Enumerating the population eligible for funded HIV pre-exposure prophylaxis (PrEP) in New Zealand

Original research

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Abstract

Background: Pre-exposure prophylaxis (PrEP) became publicly funded in New Zealand (NZ) on 1 March 2018. PrEP could have a substantial population-level impact on HIV transmission if scaled-up rapidly. An accurate estimate of the size of the PrEP-eligible population would guide implementation.

Methods: We drew on nine sources to estimate the PrEP-eligible population: (i) Statistics NZ data; (ii) PHARMAC data on adults receiving funded antiretroviral treatment (ART); (iii) expert advice; (iv) estimates of the HIV Care Cascade; (v) surveillance of undiagnosed HIV in a community sample of gay and bisexual men (GBM); (vi) surveillance of HIV diagnoses; (vii) NZ Health Survey data on sexual orientation among males; (viii) behavioural surveillance among GBM; (ix) behavioural data among people living with HIV (PLWH) from the HIV Futures NZ study. From these we derived three estimates relating to GBM, non-GBM and total eligible. Sensitivity analyses examined different assumptions (GBM denominators, proportion PLWH diagnosed, proportion diagnosed PLWH treated).

Results: We estimated that 17.9% of sexually active HIV negative GBM would be eligible for PrEP, equating to 5,816 individuals. We estimated that 31 non-GBM individuals would be eligible. In total 5,847 individuals would be eligible for PrEP, comprising 99.5% GBM and 0.5% non-GBM. Sensitivity analyses ranged from 3,062 to 6,718 individuals.

Conclusions: Policy-makers can utilise enumeration to monitor the speed and scale in coverage as implementation proceeds. Sexual health and primary care services can apply enumeration to forecast PrEP demand and plan accordingly. Better quality data especially on transgender adults in NZ would improve the accuracy of estimates.
Additional keywords: enumeration, homosexual, sexually transmitted infection, condomless anal intercourse, methamphetamine

Abridged title

Enumerating PrEP eligibility in NZ
Introduction

Studies among gay and bisexual men (GBM) show that pre-exposure prophylaxis (PrEP) with correct adherence is safe and highly effective against HIV. (1-3) International guidelines recommend that PrEP should be offered to individuals at highest HIV risk, (4-8) prompting country-level medicines regulators and health policymakers to consider access and funding arrangements. Hastening these deliberations are data that the HIV epidemic is expanding (9) and costly, (10) that PrEP could have a substantial population-level impact on HIV transmission if targeted and scaled up, (11) and that it can be cost-effective. (12) Consequently countries have an interest in estimating the size of their populations potentially eligible for PrEP.

In New Zealand the momentum on PrEP is accelerating after a cautious start. PrEP became fully publicly funded on 1 March 2018, (13) one year after Truvada was approved for PrEP by the Medicines and Medical Devices Safety Authority (Medsafe). Eligibility reflects the pattern of HIV incidence and is focused on GBM, the partners of people living with diagnosed but unsuppressed HIV, and transgender individuals. The New Zealand government is now one of the earliest adopters globally to publicly fund PrEP. Evidence, including uptake targets, should continue to underpin the implementation phase.

Public health personnel can use estimates of the PrEP-eligible population to make a number of strategic decisions. Government agencies and the pharmaceutical industry can consider information on the size and therefore cost of PrEP coverage when negotiating potential healthcare subsidies. Policy makers can utilise estimates to monitor the speed, scale and gaps in coverage once implementation begins. Sexual health and primary care services can apply enumeration to forecast anticipated PrEP demand and plan accordingly. The enumeration process itself can also identify critical knowledge gaps
for further research to improve accuracy. The aim of this study was to estimate the number of individuals potentially eligible for publicly-funded PrEP in New Zealand under the current criteria.

