

Monitoring Recent HIV Infection in Ireland, 2017

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Key Facts

- 13% of HIV diagnoses in 2017 (of those tested) were likely to be recent infections (within 4 months), using the Recent Infection Testing Algorithm (RITA), or a p24 antigen positive status.
- By probable routes of transmission, men who have sex with men (MSM) had the highest proportion of likely recent cases (16%) followed by people who inject drugs (PWID) (14%).
- Higher proportions of likely recent infections were also seen in young people (15-24 years) (29%); people born in Ireland (23%); and people who acquired their infection in Ireland (28%).



Background

In order to monitor the ongoing transmission of HIV, it is important to determine the proportion of new diagnoses which are recent HIV infections. Recent Infection Testing Algorithms (RITA) attempt to differentiate recent from longer standing infections. They combine results of recent infection assays and supplementary laboratory and clinical information that together are used to classify a HIV infection as likely to be recent or not recent. In addition, the HIV p24 antigen test which is designed to detect a protein (the p24 protein) associated with HIV can be used to indicate acute infection with HIV.

A pilot study on the use of RITA in Ireland was undertaken during 2016 (1). The pilot project demonstrated that it was feasible to combine epidemiological and clinical HIV data from the computerised infectious disease reporting system (CIDR) with avidity results from the National Virus Reference Laboratory (NVRL) and to determine the proportion of recent infections among new HIV diagnoses by applying a RITA algorithm. Following the success of the pilot, HIV avidity testing was incorporated into routine surveillance of HIV in Ireland. This report presents the results of HIV recent infection surveillance in 2017.

Methods

The NVRL performs confirmatory testing on all new HIV diagnoses in Ireland. Residual sera of newly diagnosed HIV cases in 2017 were tested in the NVRL using the Sedia™ HIV-1 limiting antigen-avidity EIA assay. Results of avidity testing were notified to the relevant Department of Public Health and entered onto CIDR. The RITA adopted during this pilot project classified cases with a numeric avidity result of less than 1.5 as likely to be recent infections (within 4 months) unless there was information available to indicate longer standing infection within the enhanced surveillance data. If there was no epidemiological data available for particular cases, they remained as being likely recent. Criteria used to indicate long standing infection were: CD4 count of less than 200 cells/ μ L within three months of diagnosis; viral load of less than 1000 copies/mL within three months of diagnosis; presence of an AIDS defining illness within three months of diagnosis; or on anti-retroviral therapy (ART) at the time of the diagnosis. Cases with a history of pre-exposure prophylaxis (PrEP) or post-exposure prophylaxis (PEP) use in the previous six months were not classified as recent infections, as any use of ART in this context would affect the recency assay results.

Routine confirmatory testing in the NVRL also includes p24 antigen testing. The p24 antigen test is implemented when a sample is HIV antibody positive, and subsequently negative or 'indeterminate' on an HIV line assay test (INNOLIA). A positive p24 antigen test is an indicator of infection within three weeks of the specimen date.

Results

There were 492 HIV diagnoses in Ireland in 2017. Of these, 417 (85%) had an avidity test result available on CIDR. Reasons for not having an avidity test included insufficient sample and known HIV positive confirmatory cases which had not been previously notified. Of those with avidity results, 97 had an avidity of less than 1.5 indicating likely recent infection. When the RITA algorithm was applied using available epidemiological and clinical data, 48 of these were classified as false recent (43 had a viral load less than 400 copies per ml; 41 were previously on ART; three had a CD4 count of less than 200 cells/ μ l; one had PEP use in the previous six months)¹ leaving 49 cases likely to be recent (within 4 months).

A total of nine cases in 2017 had a p24 antigen positive result reported through CIDR, indicating that they were likely to be acute infections. One of these had undergone avidity testing and was deemed to be recent based on RITA. Combining those who were likely to be recent on avidity testing (n=49) and those that were p24 antigen positive (n=8) resulted in a total of 57 cases which were likely to be recent (within 4 months). This represents 13% of the total tested (with either an avidity result or that were p24 positive) (see Figure 1).

Table 1 describes the proportion of likely recent infections (as determined by RITA and p24 antigen status) by demographic characteristics amongst new diagnoses. Regarding probable routes of transmission, men who have sex with men (MSM) had the highest proportion of likely recent cases (16%) followed by people who inject drugs (PWID) (14%), although the number of recent infections among PWID was very low (n=2). Higher proportions of recent infections were seen in males (16%); 15-24 year olds (29%); those who were born in Ireland (23%); and those who had acquired their infection in Ireland (28%).

