, Hamouda O. Epidemiologie der HIV-Neuinfektionen in den verschiedenen Risikogruppen. In: Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz. Berlin: Springer-Verlag, 2000, 43: 3-8

6.2.3 The Polish version of slight movement

According to Pawel Swiecki [341] the number of IDU will drop. No increase of IDU prevalence and IDU related HIV infections are expected until 2030 but stability or even decrease. In recent years a shift from IDU to heterosexual contacts as the main source of infection has been observed. In accordance with Magdalena Rosinska [342] the IDU population may decrease what they already do if no new trendy intravenous drugs are introduced. Sexual transmission will probably dominate in the next decades. After Anna Marzec-Boguslawska [343] the population size of IDU will remain on the same level but the rate of those using different than intravenous drugs will grow. Due to harm reduction programmes the HIV prevalence among IDU will not change remarkably.

The same stability goes for the new HIV infections and for the population size of MSM and HIV prevalence within this sub-group [344]. The population of MSM will probably remain stable. HIV is believed to spread into the general population and the lower risk MSM will suffer from HIV increase but among the high risk MSM an HIV decrease is expected due to more awareness of risk and prevention strategies. Fewer new infections are registered among MSM [345]. Also in accordance with Anna Marzec-Boguslawska [346] the number of MSM will remain on the same level. According to UNAIDS [347] a substantial increase in commercial sex work contributes to an increase in STD including HIV. Magdalena Rosinska [348] is of the opinion that probably the number of CSW may increase. The media report about teenager's trends to sell sex in order to get entertained, thrilled and experience some unforgetable events. Most of CSW declare the use of condom but work while having STI or mensis [349] [350]. On the other hand the awareness of high risk behaviours and prevention is increasing so that may be the prevalence will remain on the same level [351]. The knowledge about the proper HIV status among CSW is not high. Among 10 infected CSW only one is aware of her infection. If the infection is announced a further sex work becomes impossible. Thus several CSW may wait as long as possible for HIV testing

[341] Pawel Swiecki, National Bureau for Drug Prevention, Warsaw, personal communication 2004-09
[342] Magdalena Rosinska, National Hygiene Institute, Warsaw, personal communication 2004-08
[343] Anna Marzec-Boguslawska, National AIDS Centre, Warsaw, personal communication 2004-09
[344] Pawel Swiecki, National Bureau for Drug Prevention, Warsaw, personal communication 2004-09
[345] Magdalena Rosinska, National Hygiene Institute, Warsaw, personal communiction 2004-08
[346] Anna Marzec-Boguslawska, National AIDS Center, personal communication 2004-09
[347] UNAIDS/WHO. Poland. Epidemiological Fact Sheets on HIV/AIDS and sexually transmitted infections. Updated 4 February 2004
[348] Magdalena Rosinska, National Hygiene Institute, Warsaw, personal communication 2004-08
[349] ibidem
[350] Joanna Dec, University of Zielona Gora, personal communication 2004-05
[351] Magdalena Rosinska, National Hygiene Institute, Warsaw, personal communication 2004-08

[352]. In accordance with Beata Sierocka the number of foreign sex workers is decreasing due to changing border rules [353].

Male prostitution is increasing [354] [355]. Migrant rent boys and other sub-groups from Moldavia, Belarus and Ukraine can not enter Poland as easily as before October 2003 and have to proof financial independence. As a consequence the trafficking in human beings increase. Poland has to be regarded as a transit country for migration into the west, especially Germany.

Based on these considerations the scenario could be assumed that the numbers of CSW and of rent boys increase as well as the HIV prevalences among them increase slightly, the number of IDU/migrant sex workers decreases and a slight increase in HIV prevalence in PLR is observed.

6.2.4 The Polish version of increase

According to Rosinska IDU belong furthermore to that group which is mostly affected by the HIV epidemic [356]. Jacek Moskalewicz is of the opinion that intravenous drug use becomes less fashionable but persists to exist among marginalized addicts. Generally it could be possible that the number of IDU will slightly increase as well as HIV infections among them because they belong to hard-to-reach-population concerning education and harm reduction measures [357].

In accordance with Anna Marzec-Boguslawska the number of MSM will remain on the same level but probably more of them than nowadays will not longer cover their MSM identity. Prevalence in this group will grow because they will have more sexual contacts.[358]

At present homosexual contacts are not widely socially accepted so that it might happen that some MSM try to deny their preferences by behaving themselves abstemious from sex or by hiding their sexual preferences. The fact that Poland in contrast to Germany is still a catholic and family orientated country may lead to the consequence that the numbers of

[352] Joanna Dec, University of Zielona Gora, personal communication 2004-05
[353] Beata Sierocka, umbrella project coordinator, personal communication 2004-06
[354] Magdalena Rosinska, National Hygiene Institute, Warsaw, personal communication 2004-08
[355] Sergiu Grimalschi, SUB/WAY berlin e. V., personal communication 2004-07
[356] Rosinska M, Werbinska B. AIDS i zakazenia HIV w 2002 roku. In: Przeglad prazy epidemiologii 2004, 58: 171-181
[357] Jacek Moskalewicz, Ministry of Health, Warsaw, personal communication 2004-09
[358] Anna Marzec-Boguslawska, National AIDS Centre, Warsaw, personal communication 2004-09

infection in this sub-population may be underestimated because the way of transmission might not voluntarily be stated [359] [360] [361] [362] [363] [364] [365] [366].