Methods

PrEP eligibility criteria

We followed the published PHARMAC funding criteria,(13) summarised as:

Patient has tested HIV negative and either:

1) Patient is male or transgender, has sex with men, is likely to have multiple episodes of condomless anal intercourse in the next 3 months and any of the following:
   i) 1+ episode of condomless receptive anal intercourse with a casual male partner in the last 3 months
   ii) diagnosis of rectal chlamydia, rectal gonorrhoea or infectious syphilis in the last 3 months
   iii) methamphetamine use in the last 3 months; or

2) Patient has a regular partner with HIV, regular partner is not on HIV treatment or has a detectable viral load, and condoms have not been consistently used.

Data sources

We used the following sources to enumerate the PrEP-eligible population given the above criteria:

- Statistics New Zealand data on the population aged 16-69 at 31 December 2017 (14)
- PHARMAC data on the number of adult people living with HIV (PLWH) receiving funded antiretroviral treatment (ART) as at 30 June 2017 (15)
- Expert advice that 85% of diagnosed PLWH are accessing funded ART (9)
- Estimates of the HIV Care Cascade in Capital and Coast District Health Board, Wellington (16)
Active surveillance of the prevalence of diagnosed and undiagnosed HIV in a community sample of GBM in Auckland in 2011 (17)

Passive surveillance of new HIV diagnoses (9)

New Zealand Health Survey Sexual and Reproductive Health module 2014/15 data (18)

Behavioural surveillance from surveys of GBM in community settings in Auckland (19)

Behavioural data among diagnosed PLWH from the HIV Futures NZ 2 study (20)

Subpopulation estimates

We calculated the following subpopulation estimates using the sources above:

a) adult PLWH diagnosed;

b) adult PLWH diagnosed non-GBM;

c) adult PLWH diagnosed GBM;

d) adult PLWH;

e) PLWH GBM;

f) HIV negative GBM;

g) sexually active HIV negative GBM;

h) sexually active HIV negative GBM eligible for PrEP under criteria 1 or 2;

i) non-GBM eligible for PrEP under criteria 2;

j) all individuals eligible for PrEP under criteria 1 or 2.

People living with HIV

There is no register of the number of PLWH in New Zealand. To estimate this we used (a) PHARMAC data on the number of adults receiving funded ART at the end of June 2017; (b) an assumption that 85% of diagnosed PLWH are accessing funded ART, from previous New Zealand estimates; (9) (c) an assumption that 79% of PLWH are diagnosed, from a 2011 HIV prevalence study among GBM in
Auckland.(17) To estimate the proportion and number of PLWH who were non-GBM we assumed that
(d) the proportion of females receiving funded ART provides a proxy for the proportion of non-GBM
males receiving funded ART, based on surveillance data of new HIV diagnoses.(9) To estimate the
proportion who were GBM (e) we subtracted the proportion assumed to be non-GBM from all adults
receiving funded ART.

**GBM**

To estimate GBM (f) we used data from the New Zealand Health Survey Sexual and Reproductive Health
module 2014/15 on males aged 16-74 who identified as gay or as bisexual.(18)

**HIV negative GBM who are sexually active**

We estimated the number of HIV negative GBM (g) by subtracting the number of estimated GBM PLWH
(e) from the estimated number of GBM (f). We estimated the proportion that are sexually active using
2014 behavioural surveillance data.

**HIV negative GBM eligible for PrEP**

We used behavioural surveillance data to estimate the proportion eligible for PrEP under current
PHARMAC criteria (h), making best approximations where necessary. For criteria 1(i) we used the
proportion engaging in any receptive condomless anal intercourse with a casual male partner in the last
six months from the 2014 behavioural surveillance survey. For criteria 1(ii) we used the proportion
reporting gonorrhoea or chlamydia (at any site) or lymphogranuloma venereum (LGV) (a chlamydia
variant) or syphilis in the last 12 months from the 2014 behavioural survey. For criteria 1(iii) we used the
proportion reporting methamphetamine use in the last six months from the 2006 behavioural survey.(21)
For criteria 2 (GBM only) we used the proportion reporting any condomless anal intercourse with a
known HIV positive regular male partner in the last six months.
Non-GBM eligible for PrEP

For criteria 2 (non-GBM) we estimated the proportion of HIV positive non-GBM with a regular partner, the proportion of these partnerships that were sero-nonconcordant, and the proportion of these not using condoms consistently from HIV Futures NZ 2 study. We estimated the proportion of diagnosed HIV positive individuals not virally suppressed (not on ART or on ART but not virally suppressed) from the HIV Care Cascade study in the Capital and Coast District Health Board.

