Past it? HIV and older people in England, Wales and Northern Ireland

SARAH DOUGAN*, LARA J. C. PAYNE, ALISON E. BROWN,
BARRY G. EVANS AND O. NOEL GILL

Health Protection Agency, Communicable Disease Surveillance Centre, London, UK

SUMMARY

The majority of those infected and affected by HIV are younger adults. The ability of highly active antiretroviral therapies (HAART) to extend survival means that those infected when younger may reach older age, and future increases in numbers of older individuals living with HIV in England, Wales and Northern Ireland (E,W&NI) are expected. Evidence that older individuals engage in risky sexual behaviours suggests potential for HIV transmission. Data from national HIV/AIDS surveillance systems were reviewed (1997–2001). An older individual is defined as aged 45 years or over. Between 1997 and 2001, 2290 older individuals were diagnosed with HIV; 361 in 1997, rising to 648 in 2001. Heterosexual acquisition accounted for 1073 (47%) infections; 662 were male. Where reported, 666 (65%) older heterosexuals were probably infected in Africa, 144 (14%) in the United Kingdom and 113 (11%) in Asia. There were 1020 (45%) new diagnoses acquired homosexually; white (92%), infected in the United Kingdom (78%). Numbers of older individuals accessing HIV-related services more than doubled between 1997 (2488) and 2001 (5175). In 2001, 2270 (53%) were London residents. Between 1997 and 2001, among HIV-infected older individuals attending genitourinary medicine (GUM) clinics, the proportions previously undiagnosed were 60% and 82% in heterosexual males and females respectively, and for men who have sex with men (MSM), 42%. Numbers of older individuals newly diagnosed with HIV have increased in recent years. The increase in numbers of older individuals accessing HIV-related services were in excess of younger adults. A significant proportion of older HIV-infected female heterosexuals and MSM were undiagnosed. Awareness must be raised among clinicians, and an 'aged response' to HIV is required.

INTRODUCTION

Background

While the vast majority of those infected with HIV are aged between 15 and 45 years [1], there is concern that older populations are increasingly at risk [2]. Indeed, as a high incidence of erectile dysfunction leads to widespread use of viagra [3, 4], divorce rates rise [5] and the more 'sexually liberated' generations grow old [6], an increase in HIV transmission among older people in England, Wales and Northern Ireland (E,W&NI) may be expected. Of greater certainty is the future increase in numbers of older individuals living with HIV. As HIV becomes a manageable chronic disease, through the use of highly active antiretroviral therapy (HAART), survival is lengthened, and even those infected years previously may reach older age. A large future increase in numbers of older individuals accessing HIV-related services in E,W&NI is likely.

* Author for correspondence: Dr S. Dougan, Health Protection Agency, Communicable Disease Surveillance Centre, 61 Colindale Avenue, London, NW9 5EQ, UK.
(Email: sarah.dougan@hpa.org.uk)

UNAIDS reports that in Western Europe, nearly 10% of new infections declared between January 1997 and mid-June 2000 were among individuals aged >50 years, and in the United States, 10% of all reported AIDS cases occur among those aged >50 years [2]. Infections may be recent, but for the most part are likely to have been acquired several years previously. For these people, older age is a risk factor for a decreased chance of immune recovery with HAART [7], since decreased thymic activity reduces the rate of CD4 cell replenishment – the most important mediator in the clinical response [8].

Historically, older individuals have been perceived as a low-risk group for HIV transmission, with relatively limited sexual activity and other risky behaviours. In E,W&NI, those aged over 44 years have been excluded from the national behavioural surveys such as the *National Survey of Sexual Attitudes and Lifestyles* (Natsal) [9]. However, exploration of the sexual histories of older genitourinary medicine (GUM) clinic attendees in northern England found that older people are engaging in behaviours that place them at risk of acquiring HIV [10]. In the United States, approximately 10% of older people were found to have at least one sexual risk factor for HIV, but were one-sixth as likely to use a condom during sex, and one-fifth as likely to have been tested for HIV, when compared to risk takers in their twenties [11].

We describe the epidemiology of HIV among those aged ≥45 years in E,W&NI between 1997 and 2001 compared to adults <45 years. The number of older individuals diagnosed and living with HIV is set to rise, with the potential for the spread of HIV within this age group.

METHODS

We reviewed three surveillance systems, which together provide an informative picture of HIV/AIDS among the older population of E,W&NI between 1997 and 2001 inclusive. We define an older individual as aged ≥45 years, to ensure that data from surveillance systems are comparable. Comparisons are made with younger adults, those aged 15–44 years, where possible.

