

Canada³⁾, 90% in Australia⁴⁾, 80% in the UK¹⁶⁾ and 85% in Germany¹⁷⁾. On the other hand, HIV infection data should be interpreted more cautiously. HIV surveillance reports might not be representative of all individuals infected with HIV, because most HIV-infected individuals have no specific symptoms for a long time after HIV transmission, and not all infected individuals have been tested, hence identified. Particular care should be taken when interpreting the annual trends in reported HIV cases (Table 2 and Figure 1 (b)).

Reporting delays refer to the time between diagnosis of HIV infection or AIDS and the reporting of those events to the surveillance system. Reporting delays might vary according to exposure, geography, age, and sex, and might constitute

several years for some AIDS cases. In Japan, about 95% of Japanese HIV cases and 85% of Japanese AIDS cases were reported to the surveillance system within 1 year of diagnosis¹¹⁾. In the USA, the proportions were about 93% and 88%, respectively¹⁾, while overall in the EU about 90% of the diagnosed AIDS cases were reported within 1 year²⁾. Considering the effects of these reporting delays, recent trends in the number of reported AIDS cases should be assessed by analyzing the data according to the year of diagnosis rather than the year when reported. In this study, the analyses were performed based on the year of diagnosis, except in a few countries in which the year when reported was used. However, the effect of using the year when reported on the recent

Table 1 Annual trends in the number of people reported with AIDS by country and sex.

Country	Sex	Calendar year of diagnosis																	Total
		85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	
Japan ^e	Male	5	3	6	9	15	18	24	36	53	91	108	156	170	158	212	239	221	1,524
	Female	0	0	3	2	2	3	0	1	5	9	11	15	12	10	12	21	24	130
Total		5	3	9	11	17	21	24	37	58	100	119	171	182	168	224	260	245	1,654
USA		23,205 ^b	19,404	29,105	36,126	43,499	49,546	60,573	79,657	79,879	73,086	69,984	61,124	49,379	41,829	38,811	36,087	24,855	816,149
EU ^c		—	—	—	—	—	—	—	21,380	23,256	26,605	25,980	22,769	16,036	12,853	11,788	11,075	9,890	255,621 ^d
Canada	Male				7,273 ^f				1,604	1,634	1,595	1,451	939	597	517	376	349	184	16,519
	Female				471 ^f				120	125	149	141	137	107	95	76	45	35	1,501
Total ^g		646 ^b	628	950	1,162	1,377	1,430	1,551	1,724	1,759	1,745	1,593	1,076	705	612	453	394	221	18,026
Australia	Male					4,065 ^h				799	905	771	636	350	296	166	214	127	8,329
	Female					152 ^h				46	49	38	33	31	19	20	22	17	427
Total						4,217 ^h				845	954	809	669	381	315	186	236	144	8,756
UK	Male	391 ^b	461	659	870	1,016	1,147	1,250	1,404	1,549	1,628	1,485	1,162	852	585	548	546	417	15,970
	Female	17 ^b	13	22	38	66	97	138	173	237	225	281	268	216	190	185	234	200	2,600
Total		408 ^b	474	681	908	1,082	1,244	1,388	1,577	1,786	1,853	1,766	1,430	1,068	775	733	780	617	18,570
Germany	Male	453 ^b	525	964	1,163	1,448	1,386	1,578	1,656	1,711	1,796	1,610	1,320	807	689	576	502	339	18,523
	Female	23 ^b	46	69	104	128	157	183	230	262	256	260	250	203	145	145	101	104	2,666
Total		476 ^b	571	1,033	1,267	1,576	1,543	1,761	1,886	1,973	2,052	1,870	1,570	1,010	834	721	603	443	21,189
Italy		244 ^b	458	1,030	1,775	2,482	3,134	3,827	4,261	4,814	5,524	5,662	5,051	3,370	2,418	2,111	1,876	1,296	49,333
Spain	Male	222 ^b	403	897	1,868	2,635	3,221	3,720	4,101	4,423	5,904	5,655	5,201	3,758	2,746	2,299	1,966	1,590	50,680 ^a
	Female	24 ^b	92	192	401	522	693	839	958	1,047	1,450	1,424	1,368	982	752	595	578	390	12,322 ^a
Total		246 ^b	495	1,089	2,269	3,157	3,914	4,559	5,059	5,470	7,354	7,079	6,569	4,740	3,498	2,894	2,544	1,980	63,002 ^a
France	Male				17,174 ^f				4,305	4,418	4,601	4,202	3,185	1,774	1,488	1,360	1,218	1,009	44,734
	Female				3,136 ^f				887	1,103	1,161	1,089	824	493	430	430	456	361	10,370
Total					20,310 ^f				5,192	5,521	5,762	5,291	4,009	2,267	1,918	1,790	1,674	1,370	55,104

^a Calendar year is year of report. ^b Cumulative reported numbers until the end of 1985. ^c Reported numbers in each year was adjusted for reporting delay.

^d Cumulative total since the beginning of reporting (not adjusted for reporting delay). ^e Includes 6 persons whose sex is unknown.

^f Cumulative reported numbers until the end of 1991. ^g Cumulative reported numbers until the end of 1992.

^h Includes 86 persons (male 71, female 15) whose year of diagnosis is unknown.

Table 2 Annual trends in the number of people reported with HIV by country and sex.

Country	Sex	Calendar year of diagnosis																	Total		
		85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01			
Japan ^a	Male	0	0	34	15	35	27	52	108	102	134	147	189	234	261	379	336	475	2,528		
	Female	0	0	11	4	18	10	17	16	22	32	19	41	34	36	45	32	50	387		
Total		0	0	45	19	53	37	69	124	124	166	166	230	268	297	424	368	525	2,915		
USA ^b																	19,393	21,419	22,144	35,575	174,026 ^c
EU ^d									9,617	9,931	11,665	17,705	24,748	24,397	36,578	82,316	112,210	403,359 ^e			
Canada	Male						27,771 ^f						1,988	1,785	1,746	1,653	1,557	1,601	38,101		
	Female						3,342 ^f						541	457	499	543	494	535	6,411		
Total ^f							36,075 ^f						2,785	2,541	2,328	2,239	2,119	2,172	50,259		
Australia	Male					13,060 ^g					997	921	854	838	729	661	649	664	680	20,053	
	Female					893 ^g					81	94	76	77	86	99	76	82	97	1,661	
Total						13,953 ^g					1,078	1,015	930	915	815	760	725	746	777	21,725 ^h	
UK ⁱ	Male	7,085 ^k	2,199	1,719	1,866	2,169	2,269	2,201	2,084	2,039	2,070	2,100	2,063	2,052	2,113	2,420	2,685	39,134			
	Female	513 ^k	302	231	270	369	446	539	529	532	568	584	658	746	926	1,352	1,733	10,298			
Total ^l		7,613 ^k	2,509	1,952	2,140	2,543	2,715	2,741	2,614	2,571	2,640	2,684	2,723	2,799	3,042	3,772	4,419	49,477			
Germany ^j									2,417	2,334	2,277	1,907	2,096	1,959	1,769	1,712	1,482	17,953			

^a Calendar year is year of report.

