



Can the BED-CEIA HIV incidence assay improve our ability to track progress towards elimination in Australia?

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25 September 2018



Background

- Measuring HIV incidence important
 - Understand transmission
 - Track epidemic
- Generally require cohort studies to follow up people to time to infection
- Standard reporting relies on case reporting
- Clinical and testing information used to classify stage of diagnoses
- Incomplete for many people

Background

- BED capture enzyme immunoassay (BED-CEIA) used in select laboratories in Australia to determine incident cases
- Measures the increasing proportion of HIV-1 IgG to total IgG after seroconversion, to estimate incidence
- Australian surveillance system meets UNAIDS requirements for using BED-CEIA to estimate incidence
 - High and accurate coverage
 - Timely reporting
 - Data available on clinical staging and testing history

3

Aim

To assess the public health surveillance utility of incidence testing in Australia using the BED-CEIA

4

Methods

- Study population: people newly diagnosed in Australia with HIV between 2006 and 2016
- Excluded people with a previous overseas diagnosis
- Compared proportions:
 - Newly acquired as defined by national surveillance as an infection acquired in the last 12 months (based on previous negative or indeterminate test, or onset of seroconversion illness)
 - Incident infections classified by BED-CEIA as acquired in last 6 months

5

Methods

- Analysed key characteristics
 - Sex: Male, female
 - Exposure category: Male-to-male sex, male-to-male sex and injecting drug use, heterosexual contact, injecting drug use, other
 - Region of birth: Oceania (incl. Australia and New Zealand), Asia (North, South and East Asia), Other, not reported
 - MSM by region of birth

6

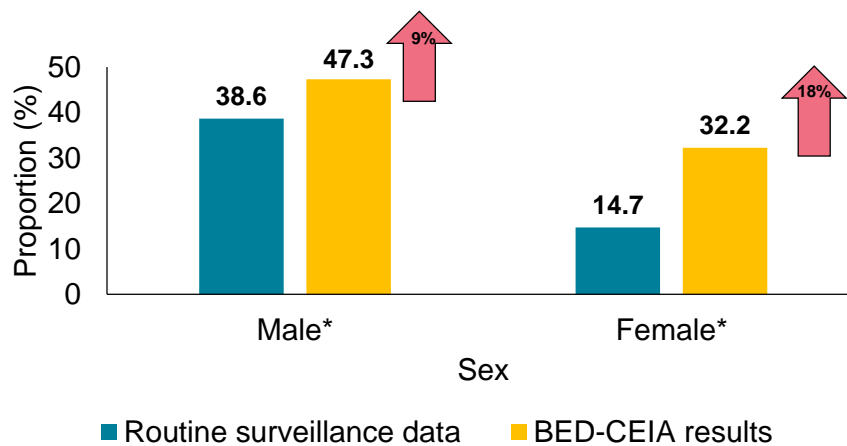
Results

- Initial results for 1544 matched BED-CEIA and notification pairs

	Newly acquired	Unspecified	Total
Incident	432	276	708
Not incident	130	706	836
Total	562	982	1544

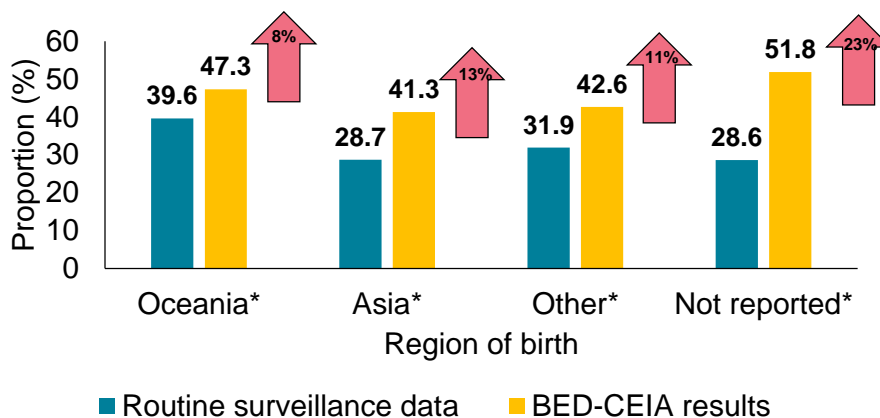
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Proportion classified as newly acquired or incident, by data source and sex