New diagnoses

Voluntary confidential reports of new HIV diagnoses are received from laboratories and additionally since 2000, from clinicians [12]. Date of birth and probable route and country of infection are collected for all reports, through follow up by a research nurse when the information reported is initially incomplete. New AIDS diagnoses are reported by clinicians. The European AIDS case definition is used [13]. An AIDS diagnosis within three calendar months of a new UK HIV diagnosis is taken as defining a late diagnosis. Deaths occurring in HIV-infected individuals are reported by clinicians or ascertained through indirect matching with Office for National Statistics (ONS) death records [12].

HIV-infected individuals accessing treatment and care services

The *Survey of Prevalent HIV Infections Diagnosed* (SOPHID) provides the number of individuals living with diagnosed HIV infection in E,W&NI [14]. This annual survey aims to collect information for each individual seen for HIV-related treatment and care within the previous calendar year, including area of residence.

Undiagnosed HIV

The Genitourinary Medicine (GUM) Survey, which is part of the Unlinked Anonymous Prevalence Monitoring Programme (UAPMP), measures the level of undiagnosed (i.e. unrecognized) infection among those attending 15 GUM clinics (seven in London, eight elsewhere) through the unlinked testing of residual blood left over from syphilis screening [15]. Data are collected on five age groups: <20, 20–24, 25–34, 35–44 and ≥45 years.

Statistical methods

Descriptive epidemiology has been supplemented by statistical tests where appropriate. Poisson regression analysis was used to determine differences in rates of HIV-infected individuals accessing services by regions, using STATA 8 (StataCorp, College Station, TX, USA). χ^2 tests and tests for trend were calculated using Epi-Info 6 (version 6.04d; CDC, Atlanta, GA, USA).

Ethics

Reports of new diagnoses and of those diagnosed and living with HIV are voluntary and confidential. To maintain patient confidentiality no names are held

Table 1. *Numbers and proportions of new diagnoses and HIV-infected adults accessing treatment and care services by year and age group in England, Wales and Northern Ireland, 1997–2001*

Age group (yr)	Year of diagnosis/year seen for treatment care											
	1997	(%)	1998	(%)	1999	(%)	2000	(%)	2001	(%)	Total	(%)
New diagnosis												
15 to <45	2127	(85·5)	2207	(86·2)	2428	(85·8)	3044	(85·2)	4083	(86·3)	13 889	(85·8)
⩾45	361	(14·5)	352	(13·8)	401	(14·2)	528	(14·8)	648	(13·7)	2290	(14·2)
Total (100%)	2488		2559		2829		3572		4731		16 179	
HIV-infected individuals accessing treatment and care services												
15 to <45	12 267	(83·1)	13 481	(82·1)	14 955	(80·6)	16 612	(79·6)	19 166	(78·7)		
⩾45	2488	(16·9)	2930	(17·9)	3605	(19·4)	4254	(20·4)	5175	(21·3)		
Total (100%)	14 755		16 411		18 560		20 866		24 341			

New diagnoses reported by end of March 2003, HIV-infected individuals accessing treatment and care services from annual SOPHID surveys.

on the database, and surname soundex codes are used instead [16]. The reporting system has approval under the section 60 regulations of the Health and Social Care Act (Statutory Instrument 1438 – June 2002). The ethical and legal basis for unlinked anonymous testing has been described elsewhere [17]. The programme complies with guidelines published by the Medical Research Council [18], and Department of Health guidelines on the use of human organs and tissue [19]. All data are stored on restricted and secure databases at CDSC, with strict adherence to the Data Protection Act and Caldicott Guidelines [20].

RESULTS

New diagnoses

Between 1997 and 2001, 2290 individuals aged ⩾45 years were newly diagnosed with HIV in E,W&NI, representing 14% of new diagnoses in adults over this period (Table 1). Of these 2290 older individuals, 1569 (69%) were aged 45–54 years, 574 (25%) 55–64 years and 147 (6·4%) ⩾65 years. There was a 1·8-fold increase in the number of older individuals newly diagnosed with HIV in E,W&NI between 1997 and 2001, compared with a 2·0-fold increase in younger adults, with no significant change in the proportion of new diagnoses among older adults over time (test for trend: $\chi^2 = 0.20$, $P = 0.655$).

Probable route and country of infection

Heterosexually acquired

Sex between men and women accounted for 1073 (47%) of infections diagnosed in older individuals between 1997 and 2001; 662 (62%) males and 411 females. In younger adults, 51% (7030/13 889) of new diagnoses were heterosexually acquired ($\chi^2 = 11.12$, $P < 0.0009$); 37% (2568/7030) males. Where ethnicity was reported (956), 448 (47%) older heterosexually infected individuals were black African and 372 (39%) white. This contrasts with younger individuals with heterosexually acquired infections; where reported (6311), 4726 (75%) were black African and whites 914 (15%) ($\chi^2 = 381.22$, $P < 0.001$).

