# Predictors of late diagnosis for people newly diagnosed with HIV infection in NSW January 2013 to June 2017

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## Background

- Late diagnosis of HIV is a global and local problem:
  - Delayed initiation of ART
  - Increased morbidity and mortality and other costs
  - Potential for onward transmission of HIV

- Over 1 in 3 infections diagnosed late in NSW

- A barrier to eliminating the transmission of HIV in NSW by 2020

## Study objective and method

- To identify patient characteristics associated with late diagnosis

- Study design: cross-sectional population based

- Data source: NSW HIV surveillance data (NCIMS)

- Included: NSW residents newly diagnosed with HIV infection from 1 Jan 2013 to 30 Jun 2017

## Method

- Outcome definition: CD4 count < 350 or an AIDS defining illness or AIDS death within three months of diagnosis, in the absence of a laboratory confirmed negative HIV test in the 12 months prior to diagnosis

- Explanatory variables include year diagnosed, demographics, risk exposure

- Analysis via binomial and Poisson regression using SAS 9.3

## Results – late diagnosis univariate analysis

- Of 1465 new diagnoses Jan 2013-Jun 2017, 550 (38%) "late"

- Variables with a univariate p value <= 0.10 for the model
  - Age 50+ (p<.0001)
  - Gender female (p=0.009)
  - Born overseas (p=0.0004)
  - Lives in rural/regional NSW or outer metro Sydney (p=0.008)
  - HIV risk other than MSM (p<.0001)

- Other variables not in the model
  - Language at home other than English (p<.0001) as highly correlated with place of birth
  - Year diagnosed (p=0.24)
  - Aboriginal or Torres Strait Islander person status (p=0.21)

## Table 2: Late diagnosis multivariate model

| Characteristics at diagnosis | Adjusted prev. ratios (95% CI) | p value |
|---|---|---|
| Age in years at diagnosis 0-19yrs, | Referent | <.0001 |
| 20-29 | 1.18 (0.58-2.39) | |
| 30-39 | 1.15 (0.95-1.39) | |
| 40-49 | 1.15 (0.95-1.39) | |
| 50 plus | 1.25 (1.04-1.51) | |
| Gender male, | Referent | 0.64 |
| Female | 0.90 (0.72-1.13) | |
| Transgender | 1.00 (0.45-2.25) | |
| Born Australia - No | 1.35 (1.18-1.55) | <.0001 |
| Reported risk exposure MSM, | Referent | 0.002 |
| Hetero-sex only | 1.48 (1.25-1.76) | |
| Person who injects drugs | 1.09 (0.63-1.89) | |
| Vertical | 0.97 (0.16-5.84) | |
| Other or unknown | 1.32 (0.90-1.95) | |
| Resides in Inner metro Sydney, | Referent | 0.11 |
| Outer metro Sydney | 1.09 (0.94-1.27) | |
| Regional/rural NSW | 1.23 (1.01-1.50) | |

## Conclusion

- Independent risk factors for late diagnosis of HIV infection in NSW residents associated with:
  - Being older in age (esp. 50+)
  - Being born overseas
  - Acquiring HIV via hetero-sex

- Need for earlier and increased testing for these groups

## Acknowledgements

- Public/private HIV specialist services and doctors

- HIV reference laboratory network

- ASHM

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## Table 1a: Late diagnosis univariate results