^b Before 1991, surveillance of HIV infection was not standardized. The numbers of reported areas is 33, 34, 36, and 39 in calendar year order.

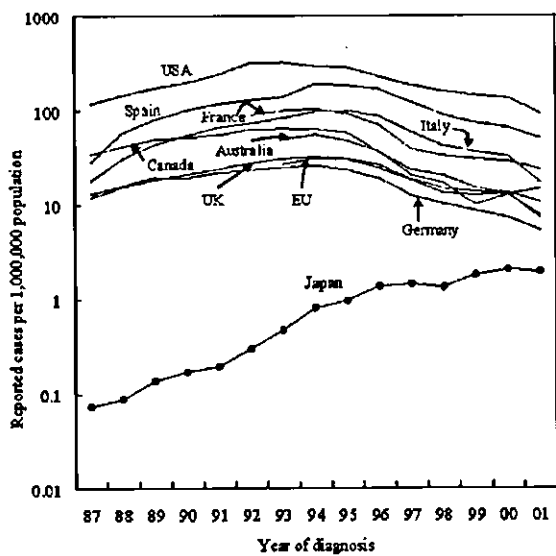
^c Cumulative total since the beginning of reporting which includes persons whose year of report is unknown.

^d Calendar year is year of report. Individual data on all cases are reported since 1997 according to a standard data file.

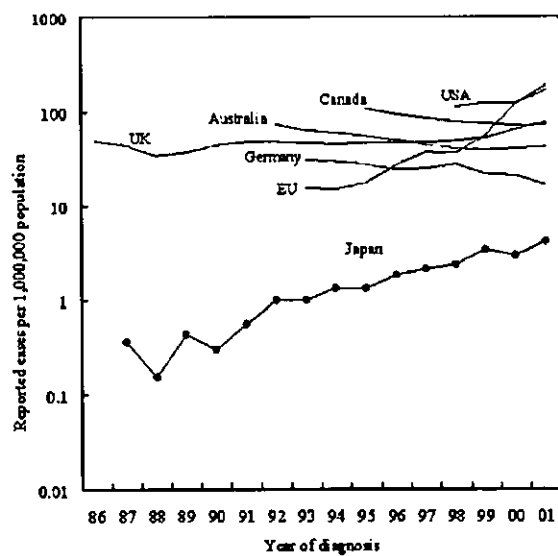
^e Includes 5,747 persons whose sex is unknown. ^f Cumulative reported number until the end of 1995. ^g Cumulative reported number until the end of 1992.

^h Includes 11 persons whose year of diagnosis is unknown. ⁱ Includes AIDS or death cases without the report of HIV infection.

^j Includes 45 persons whose sex is unknown. ^k Cumulative reported number until the end of 1986. ^l Reporting is started from 1993.



(a) AIDS cases



(b) HIV-infected cases

Figure 1 Annual trend in the reported number of people with (a) AIDS and (b) HIV per 1,000,000 individuals (the vertical axis is a common logarithm scale).

trend in the reported numbers of AIDS cases would be small.

Duplicate positive HIV test reports (repeated testing of the same HIV-positive individual) results in an overestimation of the number of positive reports. In Japan, if new AIDS cases that have already been reported as HIV-positive in the first HIV infection report visit different hospitals, the physicians are likely to mistake such AIDS cases for first report cases and will file the First Report. The removal of duplicates or linking the First and Second reports is difficult because of the anonymous nature of the HIV/AIDS reports in Japan. In contrast, all other countries^{1-4,16-20)} with HIV/AIDS surveillance systems include an identification number or code name such as the first two letters of the family name and the given name. Using such information along with the date of birth and sex data allow the detection and elimination of possible duplicate reports. This is therefore one of the defects in the HIV/AIDS

surveillance system in Japan. In the future, if certain individual information is included in the surveillance data, it will be possible to exclude duplicate reports.

Differences in the hierarchy of exposure categories between countries

In all countries, HIV-infected and AIDS cases were counted only once in a hierarchy of exposure categories for surveillance purposes. This hierarchy varied slightly between countries. In this study, exposure was divided into six categories, excluding infection through hemophilia/coagulation disorders. In some countries, however, infection through "MSM + IDU" was included in the "IDU" category and infection through hemophilia/coagulation disorders was included in the "others" category. However, it is unlikely that these differences significantly change the comparative results in Table 4.

Table 3 AIDS cases and HIV infection cases by sex or age reported through the end of 2001.

HIV/ AIDS	Country	Cumulative total	Sex (%)		Age (%)							
			Male	Female	-14	15-19	20-29	30-39	40-49	50-59	60-	Unknown
AIDS	Japan	1,654	92.1	7.9	0.7	0.1	10.1	24.7	31.4	23.6	9.4	0.0
	USA	816,149 ^a	82.2	17.8	1.1	0.5	16.4	44.4	26.5	8.1	3.0	0.0
	EU	255,621 ^b	80.7	19.3	3.8	0.7	23.6	44.3	17.5	10.1 ^c		0.1
	Canada	18,026 ^d	91.7	8.3	1.1	0.3	15.9	43.9	27.3	8.4	3.1	0.0
	Australia	8,756	95.1	4.9					— ^e			
	UK	18,570 ^f	86.0	14.0	2.7	0.5	19.5	42.6	23.4	8.4	2.9	0.0
	Germany	21,189	87.4	12.6	0.7	0.5	15.5	41.6	25.4	12.9	3.6	0.0
	Italy	49,333	77.9	22.1	1.5	0.2	25.8	50.9	14.0	5.2	2.4	0.0
	Spain	63,002 ^g	80.4	19.6	1.6	0.6	30.4	47.8	12.6	4.2	2.5	0.3
	France	55,104	81.2	18.8					—			
HIV	Japan	2,915	86.7	13.3	0.6	1.4	32.9	30.0	18.8	10.8	5.4	0.1
	USA	174,026 ^h	70.6	29.4	2.2	3.8	30.2	38.1	18.9	5.2	1.6	0.0
	EU	403,359 ⁱ	75.0	25.0	2.7	11.8	44.5	19.9	6.4	3.0 ^e		11.7
	Canada	50,259 ^j	85.6	14.4	1.4	1.3	24.6	37.8	18.3	7.4 ^e		9.2
	Australia	21,725	92.3	7.7					— ^k			
	UK	49,477 ^l	79.2	20.8	2.4	2.3	34.2	38.5	14.9	5.2	1.7	0.8
	Germany	17,953 ^m	77.4	22.6	2.1	2.4	29.5	38.0	14.5	8.0	3.1	2.4

^a Includes 1 person whose sex is unknown and 1 person whose age is unknown.