Where probable country of infection was reported (1021), 666 (65%) older heterosexuals were probably infected in Africa, 144 (14%) in the United Kingdom and 113 (11%) in Asia (Table 2). Of those older individuals heterosexually infected in Africa, 421 (69%) were black African and 149 (25%) white, with Zimbabwe (146) and Uganda (97) the predominant countries of infection. Those infected in the United Kingdom (144) were predominantly white (94) and female (78), whereas those infected in Asia (113) were mainly white (62) and male (102); between 1997 and 2001, 56 infections diagnosed in white older males were probably acquired in Thailand. Among younger adults, where reported (6757/7030), 77% (5220/6757) of infections were acquired in Africa, 12% (780/6757) in the United Kingdom, 4·1% (275/6757) in Asia and the remainder in other regions (comparison to older adults: $\chi^2 = 116.13$, $P < 0.0001$).

Homosexually acquired

In total, 1020 (45%) new diagnoses in older individuals were acquired homosexually, and where reported, 720 (92%) were white and 297 (78%) were

Table 2. *New UK HIV diagnoses among those aged ⩾45 years in England, Wales and Northern Ireland between 1997 and 2001, by ethnic group and country/region of probable infection (reports received by the end of March 2003)*

Ethnic group	Region/country of probable infection							
	UK	Africa	LA/C*	Asia	Other†	Subtotal	Unknown	Total‡
Heterosexual males								
White	49	124	4	60	30	**267**	15	282
Black African	4	200	2	1	—	**207**	3	210
Black Caribbean	4	3	24	—	—	**31**	2	33
Other§	3	26	1	23	—	**53**	2	55
Subtotal	**60**	**353**	**31**	**84**	**30**	558	22	580
Not reported	6	37	4	18	1	66	16	82
Total	66	390	35	102	31	624	38	**662**
Heterosexual females								
White	45	25	11	2	5	**88**	2	90
Black African	9	221	—	—	2	**232**	6	238
Black Caribbean	10	2	10	1	1	**24**	3	27
Other§	5	6	1	8	—	**20**	—	20
Subotal	**69**	**254**	**22**	**11**	**8**	364	11	375
Not reported	9	22	2	—	—	33	3	36
Total	78	276	24	11	8	397	14	**411**
Men who have sex with men								
White	276	13	5	16	32	342	378	720
Black African/Caribbean	2	3	2	—	—	7	16	23
Other§	5	3	—	3	2	13	28	41
Subtotal	**283**	**19**	**7**	**19**	**34**	362	422	784
Not reported	14	1	1	—	2	18	218	236
Total	297	20	8	19	36	380	640	**1020**

* LA/C, Latin American/Caribbean.
† Includes Europe (excluding UK), North America and Australasia.
‡ Subtotals equal 2093 not 2290 (the total number of new diagnoses in those aged ⩾45 years), as individuals infected through other or undetermined routes of infection are not included.
§ Includes India/Pakistani/Bangladeshi, mixed, black and other ethnicities.

probably infected in the United Kingdom (Table 2). Results, although statistically significant, are broadly comparable to those <45 years, of whom 43% (5921/13 889) were men who have sex with men (MSM) ($\chi^2 = 31.52$, $P < 0.0001$) and of these, where reported, 87% (3499/4034) were white ($\chi^2 = 15.68$, $P < 0.0001$) and 82% (1663/2041) were probably infected in the United Kingdom ($\chi^2 = 2.29$, $P = 0.13$).

Other routes of infection

Forty-five older individuals were probably infected with HIV through injecting drug use and 25 through blood transfusions/products (22 were probably infected abroad and three in the UK† [21]). There were

† Person donated in the 'window period' between infection and development of HIV antibody, and three recipients were reported to be infected.

proportionally more (5.0%) older individuals with an undetermined route of probable acquisition compared to younger individuals (2.6%) ($\chi^2 = 39.04$, $P < 0.0001$).

