



Potential Impact of Routinely Offering HIV Screening at Auckland DHB

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Introduction

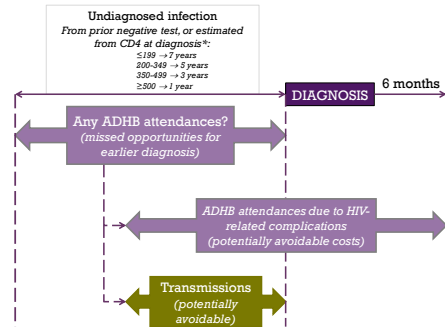
- 50% of new HIV diagnoses in NZ are late, and 32% have advanced HIV disease.¹
- CDC recommends routine offer of HIV screening to all adults ≤65 at all healthcare interactions.²
- Earlier diagnosis leads to better outcomes³ & reduced transmission.⁴

1. Dickson NP et al. HIV Med 2012;13:182-189
2. Branson BM et al. MMWR Recomm Rep 2006;22:55(06-14):1-17
3. Nakagawa F, May M & Phillips A. Curr Opin Infect Dis 2013;28:17
4. Cohen MS, Chen YQ & McCauley M et al. N Engl J Med 2011;365:493-505

Aim

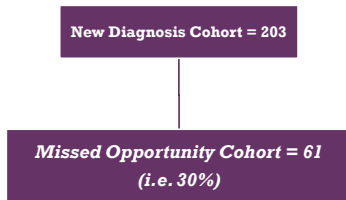
- Screen all ADHB-resident adults (15-65y) diagnosed with HIV between Jan 2007 – Dec 2013.
- Identify those who could have been diagnosed earlier if screening had been offered at a previous ADHB attendance.
- Estimate costs associated with screening all patients attending ADHB services.
- Model cost savings from earlier diagnosis:
 - HIV-related complications
 - Reduction in transmissions
- Hypothesis:- A routine offer of HIV screening will be cost neutral to implement.

Method



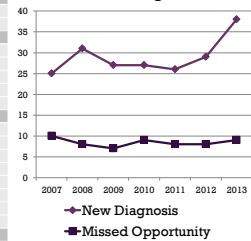
* Lodi S et al (for the CASCADE investigators). Clin Infect Dis 2011;53:817-25.

Results



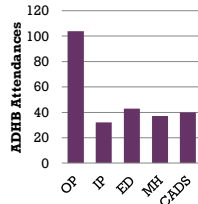
Baseline Characteristics	New diagnosis cohort (n=203)		Missed Opportunity Cohort (n=61)	
	Number	%	Number	%
Age				
Median	37		38	
Range	18-67		18-67	
Gender				
Male	187	92%	55	90%
Female	16	8%	6	10%
Transmission risk factor				
MSM	157	77%	38	62%
Hetero M	26	13%	13	21%
Hetero F	15	7%	5	8%
IVDU	3	1%	3	5%
Unknown	2	1%	2	3%
Ethnicity				
NZE	85	42%	26	43%
Maori	19	9%	8	13%
SE Asian	38	19%	12	20%
African	24	12%	6	10%
European	18	9%	4	7%
PI	12	6%	5	8%
Other	4	2%	0	0%
Not available	3	1%	0	0%
CD4 at diagnosis				
≤189	41	20%	23	38%
200-349	41	20%	13	21%
350-499	46	23%	10	16%
≥500	75	37%	15	25%

Year of diagnosis



+ Missed Opportunities

Transmission Risk Factor	Number of patients	Months of potential earlier diagnosis
MSM	38	1036
Hetero M	13	265
Hetero F	5	53
IVDU	3	38
Unknown	2	12
TOTAL	61	1404 (median 12; range 1-84)



Departments (OP & IP):
 Anaes, Cardio, Diab, Gastro, Gen Med, Gen Surg, Gynae, ID, Obstetrics, Ophth, Oral Health, ORL, Ortho, Resp, Rheum, Urol

+ Costs

Numbers Screened	
ADHB residents aged 15-64 years with ADHB attendance, Jan 2007 to Dec 2013	229,856 (= 70% pop.)
ADHB obstetric patients Jan 2007 to Dec 2013 (already offered screening)	- 19,717
Total number of patients offered screening	= 210,239
False positive HIV EIA rate (From antenatal screening program, June 2011 to June 2014)	x 0.089%
Number of false positive HIV EIAs	= 124

Costs of Screening	
HIV tests (EIAs) (210 239 @ \$17.71 each)	\$ 3,723,000
HIV viral loads for false positives (124 @ \$362.97 each)	\$ 45,000
Cost of ART for patients who are diagnosed earlier (25 years of treatment @ \$18,500 per year)	\$ 470,000
Total cost (over 7 years)	\$ 4,238,000

+ Benefits

Reduced HIV transmissions (MSM only)	
Total years of MSM diagnosed earlier	86 years
Estimated number of transmissions per year from undiagnosed MSM (using modelling from Wilson D et al. Sex Health 2009;6:19)	0.21 to 0.36
MSM transmissions while undiagnosed (conservative estimate of 0.31 transmissions/year x 86 years)	= 18
MSM transmissions following diagnosis (modelling from Skarbinski J et al. JAMA Intern Med 2013 epub Feb 23)	- 4
New MSM transmissions prevented in 7 years	= 14
Predicted years of treatment per patient (From diagnosis of HIV infection to death (male) - time to starting ART (using modelling from Samji H et al. PLoS One 2013;8:e81353))	34.8
Total years of prevented treatment	= 487

Costs Saved by Screening	
Cost of inpatient admissions for HIV-related illnesses avoided	\$ 282,000
Cost of outpatient clinic visits for HIV-related illnesses avoided	+ \$ 7,900
Total cost of treatment avoided (of transmissions avoided) \$18,500 per year x 487 years	+ \$ 9,009,000
Total cost saved	= \$ 9,298,000

+ Cost/Benefit analysis

Total costs (over 7 years of universal screening)	\$ 4,238,000
Total benefits (including long-term savings from transmissions avoided in the 7-year study period)	\$ 9,298,000
Potential overall cost saving (conservative estimate)	\$ 5,060,000

- PLUS non-financial / unmeasurable benefits...
 - 'Normalisation' of testing; reducing stigma.
 - Personal/social/productivity benefits of earlier diagnosis and reduced transmissions.

+ Discussion

Strengths

- Conservative estimates at all stages of modelling.
- Most of the underlying patient & cost data is robust.
- This is the only method to estimate cost-effectiveness.
- First study of its kind in NZ.

Limitations

- Modelling relies on numerous assumptions & estimates.
- Heterosexual & IVDU groups not included in transmission modelling.
- Assumes everyone will be offered & accept a single test.
- Undiagnosed people are not included in the study.
- Costs & savings are not experienced by the same stakeholder at the same time.
- Costs are likely to change.
- Only applies to ADHB population.
- Does not account for long-term effects on HIV incidence.

+ Conclusions

- A universal offer of HIV screening to ADHB residents attending all ADHB services could result in...
 - Earlier diagnosis in 30% of new diagnoses, at a median of 12 months earlier.
 - Potentially large long-term cost savings.
 - Many additional non-financial benefits.
 - Screening most of the total adult ADHB population, if introduced over a prolonged period.

Our modelling study supports introducing a trial of a universal offer of HIV screening to ADHB residents attending ADHB services.

+ Acknowledgements



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