Sensitivity analyses

We altered various assumptions by: changing the GBM denominator population to gay-identified males only and to males reporting same-sex behaviour in the previous five years;(18) using the lower and upper 95% confidence intervals of the proportion PLWH who are diagnosed;(17) varying the proportion of diagnosed PLWH who are under active follow-up to the most recent HIV Care Cascade study in the Capital and Coast District Health Board.(16)

Results

We estimated 2,906 adult PLWH diagnosed as of 30 June 2017 (subpopulation a). Of these, we estimated 31.8% were either female or male non-GBM and 68.2% were GBM, enumerating 924 diagnosed non-GBM (subpopulation b) and 1982 diagnosed GBM (subpopulation c). Assuming 21% of PLWH are undiagnosed we estimated 3,678 PLWH overall in New Zealand (subpopulation d), of whom 2,509 are GBM (subpopulation e) (Table 1).

The New Zealand Health Survey (Sexual and Reproductive Health module) found that 2.3% of males identified as gay or as bisexual, enumerating 37,481 individuals, 34,972 of whom are HIV negative (subpopulation f). HIV behavioural surveillance reports that 92.9% of participants had sex with a male in the previous six months, enumerating 32,489 sexually active HIV negative GBM (subpopulation g).
Table 2 shows the proportion of sexually active HIV negative GBM who would satisfy the
PHARMAC PrEP eligibility criteria based on each stipulation and overall. An estimated 13.4% qualify
for engaging in receptive condomless anal intercourse with a casual partner, 7.3% for a diagnosis of
gonorrhoea, chlamydia, LGV or syphilis, 7.4% for using methamphetamine, and 0.33% for engaging in
condomless anal intercourse with a known HIV positive regular partner. There is no available estimate for
the PHARMAC stipulation of likely future condomless anal intercourse so we assume past practice will
be ongoing. Overall we estimate 17.9% or 5,816 individuals would be eligible for PrEP under criteria 1 or
2 (subpopulation h).

We were unable to find an estimate of either the adult New Zealand transgender population or the
proportion of this that would satisfy the PHARMAC eligibility criteria.

From the HIV Futures 2 survey we assumed that 50% of diagnosed non-GBM PLWH have a
regular partner, using data available on female respondents; that 80% were sero-nonconcordant, using
data available on all respondents; and that 50% were not using condoms consistently, using data from
female respondents in non-concordant regular relationships (Table 1). We assumed that 11% of PLWH
under clinical care were not on ART, and that a further 6.6% of those who were on ART were not virally
suppressed, using data from the HIV Care Cascade study in Capital and Coast District Health Board.
Applying these assumptions we estimated 31 non-GBM would be eligible for PrEP under criteria 2
(subpopulation i).

In total we estimated that 5,847 individuals would be eligible for PrEP, of whom 99.5% are GBM
and 0.5% are non-GBM (Table 1). We then substituted in alternative estimates for the GBM denominator
(1.3% identifying only as gay, 2.6% reporting same-sex behavior in the previous five years),(18) the
lower (67%) and upper (88%) 95% confidence intervals for the proportion of PLWH diagnosed,(17) and
the proportion of diagnosed PLWH on ART (89%)(16), summarised in Fig.1. This suggested a lowest estimate of 3,062 eligible individuals (99% GBM and 1% non-GBM respectively) and a highest estimate of 6,718 individuals (99.6% GBM and 0.4% non-GBM respectively). The GBM population denominator assumption exerted the strongest effect on our estimates.

Discussion

PrEP is publicly funded in New Zealand and we estimate 5,847 individuals are eligible, almost all (99%) GBM. This figure provides a target for the implementation phase and the public health response must now focus on meeting this need. Achieving this coverage would deliver public as well as personal health benefits, as high risk individuals protected by PrEP will neither acquire HIV nor subsequently transmit it to their sexual partners.