Facility where diagnosed

The facility diagnosing HIV was reported for 1577/2290 (69%) older individuals between 1997 and 2001, of whom 1129 (72%) were diagnosed in a GUM clinic, 254 (16%) as in-patients, 71 as outpatients (other than GUM) and 68 (4.3%) through a general practitioner (GP) (Fig.). In contrast, 8234 (80%) younger individuals were diagnosed at a GUM clinic, 742 (7.2%) as in-patients, 364 (3.5%) at an outpatient facility (not a GUM clinic), and 291 (2.8%) through a GP, where reported (10 244/13 889) ($\chi^2 = 168.90$, $P < 0.0001$).
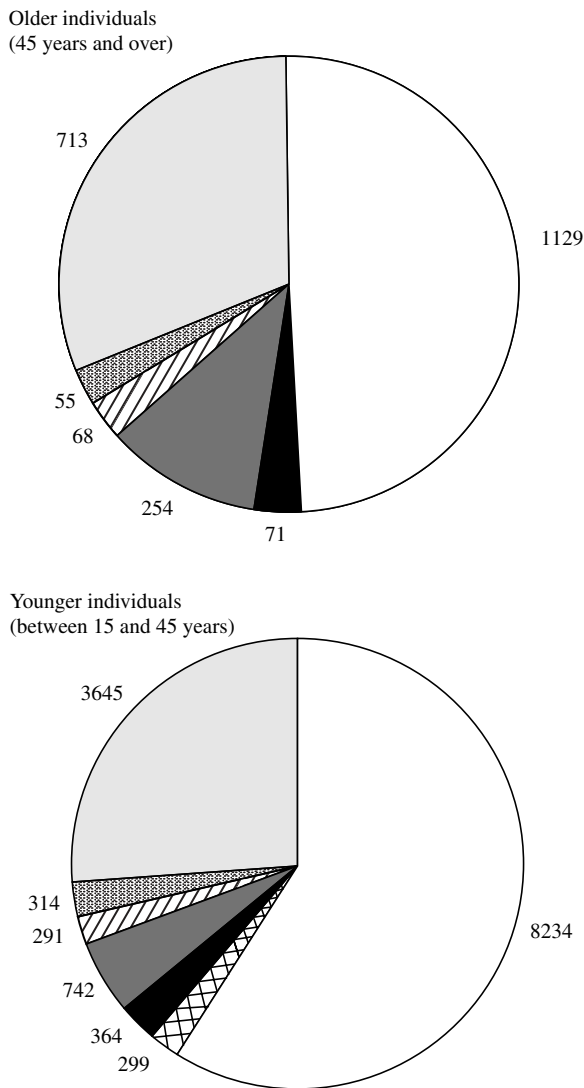
Fig. Number of new HIV diagnoses in those aged 45 years and over compared to younger individuals, by facility where first diagnosed in England, Wales and Northern Ireland, 1997–2001 (reports received by end of March 2003). □, GUM; ▨, antenatal; ■, other outpatient; ▨, in-patient; ▨, GP; ▨, other; □, not known.

Late diagnoses

Of the older individuals newly diagnosed with HIV, 598 (26%) were diagnosed late; 141 (39%) in 1997 decreasing proportionally to 127 (20%) in 2001 (test for trend: $\chi^2 = 39.58$, $P < 0.0001$), with no differences observed by infection route. There were significantly fewer younger individuals [1742 (13%)] diagnosed late compared to older individuals ($\chi^2 = 292.67$, $P < 0.0001$), with a proportional decrease also observed in late diagnoses among younger individuals over the period (test for trend: $\chi^2 = 97.10$, $P < 0.0001$).

Mortality

By March 2003, death had occurred in 348 (15%) of older individuals newly diagnosed with HIV between 1997 and 2001, of whom 200 (58%) had died within 3 months of diagnosis. Where cause of death of older individuals was reported (324/348), 167 (52%) were AIDS deaths and 157 (48%) died without AIDS reported. Of the AIDS deaths among older individuals, 82 (49%) died of *Pneumocystis carinii* pneumonia (PCP), 33 (20%) of a lymphoma (including Burkitt's, immunoblastic, primary in brain or equivalent), seven (4·2%) of Kaposi's sarcoma and six (3·6%) of toxoplasmosis of the brain. Conversely, 636 (4·6%) younger individuals newly diagnosed over the period had died ($\chi^2 = 387.97$, $P < 0.0001$): 311 (49%) within 3 months of diagnosis ($\chi^2 = 6.62$, $P = 0.01$). Where cause of death was reported (597/636), 292 (49%) were AIDS deaths and 305 (51%) HIV-infected individuals died without a report of AIDS (comparison to older individuals: $\chi^2 = 0.58$, $P = 0.46$). Of the AIDS deaths among younger individuals, 99 (34%) died of PCP, 54 (18%) of a lymphoma, 19 (6·5%) of Kaposi's sarcoma and 19 (6·5%) of toxoplasmosis of the brain.

HIV-infected individuals accessing treatment and care services

In 1997, 2488 individuals aged ⩾45 years were seen for HIV-related treatment and care. This increased 2·3-fold to 5175 individuals seen in 2001. Older individuals represented 21% of the total of individuals seen in 2001 (Table 1). By comparison, a 1·6-fold increase occurred in the numbers of adults aged <45 years seen for HIV-related treatment and care between 1997 (12 267) and 2001 (19 166). There was no significant change in the proportion of those accessing treatment and care services who were older adults over time (test for trend: $\chi^2 = 0.20$, $P = 0.655$).