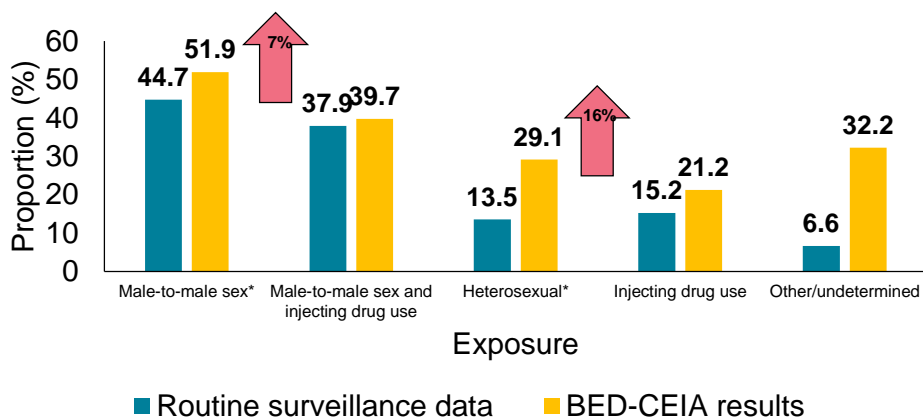
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Proportion classified as newly acquired or incident, by data source and region of birth



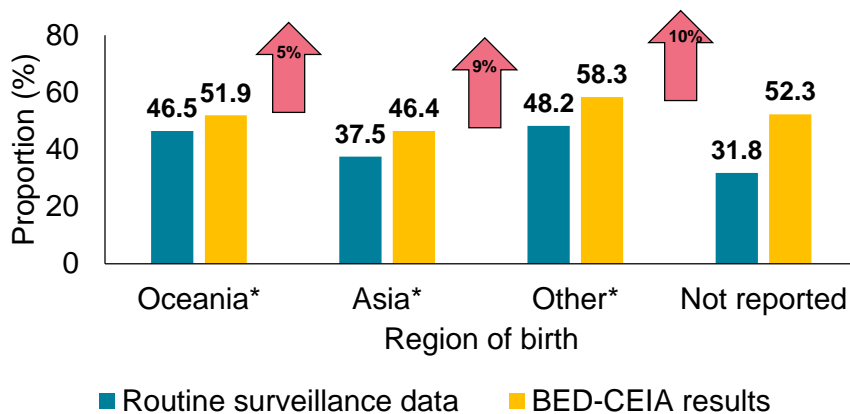
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Proportion classified as newly acquired or incident, by data source and exposure risk



10

Proportion classified as newly acquired or incident, in MSM, by source and region of birth



11

Limitations

- Unable to pair all BED-CEIA results with an HIV notification
- Potential for misclassification of established cases as incident¹
 - CD4+ count <200
 - Low viral load
 - Treatment

12

1. Laeyendecker O et al, AIDS Res Hum Retroviruses. 2012 Aug;28(8):816-22.

Conclusion

- BED method increased proportion classified as recent
 - Both males (9%) and females (18%)
 - Male-to-male sex (7%), and heterosexuals (16%)
 - Gay and bisexual men born in: Asian (9%), other (10%)
- Routine surveillance data a practical measure of recent infection
- Potential utility of incidence assays, further assessment required
- Benefit will vary by characteristics of individuals diagnosed, particularly in relation to testing history

13

Next steps

- Preliminary examination to guide further analyses
- Improve pair matching to increase sample size
- Undertake sensitivity and specificity analyses
 - CD4+ cell count of <200
 - Viral load
- Level of evidence for routine surveillance data – laboratory, doctor, patient reporting of previous negative
- Look at more detailed country and region of birth

14



Disclosure of Interest Statement

The Kirby Institute receives funding from the Australian Government Department of Health and is affiliated with the Faculty of Medicine, UNSW Sydney. No pharmaceutical grants were received in the development of this study.