Strengths of this study include using nine data sources, sensitivity analyses of 18 alternative scenarios, and the timeliness, shortly after PrEP was publicly funded in New Zealand. The findings can inform PrEP policy and implementation in New Zealand and internationally.

We based our estimates on the available New Zealand data and there are several limitations to the assumptions we made. There are no accurate data on the number of people currently living in New Zealand with diagnosed HIV, nor on the mode of transmission of PLWH receiving ART. The estimate for undiagnosed infection is based on an Auckland study of GBM in 2011(17) and may well now be lower among GBM and different for non-GBM. The time period relating to the behavioural estimates for GBM such as condomless intercourse (last 6 months), methamphetamine use (last 6 months) and STIs (last 12 months) were greater than their respective PHARMAC criteria (last 3 months); this may overestimate eligibility. Conversely, all behavioural surveillance data from 2014 and 2006 are now out of date,
especially the prevalence of condomless anal intercourse and STIs that were increasing at the time,(18) potentially underestimating current eligibility. We made assumptions about sexual partnering and behaviour among non-GBM PLWH from a 2007 survey and granular disaggregated data by mode of transmission were unavailable.(20) Estimates of the HIV Care Cascade (proportion under care, on ART, virally suppressed) rely on Wellington data(16) and are not routinely reported nationally. A major omission is an estimate for eligible transgender adults. In New Zealand 1.2% of secondary school students reported being transgender,(22) but we were unable to find data for adults and their relevant sexual behaviour. Research addressing these gaps would improve our estimates.

Our New Zealand estimates are based on national publicly funded PrEP criteria and few other countries had such provisions at the time of writing. In the United States, researchers used population surveys to estimate that 1,232,000 individuals had PrEP indications in 2015, including 24.7% of GBM, 18.5% of people who inject drugs, and 0.4% of sexually active heterosexual adults without HIV.(23) In New South Wales, Australia, researchers drew on gay community surveys, nationally representative data on the proportion of males identifying as gay, and HIV notification data to estimate that 3700 GBM were at high risk, in order to inform the large “EPIC-NSW” PrEP implementation trial.(24) The latter study proposed criteria similar to New Zealand’s, but added a further stipulation of 10 or more casual partners in the previous six months, and calculated 8.6% of GBM HIV negative GBM would be eligible for the trial. A review of PrEP demonstration projects from early-adopting countries provided five further national estimates, with several citing unpublished expert opinion.(25) In the UK, the “PrEP Impact” trial investigators estimated 10,000 individuals would be eligible across publicly-funded genitourinary medicine (GUM) clinics, citing GUM clinic data simulations.(26) The range of such estimates reflects population size, local HIV epidemiology and associated subgroup estimates, and trial or implementation project eligibility criteria. Estimates commonly relied on sexual behaviour data either from surveys or clinic databases, reinforcing the important role of these sources.
Access to PrEP in New Zealand prior to public funding was through a demonstration project in Auckland’s Sexual Health Clinics (SHC) for 150 participants, or by importing generic medication with a general practitioner’s prescription. Scaling up access to 5,847 individuals will require substantial changes to service delivery. Around half of GBM in New Zealand live in Auckland, meaning that ~2900 patients in that city alone will need screening and three-monthly follow up appointments. Barriers include restricted SHC capacity, low general practitioner (GP) PrEP awareness and training, and research suggesting that half of GBM have not disclosed their sexuality to their GP.

To reach these targets PrEP education and social marketing will also be needed to raise awareness of PrEP’s safety, efficacy, eligibility criteria and also to de-stigmatise PrEP use. This ought to judiciously balance promoting the benefits of PrEP while maintaining community norms for existing effective interventions that protect against HIV and other sexually transmitted infections such as consistent condom use.

In New Zealand, PrEP became funded in a context of HIV and sexual health sector consensus but without a contemporary government HIV strategy or action plan. Models of policy best-practice need to be shared internationally, for example the approach of the New South Wales (NSW) government. HIV notifications in NSW have declined since implementing large-scale PrEP demonstration projects. Facilitating – indeed perhaps necessary - factors underlying this success appear to be a bipartisan partnership model and timely sexual health and behavioural surveillance that has been adapted to accommodate PrEP.