Probable route of infection

In 1997, 1726 (69%) older individuals seen by services were probably infected through sex between men and 468 (19%) heterosexually (161 females); in 2001, 3103 (60%) were infected through sex between men and 1590 (31%, 628 females) infected heterosexually. By comparison, in 1997, 7214 (59%) adults aged <45 years were infected through sex between men and 3080 (25%) heterosexually (1907 females)

(comparison with older individuals: $\chi^2 = 96.73$, $P < 0.0001$), with equivalent figures of 9449 (49%) infected through sex between men and 7572 (40%, 4909 females) infected heterosexually in 2001 (comparison with older individuals: $\chi^2 = 186.62$, $P < 0.0001$).

Region of residence

Region of residence was reported for 5103 older individuals in 2001, of whom 2720 (53%) were resident in London, giving a rate of 11·7 HIV-infected diagnosed individuals per 10 000 older population in London. Other regions with high numbers of older HIV-infected individuals accessing services include the South East (661, 13%), the North West (398, 7·8%), the Eastern region (287, 5·6%), the South West (278, 5·4%) and the West Midlands (207, 4·1%). By comparison, of the 18 844 younger individuals accessing services with a reported region of residence in 2001, the majority, 11 753 (62%) resided in London, with 1764 (9·4%) in the South East and 1440 (7·6%) in the North West. Poisson regression analysis showed significantly higher rates of individuals accessing services inside London compared to outside [incidence rate ratio (IRR) 8·8, 95% CI 8·5–9·0, $P < 0.0001$]. There was a significantly lower rate of older individuals accessing services compared to younger individuals (IRR 0·34, 95% CI 0·33–0·35, $P < 0.0001$), and there was no evidence that the estimated IRR differed between London and outside London ($P = 0.1$).

Undiagnosed HIV and uptake of testing

Between 1997 and 2001, of those HIV-infected older male heterosexuals attending the 15 GUM clinics in the UAPMP, the proportion whose infection was previously undiagnosed was 60% (51/85), and for older female heterosexuals 82% (36/44) (Table 3). Among younger HIV-infected male and female heterosexuals, the proportions previously undiagnosed were 75% (471/627) ($\chi^2 = 8.75$, $P = 0.003$) and 72% (585/810) ($\chi^2 = 1.94$, $P = 0.164$) respectively. Of the older MSM with HIV attending GUM clinics, the proportion previously undiagnosed was 42% (113/270) and for younger MSM 49% (1105/2278) ($\chi^2 = 4.29$, $P = 0.04$).

Over the period of interest, 41% of older male HIV-infected heterosexuals, 31% of older female heterosexuals and 59% of older MSM who could have been diagnosed at clinic attendance, left undiagnosed (Table 3). This compares to 55% of younger male heterosexuals ($\chi^2 = 3.53$, $P = 0.06$), 51% of younger female heterosexuals ($\chi^2 = 5.83$, $P = 0.016$) and 60% of younger MSM ($\chi^2 = 0.03$, $P = 0.869$).

Uptake of voluntary confidential testing (VCT) for HIV increased in older male heterosexuals from 23% (632/2719) in 1997 to 34% (924/2691) in 2001 (test for trend: $\chi^2 = 110.17$, $P < 0.0001$). Equivalent figures for older female heterosexuals were 24% (359/1530) in 1997, rising to 35% (594/1699) in 2001 (test for trend: $\chi^2 = 67.05$, $P < 0.0001$). Increases have also been observed in the uptake of VCT among younger heterosexuals. In 1997, 27% (7593/28 554) of younger male and 24% (8080/33 316) of younger female heterosexuals accepted VCT for HIV, rising to 38% (10 789/28 155) and 39% (13 642/34 896) respectively in 2001 (test for trend: males, $\chi^2 = 961.35$, $P < 0.0001$; females, $\chi^2 = 1854.67$, $P < 0.0001$). For MSM: 44% (306/696) older MSM accepted VCT in 1997, and 50% (428/858) in 2001 (test for trend: $\chi^2 = 10.95$, $P = 0.0009$), compared to 46% (2362/5169) and 58% (3363/5781) respectively among younger MSM (test for trend: $\chi^2 = 190.52$, $P < 0.0001$).

Between 1997 and 2001, of the HIV-infected heterosexuals attending GUM clinics and having syphilis tests, 9·4% (8/85) of older males and 9·0% (4/44) of older females were co-infected with an acute STI at the time of unlinked anonymous HIV testing, with equivalent figures of 34% (213/627) ($\chi^2 = 21.0$, $P < 0.0001$) and 66% (149/225) ($\chi^2 = 48.98$, $P < 0.0001$) for younger males and females respectively. Overall, 6·8% (62/910) of older MSM were co-infected with an acute STI, compared to 8·6% (149/810) ($\chi^2 = 53.41$, $P < 0.0001$) of adult MSM aged <45 years.