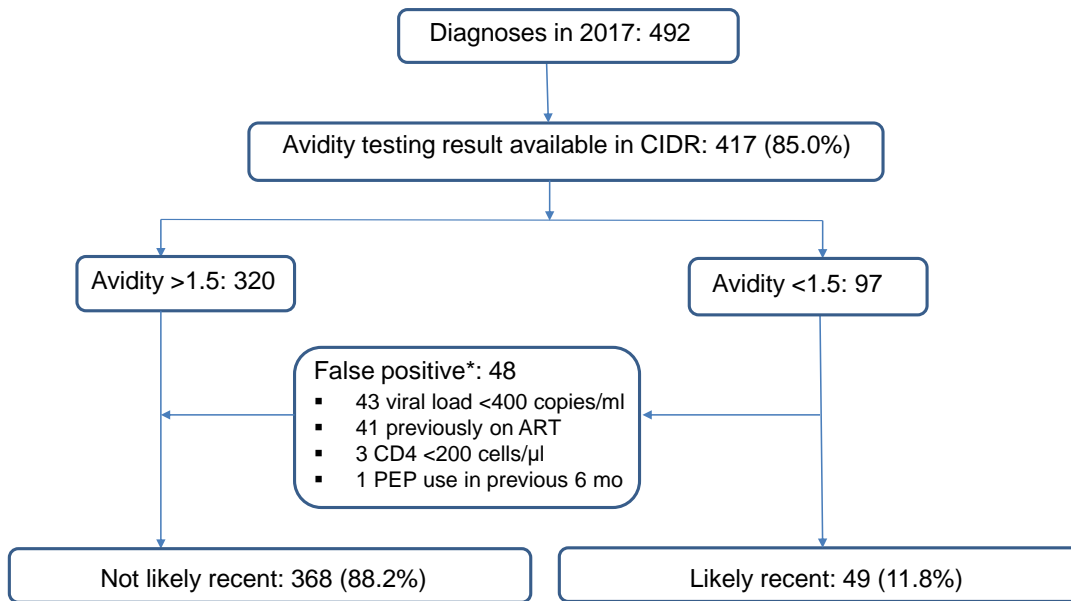
In Ireland, a high proportion of people diagnosed with HIV have been previously diagnosed abroad (40% in 2017). If we excluded these people from the analysis, the proportion who were likely to be recent would increase to 22% (56/250).

Comprehensive epidemiological data was not available for all diagnoses in 2017. Of the 97 cases with an avidity result of <1.5, viral load data was missing for 18%; clinical stage for 23%; CD4 count for 24%; history of PEP/PrEP for 24%; and history of ART for 28%. Of the 97 cases with an avidity result of <1.5, 11 did not have any of the relevant epidemiological data available and without this data, it is not possible to ensure that the application of the RITA is accurate.

¹ A case may have had more than one criterion for being classified as false recent

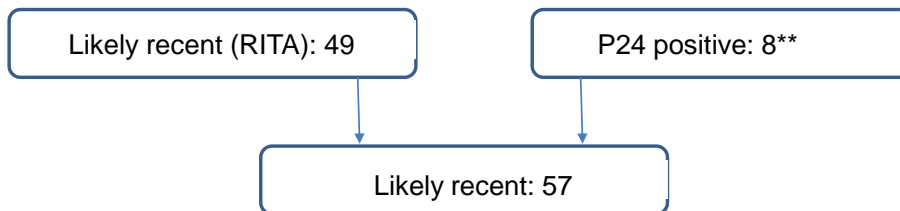
Figure 1.

(a) Likely recent: RITA



*Cases could have more than one criterion for being reclassified as longstanding;

(b) Likely recent: RITA and P24 antigen positive



**there were 9 P24 antigen positive in total, one was likely recent on avidity testing

Table 1. Demographic characteristics associated with likely recent HIV infections, 2017

		Number recent	Total tested	% recent
Total		57	425	13.4
Sex	Female	7	102	6.9
	Male	50	323	15.6
Age Group (years)	15-24	10	34	29.4
	25-34	19	177	10.7
	35-44	18	133	13.5
	45+	10	81	12.3
Probable route of transmission	Heterosexual	11	150	7.3
	PWID	2	14	14.3
	MSM	36	224	16.1
Area of residence	HSE East (Dublin, Kildare, Wicklow)	42	311	13.5
	Other areas	15	114	13.2
Region of origin	Ireland	25	109	22.9
	Europe	10	63	15.9
	Sub Saharan Africa	6	103	5.8
	Latin America	7	89	7.9
	Other	1	20	5.0
Region of infection	Ireland	25	89	28.1
	Outside Ireland	13	221	5.9

Discussion

Surveillance of recent infection has been found to be a useful additional tool to monitor the HIV epidemic in Ireland. Analysis of HIV diagnoses in 2017 has identified that a relatively small proportion of overall diagnoses were likely recent infections (13%). This was very similar to the proportion that were found to be recent in 2016. It is important to note that the avidity assay in use in Ireland identifies likely recent infections within 4 months of infection and therefore other recent infections which have a slightly longer duration of infection will not be included in the proportion likely recent.

The data from 2017 indicates on-going transmission of HIV, with a higher proportion of recent infections among MSM, young people (aged 15-24 years), those born in Ireland and those infected in Ireland. The proportion of recent infections is likely partly to be a reflection of testing practices and frequency of testing. A higher proportion of recent infections among a particular subgroup of the population could be due to good access to testing and adherence to advice regarding regular testing. Data from the Healthy Ireland Survey in 2017 showed that 12% of MSM had tested for HIV in the previous 12 months compared to 3% of heterosexual males and 5% of heterosexual females (2). Therefore trends in the proportion of recent infections need to be interpreted in conjunction with information on HIV testing rates overall and in sub-populations at higher risk, and the overall number of HIV diagnoses.

In 2017, a relatively high proportion (40%) of cases diagnosed in Ireland had been previously diagnosed abroad. In this analysis, we did not exclude those previously diagnosed abroad as false recent cases. However, almost all of these cases (42/43) fulfilled other criteria that identified them as false recent cases when the RITA algorithm was applied. If we had excluded all those previously positive from the analysis, the main effect of this would be to reduce the denominator and therefore the proportion recent would be higher among the remaining cases (20%). Finally, the completeness of surveillance data affects the accuracy of the estimation of recent infection and also impacts on the investigation of factors associated with recent infection.

Acknowledgements

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References

1. HSE Health Protection Surveillance Centre. Integration of recent infection monitoring into national HIV surveillance: 2016 results. Dublin: HSE HPSC; 2019
2. Department of Health. Healthy Ireland Survey 2017, Summary of Findings. Dublin. Department of Health; 2017.

Report prepared by:

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