In conclusion, there is widespread consensus in New Zealand’s HIV sector that intensified HIV prevention efforts are now urgently needed. Targeted uptake of PrEP has been identified as an important component for the HIV epidemic to be reversed, consistent with scientific advances and global
recommendations since 2015. Public funding for PrEP is a critical step and enumeration of the eligible population should help guide the next phase.(35)
Conflicts of interest

None.

Acknowledgements

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Ethics

Not applicable.
References


demonstration project with equity quotas in Auckland, New Zealand. *Sexual Health*. Accepted for publication.


Table 1. Estimated number eligible for funded pre-exposure prophylaxis (PrEP) in New Zealand, PHARMAC criteria 1 March 2018

<table>
<thead>
<tr>
<th>Row</th>
<th>Population</th>
<th>Proportion</th>
<th>No.</th>
<th>Notes/source</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>NZ males aged 16-69</td>
<td>1,629,590</td>
<td>(14)</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>NZ females aged 16-69</td>
<td>1,683,300</td>
<td>(14)</td>
<td></td>
</tr>
</tbody>
</table>

**PLWH diagnosed and on ART**

<table>
<thead>
<tr>
<th>Row</th>
<th>Population</th>
<th>Proportion</th>
<th>No.</th>
<th>Notes/source</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>No. adults diagnosed and on ART</td>
<td>2,470</td>
<td>(15)</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Female</td>
<td>393</td>
<td>(15)</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Male</td>
<td>2077</td>
<td>(15)</td>
<td></td>
</tr>
</tbody>
</table>

**PLWH total**

<table>
<thead>
<tr>
<th>Row</th>
<th>Population</th>
<th>Proportion</th>
<th>No.</th>
<th>Notes/source</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>Under care and on ART</td>
<td>0.85</td>
<td>2,906</td>
<td>C/F</td>
</tr>
<tr>
<td>G</td>
<td>No. diagnosed</td>
<td></td>
<td>2,906</td>
<td>G/H</td>
</tr>
<tr>
<td>H</td>
<td>Proportion diagnosed</td>
<td>0.79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>No. PLWH</td>
<td>3,678</td>
<td>G/H</td>
<td></td>
</tr>
</tbody>
</table>

**PLWH by subpopulation**

<table>
<thead>
<tr>
<th>Row</th>
<th>Population</th>
<th>Proportion</th>
<th>No.</th>
<th>Notes/source</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td>Proportion adult PLWH female</td>
<td>0.159</td>
<td>D/C</td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>Proportion adult PLWH non-GBM male</td>
<td>0.159</td>
<td>Assumed equal to J(9)</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>Proportion adult PLWH GBM</td>
<td>0.682</td>
<td>Assumed 1-(J+K)</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>No. diagnosed non-GBM male and female</td>
<td>924</td>
<td>G*(J+K)</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>No. diagnosed GBM</td>
<td>1982</td>
<td>G*L</td>
<td></td>
</tr>
<tr>
<td>O</td>
<td>No. PLWH females</td>
<td>585</td>
<td>I*J</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>No. PLWH non-GBM males</td>
<td>585</td>
<td>I*K</td>
<td></td>
</tr>
<tr>
<td>Q</td>
<td>No. PLWH GBM males</td>
<td>2509</td>
<td>I*L</td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>Transgender</td>
<td>-</td>
<td>-</td>
<td>No adult NZ data</td>
</tr>
</tbody>
</table>

**GBM**

<table>
<thead>
<tr>
<th>Row</th>
<th>Population</th>
<th>Proportion</th>
<th>No.</th>
<th>Notes/source</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>Gay and bisexual identifying males</td>
<td>0.023</td>
<td>37,481</td>
<td>A*0.023(18)</td>
</tr>
<tr>
<td>T</td>
<td>GBM HIV negative</td>
<td>34,972</td>
<td>S-Q</td>
<td></td>
</tr>
<tr>
<td>U</td>
<td>GBM HIV negative sexually active</td>
<td>0.929</td>
<td>32,489</td>
<td>T*0.929(19)</td>
</tr>
</tbody>
</table>