DISCUSSION

The increases observed in the numbers of new HIV diagnoses in older individuals between 1997 and 2001 are equivalent to those in younger adults. Older MSM are predominantly white and infected in the United Kingdom. The majority of older newly diagnosed heterosexuals are male, both black African and white ethnicity, with a significant number infected in Africa, as well as the United Kingdom and Asia, the latter possibly acquired through sex tourism. Thus, the pattern of the HIV epidemic in older individuals differs from the current overall picture of new HIV diagnoses [22], where heterosexually acquired infections in Africa, among those of black African ethnicity predominate. Differences

Table 3. *Total HIV prevalence and proportions of HIV-infected individuals with previously undiagnosed HIV and remaining undiagnosed after clinic visit, those aged <45 years and those aged ≥45 years, by probable route of transmission and year of survey (1997–2001)*

Exposure category and survey year	Under 45 years							Over 45 years						
	All			With previously undiagnosed HIV				All			With previously undiagnosed HIV			
				Previously undiagnosed		Remaining undiagnosed after clinic visit					Previously undiagnosed		Remaining undiagnosed after clinic visit	
	No. samples tested (a)	No. HIV-1 positive (b)	Prevalence (%) (b/a)	No. (c)	Proportion (c/b)	No. (d)	Proportion (d/c)	No. samples tested (a)	No. HIV-1 positive (b)	Prevalence (%) (b/a)	No. (c)	Proportion (c/b)	No. (d)	Proportion (d/c)
Heterosexual males														
1997	28 581	118	0·4 %	91	77 %	55	60 %	2724	14	0·5 %	9	64 %	3	33 %
1998	27 385	116	0·4 %	96	83 %	47	49 %	2661	14	0·5 %	8	57 %	5	63 %
1999	24 880	105	0·4 %	89	85 %	57	64 %	2349	15	0·6 %	14	93 %	5	36 %
2000	25 738	109	0·4 %	80	73 %	41	51 %	2454	16	0·7 %	10	63 %	2	20 %
2001	28 219	179	0·6 %	115	64 %	59	51 %	2707	26	1·0 %	10	38 %	6	60 %
Total	**134 803**	**627**	**0·5 %**	**471**	75 %	**259**	55 %	**12 895**	**85**	**0·7 %**	**51**	60 %	**21**	**41 %**
Heterosexual females														
1997	33 350	152	0·5 %	118	78 %	74	63 %	1530	4	0·3 %	4	100 %	0	0 %
1998	29 925	123	0·4 %	103	84 %	49	48 %	1537	6	0·4 %	6	100 %	2	33 %
1999	29 712	131	0·4 %	107	82 %	48	45 %	1391	5	0·4 %	3	60 %	2	67 %
2000	30 093	149	0·5 %	96	64 %	52	54 %	1429	12	0·8 %	11	92 %	4	36 %
2001	34 990	255	0·7 %	161	63 %	77	48 %	1704	17	1·0 %	12	71 %	3	25 %
Total	**158 070**	**810**	**0·5 %**	**585**	72 %	**300**	51 %	**7591**	**44**	**0·6 %**	**36**	82 %	**11**	**31 %**
Men who have sex with men														
1997	5357	431	8·0 %	243	56 %	150	62 %	711	40	5·6 %	25	63 %	16	64 %
1998	5581	402	7·2 %	245	61 %	146	60 %	708	40	5·6 %	24	60 %	15	63 %
1999	5142	306	6·0 %	190	62 %	120	63 %	711	23	3·2 %	11	48 %	5	45 %
2000	4965	410	8·3 %	186	45 %	113	61 %	683	48	7·0 %	19	40 %	12	63 %
2001	6269	729	11·6 %	241	33 %	135	56 %	943	119	12·6 %	34	29 %	19	56 %
Total	**27 314**	**2278**	**8·3 %**	**1105**	49 %	**664**	60 %	**3756**	**270**	**7·2 %**	**113**	42 %	**67**	**59 %**

Data from UAPMP, GUM surveys, 1997–2001.

observed may be due to differential migration; those migrating tend to be younger [23].

The high numbers of older individuals presenting late during the course of their HIV infection in E,W&NI is of concern, and combined with a generally higher background mortality compared to younger age groups [24], probably explains the high proportion of deaths among HIV-infected older men and women. Older individuals are more likely to be initially misdiagnosed, with symptoms being mistaken as age related, for example, AIDS dementia may be confused with Alzheimer's disease [25]. Additionally, older GUM attendees themselves notably exhibit higher levels of delay behaviour, compared to younger attendees, with reasons for delay including wanting to 'wait and see' if symptoms improved, and being embarrassed and afraid to attend clinic [26].