With the introduction of HAART no decrease of AIDS incidences was noted which could be connected with the fact that HIV infections were late recognized or treatment was not carried out. The percentage of infected individuals among whom the HIV infection was discovered nearly contemporaneously with the AIDS diagnosis is increasing. This observation leads to the conclusion that the awareness of the threat is low or access to the scientific results is not given [367] and prevention measures perhaps have to be reviewed regarding their efficacy. The knowledge about HIV/AIDS in the general population is high but decreasing. Polish schools do not offer prophylactic lessons any more and information in the media are not sufficient. Besides, people are not afraid of HIV due to free treatment possibilities [368].

Starting from these considerations the scenario could be assumed that additionally, the number of IDU increases, the HIV prevalence among them grows, the HIV prevalence among MSM increases and an increase in HIV prevalence in PLR will be noted.

[359] Magdalena Rosinska, National Hygiene Institute, Warsaw, personal communication 2004-08

[360] Joanna Dec, University of Zielona Gora, personal communication 2004-05

[361] Sergiu Grimalschi, SUB/WAY berlin e. V. personal communication 2004-07

[362] Goodwin R et al. Values and sexual behaviour in Central and Eastern Europe. In: Journal of Health Psychology 2002, London and New Delhi, 7 (1) 45-56

[363] Schmidt G et al. Beziehungsbiographien im Wandel. Von der sexuellen zur familiären Revolution. Vortrag auf der 21.Wissenschaftlichen Tagung „Geschlecht zwischen Spiel und Spannung“ der Deutschen Gesellschaft für Sexualforschung, 26.-28.September 2003, in Hamburg http://www.beziehungsbiographien.de. (accessed 2004-06-12)

[364] Schmidt G et al. Changes in student’s sexual behaviour: 1966 –1981 – 1996. A first report on a longitudinal study in West Germany. In: Scandinavian Journal of Sexology 1(3): 1998, 157-173

[365] Robinson N J. HIV infection in Poland (1985-96). In: Revue d’ Epidemiologie et de Sante´Publique 2000, 48: 17-31

[366] UNAIDS/WHO. Poland. Epidemiological Fact Sheets on HIV/AIDS and sexually transmitted infections. Updated 4 February 2004

[367] Rosinska M, Werbinska B. AIDS i zakazenia HIV w 2002 roku. In: Przeglad prazy epidemiologii 2004, 58: 171-181

[368] Joanna Dec, University of Zielona Gora, personal communication 2004-05

6. 3 Conclusion

In both countries the level of the HIV epidemic will not exceed the values necessary for a concentrated level of the epidemic. An independent epidemic among the German and Polish general heterosexual population is not expected to break out.

6.3.1 Germany

The increase in risky sexual behaviour not only among MSM but also in heterosexual groups leads to the conclusion that educational work is a matter of urgent necessity. The migration of members of HPC, as well a IDU, CSW and IDU sex workers from eastern Europe continues to contribute the HIV infection into the general population and thus demands on-going educational work and prevention measures especially aligned with the characteristics and cultural conditions of these brigde- and hard-to-reach-populations as well as border-crossing cooperation. The question is in what way and how strong HIV does have the possibility to spread among promisk sub-groups of the heterosexual general population. This influences the further development of the HIV epidemic in persons with heterosexual risk of infection.

Regarding probably increasing HIV new infection rates an improved epidemiological registration of substitute markers of risky sexual behaviour such as the rates of STD with short times of incubation could be helpful [369].

Due to the already explained objections these assumptions can be reflected only vaguely by the national point prevalence and projection method. Nonethess detailed information about the numbers, the HIV prevalences and probable risky sexual behaviour of the sub-groups were obtained.

6.3.2 Poland

As MSM are still more stigmatized than in Germany prevention programmes should comprise campaigns to sensitize the publicity. Special attention in educational work has to be focussed upon the general population. As several PHR-groups migrate between both countries already existing cooperation among cross-border institutions are demanded to continue their work in order to improve HIV surveillance and prevention programmes. Important for Poland is the attentive report of the epidemiological situation regarding HIV/AIDS infections and the maintenance of the high level of reliability of captured data.

[369] Marcus U, Hamouda O. Epidemiologie der HIV-Neuinfektionen in den verschiedenen Risikogruppen. In: Bundesgesundheitsblatt-Gesundheitsforschung-Gesundheitsschutz. Berlin: Springer-Verlag, 2000, 43: 3-8

Cause of concern are HIV reports with missing details regarding the way of transmission. Reasons for this could be doubts on the part of the infected individuals about the safeness of personal data or the infected persons do not belong to the defined risk groups. Besides, incompleteness of reports in cases of AIDS deaths were found. [370].

As already mentioned for Germany, despite several vagueness regarding the national point prevalence estimate and projection method extensive enquiries about the sub-groups at higher and lower risk could be provided.

[370] Rosinska M, Werbinska B. AIDS i zakazenia HIV w 2002 roku. In: Przeglad prazy epidemiologii 2004, 58: 171-181

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