^b Includes 7 persons whose sex is unknown and 265 persons whose age is unknown. ^c Proportion of people (%) aged 50 or older.

^d Includes 6 persons whose sex is unknown and 2 persons whose age is unknown. ^e Median age is 37 for males and 33 for females.

^f Includes 3 persons whose age is unknown. ^g Includes 174 persons whose age is unknown.

^h Includes 9 persons whose sex is unknown. ⁱ Includes 44,116 persons whose sex is unknown and 47,304 persons whose age is unknown.

^j Includes 5,747 persons whose sex is unknown and 4,631 persons whose age is unknown (two regions does not collect data on sex and age before 1998).

^k Median age is 32 for males and 29 for females. ^l Includes 45 persons whose sex is unknown and 405 persons whose age is unknown.

^m Includes 592 persons whose sex is unknown and 435 persons whose age is unknown.

Table 4 AIDS cases and HIV infection cases by route of infection reported through the end of 2001.

HIV/AIDS	Country	Route of infection (%)					
		Heterosexual contact Male	Heterosexual contact Female	MSM ^a /Bisexual contact	IDU ^b	Others	Risk not reported
AIDS	Japan	42.4	5.0	28.6	0.3	2.8	20.9
	USA	4.0	7.1	45.5	24.9	8.5	10.0
	EU ^{c,d}	10.0	7.7	31.4	38.3	6.5	6.1
	Canada	8.0	5.1	69.6	6.6	7.1	3.6
	Australia	4.0	2.5	80.3	3.2	6.5	3.5
	UK	11.3	11.0	65.0	6.3	5.2	1.2
	Germany ^{d,e}	4.1	4.7	63.2	15.5	4.7	7.8
	Italy	9.6	8.2	15.7	59.6	4.1	2.8
	Spain ^e	8.7	5.6	13.8	65.5	2.0	4.4
	France ^d	12.3	9.7	42.8	22.5	6.8	5.9
	HIV	Japan	30.3	10.9	45.2	0.3	2.7
USA		4.9	11.0	30.1	13.6	6.3	34.1
EU ^d		5.8	6.5	11.2	39.5	2.6	34.4
Canada ^{c,f}		2.7	2.3	31.4	8.2	4.9	50.5
Australia			8.9 ^g	65.0	3.8	4.8	17.5
UK		12.8	17.3	54.7	7.8	3.8	3.6
Germany ^{c,e}		12.5	12.9	35.0	10.5	2.4	26.7

^a Men who have sex with men. ^b Injecting drug use.

^c Excludes heterosexual contact cases whose sex is unknown.

^d Infection through hemophilia/coagulation disorder is included in the "Others" category.

^e Infection through MSM + IDU is included in the "IDU" category.

^f One province does not collect data on the route of infection.

^g No classification between males and females.

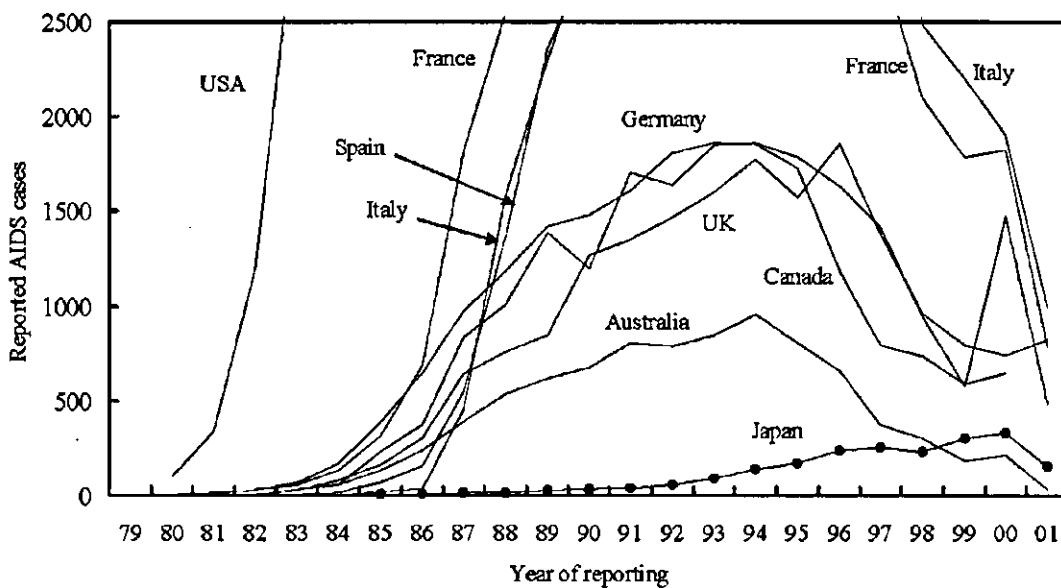
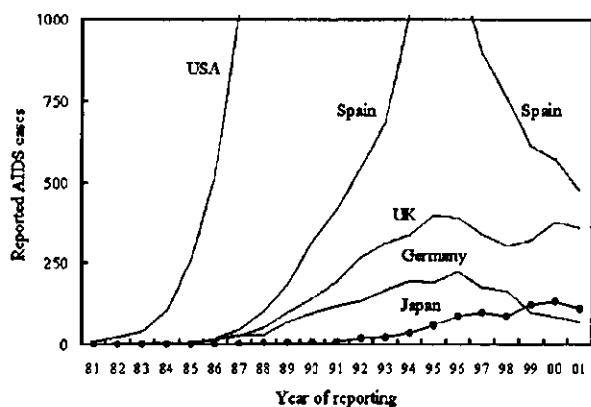
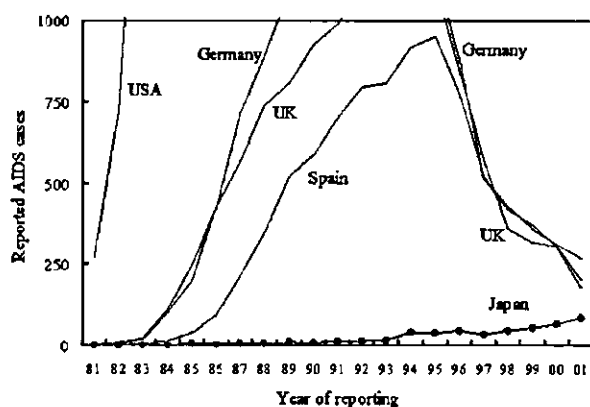