Proportional increases in numbers of older individuals accessing treatment and care services in 2001 compared to 1997, has exceeded those of younger individuals. HAART has greatly increased survival of HIV-infected individuals, therefore, those infected at a relatively young age may now live for many years. Services must take account of this changing age profile of users.

The proportion of HIV infection undiagnosed among older male heterosexuals attending GUM is significantly lower than younger counterparts, but does not significantly differ between older and younger female heterosexuals or older and younger MSM. Clinicians need to be aware that there are high proportions of older female heterosexuals and older MSM with undiagnosed HIV. Encouragingly, over the years the proportion of older individuals accepting VCT has significantly increased, as with younger individuals, which may explain some of the increase seen in the numbers of new diagnoses. HIV-infected older individuals are less likely to have an acute STI.

The major limitation of these data is that it is not possible to determine from the seroprevalent cohorts whether infections are recent or have been acquired a long time ago. Determining whether infections are recent or longer standing requires the use of more sophisticated laboratory techniques [27, 28]. Indeed, recent findings show that infections are being newly acquired by MSM of all ages in the United Kingdom [29]. As with any age group, identification of those recently infected would determine the extent of HIV transmission occurring among older people, and allow the characterization of these people

and their sexual partners to be determined, assisting the targeting of HIV prevention initiatives.

There has been little research on HIV and the sexual health of older populations in general, and particularly within E,W&NI. Routine STI surveillance does not show large increases in the rates of gonorrhoea, chlamydia, herpes or genital warts among older individuals [30]. This may suggest that there is limited HIV transmission among this group, with the majority of newly diagnosed infections acquired while younger. Recent large-scale syphilis outbreaks however, have affected those of all age groups, including those over 45 years [31]. These outbreaks have demonstrated that older individuals are engaging in behaviours that put them at risk from acquiring STIs, and, therefore, HIV. Further research is needed to describe risk behaviours of older individuals, so that the potential for HIV transmission within this subpopulation can be defined.

The widespread use of HAART is leading to a steadily increasing prevalence of HIV-infected individuals among older populations, individuals who will need to access HIV-related services. To respond to these increases and changes, adequate funding for the expansion of services must be available, as well as consideration of the needs of older HIV-infected users, which may differ from those of younger generations. The potential for HIV transmission among older people is an area for future research, and the situation must be carefully monitored. Older at-risk individuals are less likely to have adopted behaviours that prevent the spread of HIV and other STIs, since the emphasis of HIV/AIDS prevention messages have been almost exclusively aimed at the young [11]. Older individuals may be less experienced negotiating safe sex, and since there is no, or a much reduced, risk of pregnancy, women may not practice safe sex. An 'aged response' to HIV care and prevention, which would include targeting both HIV negative and positive older individuals, promoting increased awareness among medical practitioners, and with continuing encouragement for individuals to seek timely HIV tests, is required.

REFERENCES

1. UNAIDS. Report on the global HIV/AIDS epidemic. Joint United Nations Programme on HIV/AIDS (UNAIDS) and World Health Organisation (WHO), Geneva, July 2002.

2. UNAIDS. Factsheet: impact of HIV/AIDS on older populations. UNAIDS, Geneva, April 2002 (http://www.unaids.org/fact_sheets/files/Fsolder_en.html). Accessed April 2003.

3. Kaye JA, Hershel J. Incidence of erectile dysfunction and characteristics of patients before and after the introduction of sildenafil in the United Kingdom: cross sectional study with comparison patients. Br Med J 2003; 326: 424–425.

4. Pfizer (http://www.viagra.com/consumer/aboutViagra/index.asp). Accessed April 2003.

5. Office for National Statistics. Divorce increases: highest number of divorces since 1997. Office for National Statistics, General Register Office for Scotland, Northern Ireland Statistics and Research Agency, 28 August 2003 (http://www.statistics.gov.uk/cci/nscl.asp?ID=7476). Accessed April 2003.

6. Johnson AM, Wadsworth J, Wellings K, Field J. Sexual attitudes and lifestyles. Oxford: Blackwell Scientific, 1994.

7. Goetz MB, Boscardin WJ, Wiley D, Alkasspooles S. Decreased recovery of CD4 lymphocytes in older HIV-infected patients beginning highly active antiretroviral therapy. AIDS 2001; 15: 1576–1578.