| Characteristics at diagnosis | Late N=550 (38%) | Not late N=915 (62%) | Total N=1465 | Crude PR (95% CI) | p value |
|---|---|---|---|---|---|
| First tested HIV+ Jan-Dec 2013 | 127 (37%) | 213 (63%) | 340 | Referent | 0.24 |
| Jan Dec 2014 | 113 (33%) | 224 (67%) | 337 | 0.90 (0.73-1.10) | |
| Jan-Dec 2015 | 129 (38%) | 210 (62%) | 339 | 1.13 (0.93-1.39) | |
| Jan-Dec 2016 | 118 (38%) | 190 (62%) | 308 | 1.00 (0.83-1.23) | |
| Jan-Jun 2017 | 63 (45%) | 78 (55%) | 141 | 1.17 (0.92-1.47) | |
| Gender Male | 490 (36%) | 854 (64%) | 1344 | Referent | 0.009 |
| Female | 56 (51%) | 53 (49%) | 109 | 1.41 (1.16-1.71) | |
| Transgender | 4 (33%) | 8 (67%) | 12 | 0.91 (0.41-2.04) | |
| Aboriginal or Torres Strait Islander person | 9 (27%) | 24 (73%) | 33 | 0.72 (0.41-1.26) | 0.21 |
| Non Aboriginal person | 538 (38%) | 884 (62%) | 1422 | | |
| Age in years 0-19 | 7 (26%) | 20 (74%) | 27 | Referent | <.0001 |
| 20 to 29 | 126 (30%) | 295 (70%) | 421 | 1.15 (0.60-2.22) | |
| 30 to 39 | 158 (35%) | 287 (65%) | 445 | 1.19 (0.98-1.44) | |
| 40 to 49 | 122 (40%) | 185 (60%) | 307 | 1.12 (0.93-1.35) | |
| 50 and over | 137 (52%) | 128 (48%) | 265 | 1.30 (1.09-1.56) | |
| Born Australia Yes | 256 (33%) | 511 (67%) | 767 | | |
| No | 293 (42%) | 397 (58%) | 690 | 1.27 (1.11-1.45) | 0.0004 |

## Table 1b: Late diagnosis univariate results

| Characteristics at diagnosis | Late N=550 (38%) | Not late N=915 (62%) | Total N=1465 | Crude PR (95% CI) | p value |
|---|---|---|---|---|---|
| Primary language English Yes, | 386 (34%) | 751 (66%) | 1137 | | |
| No | 161 (51%) | 154 (49%) | 315 | 1.51 (1.32-1.72) | <.0001 |
| Resides in Inner metro Sydney, | 290 (34%) | 552 (66%) | 842 | Referent | 0.008 |
| Outer metropolitan Sydney | 172 (40%) | 257 (60%) | 429 | 1.16 (1.00-1.35) | |
| Regional/rural NSW | 88 (45%) | 106 (55%) | 194 | 1.32 (1.10-1.58) | |
| Reported risk exposure MSM, | 391 (33%) | 784 (67%) | 1175 | Referent | <.0001 |
| Hetero-sex only | 136 (57%) | 102 (43%) | 238 | 1.72 (1.50-1.97) | |
| Person who injects drugs | 9 (35%) | 17 (65%) | 26 | 1.04 (0.61-1.78) | |
| Vertical | 1 (25%) | 3 (75%) | 4 | 0.75 (0.14-4.11) | |
| Other or unknown | 13 (59%) | 9 (41%) | 22 | 1.78 (1.24-2.54) | |
| Diagnosing doctor type SHC, | 142 (29%) | 352 (71%) | 494 | Referent | <.0001 |
| GP not s100 prescriber | 190 (38%) | 310 (62%) | 500 | 1.32 (1.11-1.58) | |
| Hospital | 148 (65%) | 79 (35%) | 227 | 2.27 (1.92-2.68) | |
| GP s100 | 33 (20%) | 136 (81%) | 169 | 0.68 (0.49-0.95) | |
| Other | 37 (49%) | 38 (51%) | 75 | 1.72 (1.31-2.24) | |
| HIV viral load 0-9,999, | 33 (13%) | 227(87%) | 260 | Referent | <.0001 |
| 10,000-99,999 | 203 (33%) | 404 (67%) | 607 | 2.63 (1.88-3.69) | |
| 100,000+ | 307 (53%) | 267 (47%) | 574 | 1.60 (1.40-1.83) | |