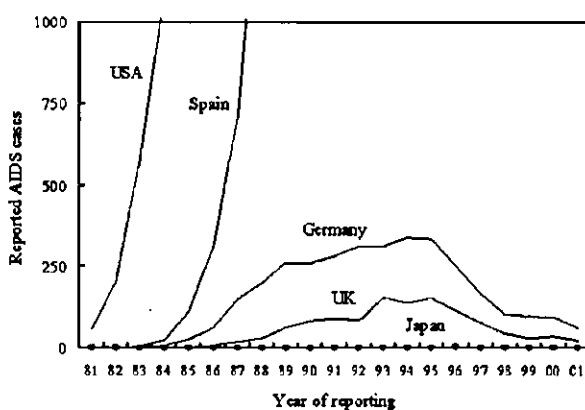
Figure 2 Increasing trends at the onset of the AIDS epidemic in each country.



(a) Heterosexual contact

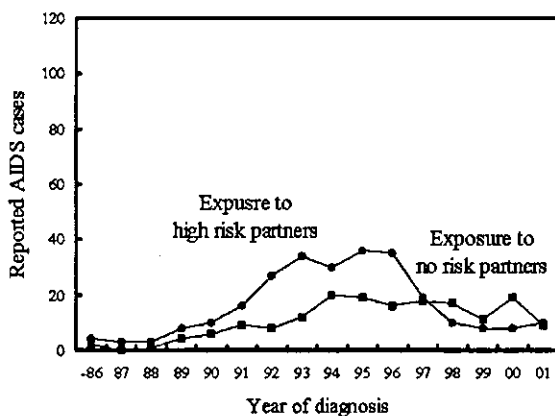


(b) MSM (men who have sex with men) / Bisexual contact

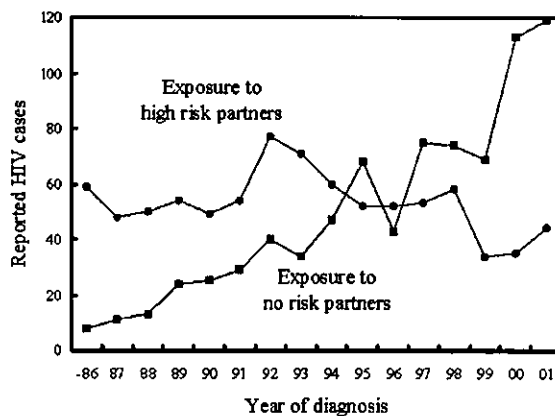


(c) IDU (injecting drug use)

Figure 3 Increasing trends at the onset of the AIDS epidemic according to the route of infection.



(a) AIDS cases



(b) HIV-infected cases

Figure 4 Annual trends in the number of women infected through heterosexual contact in the UK¹⁶⁾ according to the risk of partners.

The proportion of AIDS cases whose risk was not reported was extremely high in Japan. This is due to the fact that, in Japan, the physician in charge investigates the route of infection only at the time of diagnosis, and further inquiries are not conducted. For HIV-infected cases, the proportions were also substantially high in other countries. However, it should be noted that, in all countries, except Japan, this exposure category included cases that were currently being followed up by local health department officials. Individuals whose routes of infection are identified in the follow-up will be reclassified into the appropriate exposure categories.

Increasing trends at the onset of the epidemic

The increasing trend in Japan at the onset of the epidemic was extremely slow compared to other industrialized countries. This was due to the fact that, in Japan, there were few cases infected through MSM and/or IDU. The increasing trend in the number of cases infected through heterosexual contact was also relatively slow in Japan. The reason for this seems to be that in Japan those who tested positive were older as shown in Table 3. It is assumed that the sexual activity of such individuals is lower than that of individuals in their 20's and 30's. Information regarding heterosexual contact according to the exposure risk of partners was obtained from the UK surveillance⁶⁾. Figure 4¹⁶⁾ shows the trends for the number of women infected through heterosexual contact. At the onset of the epidemic, there were more cases with partners at high risk such as IDU and MSM, and the cases whose partners were not at high risk began to increase thereafter. This result suggests that, in Japan, it might be necessary to examine trends in the number of reported cases through heterosexual contact according to the risk of partners. Such analysis will be possible if such information is added to the current surveillance report forms in the future.

Acknowledgements

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Original Article

Numbers of People with HIV/AIDS Reported and Not Reported to Surveillance in Japan

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BACKGROUND: Trends in the numbers of Japanese patients with human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) reported to the HIV/AIDS surveillance system in Japan were examined. We attempted to estimate the cumulative number of Japanese with HIV, including people with HIV not reported to the surveillance.

METHODS: Data from the HIV/AIDS surveillance in Japan up to the end of 2002 were available. The number of unreported HIV cases was estimated using the back-calculation method. To evaluate this method, the number of reported HIV cases up to 1996 (before highly active antiretroviral treatments were widely available in Japan) was compared with the number estimated by the same method.

RESULTS: The number of AIDS cases who were initially reported as having AIDS without having been reported as HIV-infected markedly increased as did the number of reported HIV cases. The number of AIDS cases who had been initially reported as HIV-infected and who were then reported as AIDS progression increased up to 1996 but decreased in the period of 1997-2002. The cumulative number of people with HIV at the end of 2002 was estimated as 14,000, which was 4.2 times higher than the number of reported HIV cases. The cumulative number of HIV cases reported up to 1996 was nearly equal to the number estimated by the above-mentioned method.

CONCLUSIONS: HIV infection would appear to be spreading widely among Japanese population. The number of HIV cases actually reported to surveillance might still be low.

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Key words: HIV, Acquired Immunodeficiency Syndrome, surveillance, trend, estimation.

HIV/AIDS surveillance, which reveals trends in the numbers of patients with human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) for planning and evaluating countermeasures against HIV/AIDS, has been conducted in many developed countries including Japan.¹⁻³ However, such trends based on surveillance data must be carefully interpreted.