8. Haynes BF, Markert ML, Semopowski GD, Patel DD, Hale LP. The role of the thymus in immune reconstitution in aging, bone marrow transplantation, and HIV-1 infection. Annu Rev Immunol 2000; 18: 529–560.

9. Johnson AM, Mercer CH, Erens B, et al. Sexual behaviour in Britain: partnerships, practices, and HIV risk behaviours. Lancet 2001; 358: 1835–1842.

10. Gott CM, Rogstad KE, Riley V, Ahmed-Jushuf I, Green T. Exploring the sexual histories of older GUM clinic attenders. Int J STD AIDS 2000; 11: 714–718.

11. Stall R, Catania J. AIDS risk behaviours among late middle-aged and elderly Americans: the national AIDS behavioural surveys. Arch Intern Med 1994; 154: 57–63.

12. PHLS Communicable Disease Surveillance Centre, ICH (London), SCIEH. HIV & AIDS in the UK. An epidemiological review: 2000. London, 2001.

13. Ancelle Park RA. European AIDS definition. Lancet 1992; 339: 671.

14. McHenry A, MacDonald N, Sinka K, Mortimer J, Evans B. National assessment of prevalent diagnosed HIV infections. Comm Dis Public Health 2000; 3: 277–281.

15. Unlinked Anonymous HIV Surveys Steering Group. Prevalence of HIV in the United Kingdom, Data to the end of 1998. London: Department of Health, Public Health Laboratory Service, Institute of Child Health (London), Scottish Centre for Infection and Environmental Health, 1999.

16. Mortimer JY, Salathiel JA. 'Soundex' codes of surnames provide confidentiality and accuracy in a national HIV database. Commun Dis Rep 1995; 15: R183–R186.

17. Heptonstall J, Gill ON. The legal and ethical basis for unlinked anonymous testing. Commun Dis Rep 1989; 48: 3–6.

18. Medical Research Council. Guidance on 'Collections of human tissue and biological samples for use in human research'. London: Medical Research Council, April 2001.

19. Department of Health, Clinical Ethics and Human Tissue Branch. The use of human organs and tissue – an interim statement. Department of Health, London: April 2003.

20. PHLS Communicable Disease Surveillance Centre. Quarterly Communicable Disease Review October to December 2001: Caldicott, Confidentiality and the Patient Information Advisory Group. J Public Health Med 2002; 24: 138–144.

21. PHLS Communicable Disease Surveillance Centre. Serious hazards of transfusion (SHOT): report for 1999–2000. CDR Weekly, vol. 11, no. 13 (29 March 2001).

22. PHLS Communicable Disease Surveillance Centre, ICH (London), SCIEH. HIV & AIDS in the United Kingdom 2001. London: an update, November 2002.

23. Office for National Statistics. Migration: 1991 to 2000, total international migration: time series, age and sex. Office for National Statistics, November 2002 (http://www.statistics.gov.uk/statbase/xsdataset.asp?vlnk=5552&More=Y26). Accessed May 2003.

24. Office for National Statistics. Social trends, vol. 33. London: The Stationery Office, 2003 (http://www.statistics.gov.uk/downloads/theme_social/Social_Trends33/Social_Trends_33.pdf). Accessed May 2003.

25. Chaio EY, Ries KM, Sande MA. AIDS and the elderly. Clin Infect Dis 1999; 28: 740–745.

26. Gott CM, Rogstad KE, Riley V, Ahmed-Jusuf I. Delay in symptom presentation among a sample of older clinic attenders. Int J STD AIDS 1998; 10: 43–46.

27. Janssen RS, Satten GA, Stramer SL, et al. New testing strategy to detect early HIV-1 infection for use in incidence estimates and for clinical and prevention purposes. J Am Med Assoc 1998; 280: 42–48.

28. Parekh BS, Pau CP, Kennedy MS, Dobbs TL, McDougal JS. Assessment of antibody assays for identifying and distinguishing recent from long term HIV type I infection. AIDS Res Hum Retroviruses 2001; 17: 137–146.

29. Murphy G, Charlett A, Jordan LF, Osner N, Gill ON, Parry JV. HIV incidence appears constant in men who have sex with men despite widespread use of effective antiretroviral therapy. AIDS 2004; 18: 265–272.

30. PHLS, DHSS & PS and the Scottish ISD(D)5 Collaborative Group. Sexually transmitted infections in the UK: new episodes seen at genitourinary medicine clinics, 1991 to 2001. London: Public Health Laboratory Service, 2002.

31. PHLS, Communicable Disease Surveillance Centre. New episodes of infectious syphilis (primary and secondary) by age and sex: England, Wales and Northern Ireland 1996–2001 (http://www.phls.org.uk/topics_az/hiv_and _sti/epidemiology/sti_data.htm). Accessed June 2003.