The number of HIV cases reported to surveillance reliably rep-

resents the number of people diagnosed with HIV if the proportion of people diagnosed with HIV who reported to surveillance is sufficiently high. In recent years, people diagnosed with HIV can prevent or delay the progression to AIDS by undergoing highly active antiretroviral treatments, including combination regimens such as two nucleoside reverse transcriptase inhibitors plus one protease inhibitor.^{4,6} The trend in the number of AIDS cases who

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had been initially reported to surveillance as HIV-infected and were subsequently reported as having progressed to AIDS (secondarily reported AIDS cases) would reflect the effects of highly active antiretroviral treatments. Furthermore, the trend in the number of AIDS cases who were initially reported as having AIDS without having been previously reported as HIV-infected (initially reported AIDS cases) might reflect the number of people with undiagnosed HIV, which is important for monitoring through surveillance.⁷

In Japan, the proportion of those reported to surveillance among people diagnosed with HIV and AIDS was indicated to be sufficiently high.⁸ Highly active antiretroviral treatments have been widely used in cases diagnosed with HIV and/or AIDS since 1997.⁹ However, the trend in the number of non-Japanese with HIV and AIDS has been affected by arrivals to and departures from Japan.¹⁰

In this study, trends in the numbers of Japanese HIV and AIDS cases reported to surveillance in Japan up to the end of 2002 were examined. Using the surveillance data, we attempted to estimate the cumulative number of Japanese with HIV including those with HIV not reported to surveillance.

METHODS

HIV/AIDS surveillance in Japan

HIV/AIDS surveillance in Japan, organized by the Ministry of Health, Labour and Welfare of the Japanese government, was started in 1984.^{3,11} Both HIV infection and AIDS are notifiable conditions and are reported by the diagnosing physician (cases infected through blood products are not included). In the surveillance, two types of reporting forms are used; Form 1 is for the initial identification of HIV seropositivity or AIDS, and Form 2 is for cases identified as having progressed from being HIV positive to developing AIDS or from having AIDS to death. Form 1 includes sex, age, nationality, HIV/AIDS status, date of diagnosis and route of infection, while Form 2 includes all of those except for the route of infection.

Trends in the numbers of HIV and AIDS cases reported to surveillance

The annual trends in the numbers of Japanese HIV cases reported to surveillance and AIDS cases initially reported up to the end of 2002 were examined using the data of Form 1. In addition, the annual trends in the numbers of secondarily reported AIDS cases were observed using the data of Form 2.

The numbers of secondarily reported AIDS cases up to 1996 and in 1997-2002 (when highly active antiretroviral treatments were widely available in Japan) were compared with their numbers expected under the condition that HIV cases received no active antiretroviral treatments. We assumed that under this condition, each reported HIV case had the expected cumulative probability of AIDS progression over a 20-year period previously reported: 0.00, 0.005, 0.03, 0.09, 0.15, 0.22, 0.29, 0.36, 0.43,

0.50, 0.54, 0.58, 0.62, 0.66, 0.70, 0.74, 0.78, 0.82, 0.86 and 0.90 at 1-20 years after HIV infection, respectively.¹² Under the assumption, the expected number of AIDS cases progressed from reported HIV cases was calculated as the total of the expected cumulative probability of AIDS progression for such cases corresponding to the elapsed years after their report of HIV infection.

Cumulative number of people with HIV estimated from surveillance data

The cumulative number of Japanese with HIV at the end of 2002 was estimated as the number of HIV cases reported to surveillance plus the estimated number not reported. The number of reported HIV cases was obtained from the surveillance data. The number of unreported HIV cases was estimated using the back-calculation method¹³ and the surveillance data as follows.

We assumed that unreported HIV cases received no active antiretroviral treatments, and that each unreported HIV case had the expected cumulative probability of AIDS progression over a 20-year period above-mentioned. We also assumed that the distribution of years after HIV infection among unreported HIV cases was equal to that among reported HIV cases. Under these assumptions, the mean expected cumulative probability of AIDS progression for unreported HIV cases was calculated as the mean of the expected cumulative probabilities of AIDS progression corresponding to the elapsed years after the report of HIV infection among reported HIV cases. The number of unreported HIV cases was estimated as the number of initially reported AIDS cases divided by this mean expected cumulative probability of AIDS progression.

To evaluate the method for estimating the number of unreported HIV cases, the cumulative number of HIV cases reported up to 1996 (before highly active antiretroviral treatments were widely available in Japan) was compared with the number estimated by the same method.

RESULTS

Trends in the numbers of HIV and AIDS cases reported to surveillance

Figure 1 shows the annual trends in the numbers of Japanese HIV and AIDS cases reported. The number of initially reported AIDS cases markedly increased as well as the number of reported HIV cases. The number of secondarily reported AIDS cases increased up to 1996 and decreased thereafter (1997-2002).

Figure 2 shows the numbers of secondarily reported AIDS cases up to 1996 and in 1997-2002, and the numbers expected under the condition that HIV cases received no active antiretroviral treatments. The reported number was nearly equal to its expected number up to 1996, but was markedly lower than its expected number in 1997-2002 (i.e., the reported number of 72 vs. the expected number of 465).

Cumulative number of people with HIV estimated from surveillance data

Table 1 shows the estimated cumulative numbers of Japanese with HIV and/or AIDS at the end of 2002. The mean of years after the report of HIV infection among reported HIV cases at the end of 2002 was 4.6 years. Under the assumptions that unreported HIV cases received no active antiretroviral treatments, and that the distribution of years after HIV infection among such cases was equal to that among reported HIV cases, the mean expected cumulative probability of AIDS progression among unreported HIV cases was calculated as 0.163. The number of unreported HIV cases was estimated as 11,000 (=the number of initially reported AIDS cases / the mean expected cumulative probability of AIDS progression among unreported HIV cases = 1,771/0.163). The cumulative number of people with HIV was estimated as 14,000 (=the number of reported HIV cases plus the estimated number of unreported HIV cases = 3,436 + 11,000), which was 4.2 times higher than the number of reported HIV cases.

The cumulative number of HIV cases reported up to 1996 was 1,033, which was nearly equal to the 1,090 estimated by the above-mentioned method.

DISCUSSION

The increase in the number of reported HIV cases indicated that the number of people diagnosed with HIV was increasing. The rise in the number of initially reported AIDS cases indicated that people with undiagnosed HIV were increasing. Thus HIV infection would appear to be spreading widely among the Japanese population. However, the increase up to 1996 together with the decrease in 1997-2002 in the number of secondarily reported AIDS cases suggested that progression to AIDS among many people diagnosed with HIV has been prevented or delayed due to the wide use of highly active antiretroviral treatments since 1997 in Japan.⁹ The number of persons with AIDS progression prevented in 1997-2002 might be evaluated by the number of secondarily reported AIDS cases in 1997-2002 compared with its number

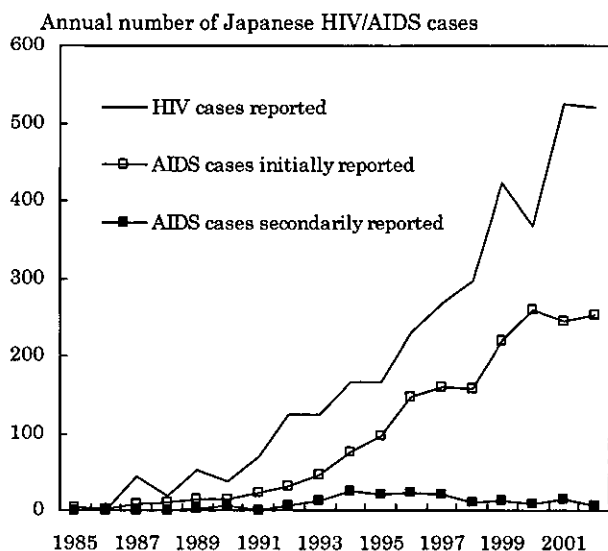


Figure 1. Annual trends in the numbers of Japanese HIV and AIDS cases reported to surveillance.

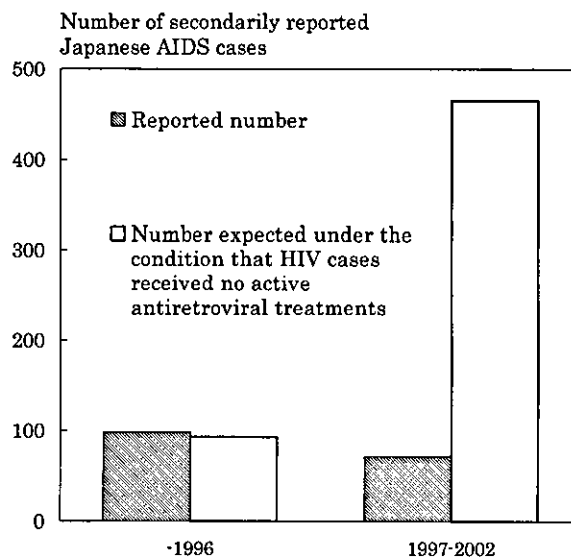


Figure 2. The number of Japanese AIDS cases secondarily reported to surveillance and its expected number.

Table 1. The estimated cumulative number of Japanese with HIV at the end of 2002.

	Progression to AIDS	Without progression to AIDS	Total
Reported as HIV- infected	171*	3,265*	3,436*
Unreported as HIV-infected	1,771*	9,000†	11,000†
Total	1,942*	12,000†	14,000†

* : the reported number

† : the estimated number

expected under the condition that reported HIV cases received no active antiretroviral treatments (the reported number of 72 vs. the expected number of 465). Further research is required.

The cumulative number of people with HIV was estimated as 14,000, which was 4.2 times higher than the number of reported HIV cases. These findings suggested that many people had HIV in Japan, that a large proportion of those not diagnosed had no opportunity to prevent or delay their progression to AIDS by undergoing highly active antiretroviral treatments, and that aggressive countermeasures must be taken to prevent HIV infection and provide opportunities to detect such potential HIV infection in Japan.

This study has several problems and limitations. The most critical problem involves the accuracy of the data from the HIV/AIDS surveillance system in Japan. Our results were affected by the breadth of the coverage and the possible duplication in reporting diagnosed HIV and AIDS cases.^{3,14} However, the proportion of people diagnosed with HIV and AIDS who reported to surveillance was seen to be sufficiently high.⁸ Although the secondarily reporting of AIDS cases was put on a voluntary basis after the Infectious Disease Control Law was enacted in April 1999 in Japan, no great decline in its coverage was suggested.¹⁵

In estimating the number of unreported HIV cases, we used the back-calculation method which has been widely employed for predicting the number of HIV and AIDS cases.¹³ In this method, the data on reported HIV cases and initially reported AIDS cases was used, whereas the data of secondarily reported AIDS cases was not. For applying other methods such as a system analysis, further data would be necessary.^{10,16}

The essential assumptions were that unreported HIV cases received no active antiretroviral treatments, and that the distribution of years after HIV infection for unreported HIV cases was equal to that for reported HIV cases. Using these assumptions, the mean expected cumulative probability of AIDS progression for unreported HIV cases was calculated. The former assumption would be reasonable because the proportion of people diagnosed with HIV reported to surveillance was found to be sufficiently high. Had the coverage of undiagnosed HIV cases reported to HIV/AIDS surveillance in Japan risen rapidly in recent years, the latter assumption would not be valid. There were no reports enabling us to reliably determine whether this assumption was valid or not in Japan.

Another assumption was that data on the expected cumulative probability of AIDS progression in the absence of active antiretroviral treatments previously reported were available.¹² It would be safe to assume that HIV cases reported up to 1996 (before highly active antiretroviral treatments were widely available in Japan) would not have received active antiretroviral treatments, as was also true of unreported cases. The cumulative number of HIV cases reported up to 1996 was nearly equal to the number estimated by the same method under this assumption, suggesting that this assumption would be equally valid for HIV cases reported up to 1996 as well as for unreported cases.

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エイズ対策研究事業

ゲイ・バイセクシュアル男性の HIV 感染予防行動と 心理・社会的要因に関する研究

研 究 報 告 書

Sexuality, Psychological, and Identity Related Issues Targeted Study 代表

京都大学大学院医学研究科

日高 庸晴

SPINTS@Wave 2

Sexuality, Psychological, and Identity Related Issues Targeted Study

はじめに

ゲイ・バイセクシュアル男性および MSM(Men who have Sex with Men)を対象としたメンタルヘルスに関する調査研究は、わが国ではこれまであまり行われてきませんでした。1999年7月～9月に初めて実施された『ゲイ・バイセクシュアル男性のメンタルヘルスに関するアンケート（研究参加者数 1,025人）』（<http://www.joinac.com/tsukuba-survey>）では、ゲイ・バイセクシュアル男性は他集団対象の先行研究の結果と比較してみると、精神的健康が全般的に悪化していることが示唆されました。また、生育歴におけるライフイベントの実態としては自殺を考えたこと、自殺未遂、いじめ被害などの経験割合の高さなども示されました。その後、2001年夏に私たちは『自由記述式によるインターネット調査 Sexuality, Psychological, and Identity Related Issues Targeted Study(SPIRITS) @Wave 1（研究参加者数 388人）』を実施し、コンドーム使用や不使用に関わる様々な状況や感情、メンタルヘルスに関わる事柄について、ゲイ・バイセクシュアル男性から生の声を寄せていただきました。本研究『Sexuality, Psychological, and Identity Related Issues Targeted Study(SPIRITS) @ Wave 2』では、SPIRITS@Wave 1で研究参加者から寄せられた生の声や専門家の意見、これまでに海外で実施されてきた研究結果などを参考にして質問票を作成しました。

私たちはインターネットを介したこの研究プロジェクトの名前を SPIRITS と名付けました。ゲイ・バイセクシュアル男性のセクシュアリティや心理的なこと、アイデンティティに関わることについて取り組んでいく研究であることを文字通り表しています。また、それに加えて私たち専門家がゲイ・バイセクシュアル男性の HIV 感染やメンタルヘルスといった健康問題の改善に寄与していきたい気持ちを込めた言葉でもあります。さらにこの SPIRITS には、HIV 予防に対して、当事者と専門家による真剣な取り組みの実現を願う思いも込められています。そして Wave 1, Wave 2 といった表記は第一次調査、第二次調査という意味合いもありますが、インターネット空間に HIV 予防の波を引き起こしていこうという決意の表明でもあります。

わが国において男性同性間における HIV の感染が拡大の一途にある現在、ゲイ・バイセクシュアル男性を対象とした有効な HIV 予防対策を推進するために、本研究の結果を多くの領域の専門家の方々に知っていただきたいという思いから本報告書を作成しました。HIV 対策やメンタルヘルス対策に重要な関わりがある、学校現場の教諭や養護教諭などの教育関係者、医師、看護師、保健師などの保健・医療の従事者、心理カウンセリングを担う臨床心理士などの心理臨床家、医療ソーシャルワーカーなどの福祉職、そして HIV 対策やメンタルヘルス対策に従事する行政担当者など、関連する領域の専門家の方々に本研究結果を還元することを通じて、各専門領域の専門性を十分に活かした形で、効果的な HIV 対策やメンタルヘルス対策が実施されていくことを願っております。

2004年12月25日

研究実施者を代表して

京都大学大学院医学研究科
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研究組織

本研究は平成 14 年度厚生労働省エイズ対策研究事業「HIV 感染症の動向と予防介入に関する社会疫学的研究」（主任研究者・木原正博）および平成 15 年度厚生労働省エイズ対策研究事業「男性同性間の HIV 感染予防対策とその推進に関する研究」（主任研究者・市川誠一）の研究として実施されました。また、本研究は IRB (Independent Review Board) として京都大学医学部「医の倫理委員会」による研究計画の審査および同委員会の指針に基づき、実施しました。

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本報告書の内容を無断で転載・転用・引用することを禁止します。

この報告書にまとめられている内容は、ゲイ・バイセクシュアル男性のメンタルヘルスや HIV 予防対策に役立っているという、本研究の目的と趣旨に賛同した研究参加者の率直な回答から得られた、貴重なデータに基づいています。そのため、この趣旨以外の目的でこれらのデータが利用されることは、研究参加者にとっても、私たち研究実施者にとっても大変不本意なことです。

本報告書の内容を無断で転載・転用・引用することはお控え下さい。この報告書がゲイ・バイセクシュアル男性への理解の促進と、差別や偏見の解消に少しでも寄与するとともに、今後の HIV 感染予防対策のために活用されることを、研究実施者一同、心から祈っています。

引用等にあたっては下記までお問い合わせください。

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第1章

量的データ

1. 研究の目的と方法

目的

2000年頃より米国においてはインターネットを通じてセックス・パートナーを探すMSM(Men who have Sex with Men)の特性の把握や、インターネットを通じた予防介入の試みがなされていますが、本邦においてそういった取り組みは十分に実施されているとは言い難い状況にあります。加えて、ゲイ・バイセクシュアル男性およびMSMのHIV感染予防行動に関連する心理・社会的要因および生育歴の実態を把握する調査研究の実施もほとんどされてきていません。これまでに本邦で実施されてきた行動疫学調査によると、MSMのインターネット利用率は比較的高率であると推察されることや、インターネットや携帯電話の出会い系サイトを通じた出会いやセックスの機会も増加傾向にあると考えられることなどから、インターネット調査を横断的に実施しました。

よって本研究の目的は、インターネットを通じた情報提供や予防介入プログラム構築に資するために、MSMのインターネット利用層のHIV感染予防行動の実態やそれに関連する心理・社会的要因やその背景を明らかにすることです。

方法

1. 無記名自記式質問票調査をインターネットで実施

これまでに男性とセックスの経験のある男性を対象として、Web上に開設した本研究専用ホームページを介して、無記名自記式質問票調査を実施しました（実施期間：2003年2月28日～5月16日）。

質問項目の構築にあたっては、1)2001年8月～9月に実施した本研究の第一次調査であるオンライン質的研究 Sexuality, Psychological, and Identity Related Issues Targeted Study (SPIRITS) Wave 1によって抽出された、セックスやコンドーム使用および不使用行動に意識的・無意識的に作用していると考えられる心理的な問題の諸側面や、2)本邦においてHIV陽性者やMSMの心理カウンセリングの臨床経験がある心理臨床家による臨床経験に基づいた示唆、3)米国における先行研究の結果を参考に検討しました。

2. 質問項目

本研究で用いた主な質問項目は、基本属性、インターネット利用環境、HIV/STI一般知識、過去6ヶ月間のセックスやコンドーム使用状況、性感染症の既往歴、セックスに投影される心理的なこと等に加えて、STAI特性不安尺度(Spielberger、水口・下仲・中里訳)、異性愛者的役割葛藤尺度(日高)、自尊心尺度(Rosenberg、山本・松井・山成訳)、改訂版UCLA孤独感尺度(Russel, Peplau & Cutrona、工藤・西川訳)、SDS抑うつ尺度(Zung、福田・小林訳)等の心理尺度などによって構成しました。以下、本調査で用いた心理尺度の概要を説明します。

STAI特性不安尺度(得点範囲：20～80点)：不安とは発汗、めまい、不眠などの生理的現象を伴った、漠然としたおそれのことをいいますが、不安は一般に恐怖とは異なり、不特定の不明瞭な、目標のない危険に対する反応だと考えられています。不安は自律神経等の興奮が伴う一時的、状況的な不安と、ストレス状況に対して状

態不安を喚起させやすい傾向で比較的安定した個人内特性による不安があります。特性不安はストレス状況下において前者を生み出す個人差特性すなわち、個人の不安傾向であると言えます。この尺度は Spielberger C.D.によって開発され標準化された STAI を水口、中里らが翻訳し、信頼性および妥当性を検討した上で標準化し、商品化された尺度です。高不安と判断される基準値（カットオフポイント）は 44 点とされています。

異性愛者的役割葛藤尺度（得点範囲：15～60点）：日高によって開発された、異性愛者を装うことでストレスを感じる状況場面を設定し、その時々を感じる役割葛藤の頻度を測定する尺度です。「彼氏のことを彼女に置き換えて話しているとき」「彼女いないの?と聞かれ、適当に話をあわせているとき」「『結婚話』をすすめられたとき」など 15 項目によって構成されています。尺度得点が高いほど異性愛者的役割演技をすることによってその役割演技に対する葛藤が高いことを表しています。

自尊心尺度（得点範囲：10～50点）：Rosenberg によって開発され、山本らによって翻訳され、信頼性および妥当性を検討された自尊心尺度です。自分をどれだけ大切に思っているか、自分をどれだけ評価しているかというセルフ・エスティームを測定するものです。セルフ・エスティームの訳としては、「自尊心」「自尊感情」「自己評価」などいくつかあります。

改訂版 UCLA 孤独感尺度（得点範囲：20～80点）：Russel, Peplau & Cutrona によって開発された孤独感尺度を工藤・西川が翻訳し、信頼性および妥当性を検討された尺度です。孤独感とは人間関係の中でわれわれがこうありたいという願望があるとき、その願望が十分に満たされなかったり逆に倫理的な満足感を低下させるような結果が生じたときに感ずる感情の 1 つであると定義しています。UCLA 孤独感尺度は孤独感が社会的関係の不全由来するという状況的立場から開発されています。

SDS 抑うつ尺度（得点範囲：20～80点）：Zung WWK によって開発され標準化された尺度を福田・小林が翻訳し、信頼性および妥当性を検討した上で商品化された尺度です。この尺度は自己評価により抑うつ状態を測定する尺度であり、スクリーニングテストとして活用されることが多く、本邦のみならず世界中で使われています。日本人の平均点は一般の健常者においては男性で 35 点、神経症患者においては男性で 46 点、うつ病患者においては男性で 59 点であると言われています。

3. サンプリング

本研究のホームページを潜在的な研究参加者に広く知らせる方法として、50 件を超えるゲイサイトにバナー広告を掲示し、バナーリンクによって研究参加を呼びかけました。バナー広告掲示にあたっては、各サイトの管理者の協力と一部の有償広告の併用によって行われ、またこうしたリンク協力の依頼を E-mail を通じても行いました。この E-mail がスノーボール式に転送されることによって、口コミによる研究実施の告知にもなったものと考えられます。さらに、ゲイ雑誌やゲイ対象のメールマガジンにおいても本研究の実施について記事が掲載されたことによって、研究参加者の増加につながりました。

本邦においては可視化されづらい集団のひとつである MSM を対象とした調査手法にインターネットを活用することの最大の利点は、研究参加者のプライバシー等の秘匿性を最大限に確保した状況で、当事者の研究参加が実現できる点であると考えられます。インターネットを介した質問票回答は、個別訪問調査やロケーション・サンプリングとは異なり、研究参加者の都合に合わせて、時間や場所を選ぶことなくアンケートに回答という形で研究参加が可能

になるという利便性もあります。加えて、インターネットを通じた回答は、従来からの「面接調査」や「紙とペンによる質問紙調査」に比較してもその回答は信憑性が高いとも言われています。その信憑性の高さは、研究参加者がひとりである空間で自由意思に基づいてひとりで回答できる可能性が高いことなどが要因であると考えられます。そのため研究参加者のプライバシーを確保するためには、インターネット上のセキュリティやシステムにも十二分の配慮が必要であると考えられました。また、本研究の対象とする集団は社会的マイノリティであることや、質問票の内容は精神的健康や性行動など非常にセンシティブな内容であるため、内容的側面からも高いセキュリティの確保が必要であったため、インターネット・サーバのセキュリティ保守には以下のような対策を講じました。

4. インターネット・セキュリティ

ホームページ制作に当たって使用したプログラムは、コードを隠蔽することが可能な JAVA 言語によって構築しました。JAVA は perl 言語、php 言語、asp 言語に比較するとセキュリティは高くなると考えられ、また、本研究サイト全てをセキュリティ機能の付加された http プロトコルである SSL(Secure Socket Layer)によって保護しました。SSL はインターネット上でのショッピング時などのクレジットカード情報や、個人情報の保護などを目的に、インターネット上で最も使用されているセキュリティ手法の一つです。この SSL によって、Web 上で研究に参加した研究参加者からの回答データと Web サーバ間の通信内容を暗号化し、SSL によるデータの暗号化を、回答データ送信時の情報漏洩防止策としました。

5. サーバ管理

本研究に用いたサーバは RAID 機能を有しており、1 台のディスク装置が万が一の不測の事態により機能を停止した場合でも、代替ディスクによりシステムは正常に稼働するようシステムを設計しました。このサーバは他のユーザーとの共有はなく本研究専用として運用しました。また、本サーバはステルス型の Firewall ならびにアプリケーション・ゲートウェイによってインターネットセグメントから分離されており、不正アクセスからサーバを防御しました。

サーバ管理に関しては専門の業者に運用管理を委託し、サーバはその業者社屋に設置しました。調査実施中に、社外からのインターネットを経由した運用管理の処理をすることは一切なく、全て内部に設置した local ネットワークで処理を行いました。監視・制御も同様に外部からのモニタリングは一切なく、すべて業者社屋内で行いました。データ運用にあたってはアカウント制限を設けており、本研究サーバには担当管理者のみがアクセス可能としました。なお、サーバ室は管理運用場所と別フロアになっており、物理的な侵入も不可能にしたことで、サーバ管理上の物理的なセキュリティも高めることができました。耐障害性の面では、電源の二重化・ノイズカットトランス・電源の無停電化・光ファイバーを用いたアイソレーションの確保などにより、システム面だけでなくフィジカルな対応も行いました。また、サーバ・システムの生死(ネットワーク疎通)にかかわる障害は監視システムで自動検出するようにしました。

ポートに関しては、必要以外のアプリケーションポートを閉じることは前提であると考え、リモート操作を可能とするデーモン(telnet、rsh、ftp)は全て閉じた上で運用しました。Web の http リクエストおよび smtp ポートはインターネット運用上閉じるわけにはいかず、smtp のアクセス制御の設定を local からのリクエストのみ配送とし、外部から故意に利用されるのを防止しました。また、アクセスログの管理は担当管理者により厳重に行い、日に数回の定時監視システムによりサーバの運用を管理・保守しました。