**GBM eligible for PrEP**

<table>
<thead>
<tr>
<th>Row</th>
<th>Population</th>
<th>Proportion</th>
<th>Notes/source</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>GBM HIV negative sexually active PrEP eligible under criteria 1 or 2</td>
<td>0.179</td>
<td>From Table 2</td>
</tr>
</tbody>
</table>

**Non-GBM eligible for PrEP**

<table>
<thead>
<tr>
<th>Row</th>
<th>Population</th>
<th>Proportion</th>
<th>Notes/source</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>Proportion diagnosed positive non-GBM with regular partner</td>
<td>0.5</td>
<td>(20) estimated from Table 46, women</td>
</tr>
<tr>
<td>X</td>
<td>Proportion serononconcordant</td>
<td>0.8</td>
<td>(20) estimated from p.42, all respondents (16)</td>
</tr>
<tr>
<td>Y</td>
<td>Proportion not on ART, or ART but not virally suppressed</td>
<td>0.169</td>
<td></td>
</tr>
<tr>
<td>Z</td>
<td>Proportion not using condoms consistently</td>
<td>0.5</td>
<td>(20) estimated from Table 49</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
<td></td>
<td></td>
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<tr>
<td>--------------</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>AA</td>
<td>Total GBM eligible</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AB</td>
<td>Total non-GBM eligible</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC</td>
<td>Total eligible</td>
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<td></td>
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<tr>
<td>AD</td>
<td>Proportion GBM</td>
<td></td>
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</tr>
<tr>
<td>AE</td>
<td>Proportion non-GBM</td>
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**Total**

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<tr>
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<tbody>
<tr>
<td>AA</td>
<td>Total GBM eligible</td>
<td>5,816</td>
</tr>
<tr>
<td>AB</td>
<td>Total non-GBM eligible</td>
<td>31</td>
</tr>
<tr>
<td>AC</td>
<td>Total eligible</td>
<td>5,847</td>
</tr>
<tr>
<td>AD</td>
<td>Proportion GBM</td>
<td>0.995</td>
</tr>
<tr>
<td>AE</td>
<td>Proportion non-GBM</td>
<td>0.005</td>
</tr>
</tbody>
</table>

**Abbreviations:**

- PrEP: pre-exposure prophylaxis
- ART: antiretroviral treatment
- GBM: gay and bisexual men
- PLWH: people living with HIV
- NZ: New Zealand
Table 2. Estimated proportion of HIV negative sexually active gay and bisexual men (GBM) eligible for funded pre-exposure prophylaxis (PrEP) in New Zealand, PHARMAC criteria 1 March 2018

<table>
<thead>
<tr>
<th>PHARMAC criteria</th>
<th>Proportion of HIV negative sexually active GBM</th>
<th>Measure used and notes/source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1(i). 1+ episode of condomless receptive anal intercourse with a casual male partner in the last 3 months</td>
<td>13.4%</td>
<td>Any receptive condomless anal intercourse with a casual male partner in the last 6 months; 2014 survey(19)</td>
</tr>
<tr>
<td>1(ii). Diagnosis of rectal chlamydia, rectal gonorrhoea or infectious syphilis in the last 3 months</td>
<td>7.3%</td>
<td>Diagnosis of gonorrhoea, chlamydia, lymphogranuloma venereum (LGV) or syphilis in the last 12 months, any site; 2014 survey(19)</td>
</tr>
<tr>
<td>1(iii). Methamphetamine use in the last 3 months</td>
<td>7.4%</td>
<td>Methamphetamine use in the last 6 months; 2006 survey(21)</td>
</tr>
<tr>
<td>2. Patient has a regular partner with HIV, regular partner is not on HIV treatment or has a detectable viral load, and condoms have not been consistently used</td>
<td>0.33%</td>
<td>Any condomless intercourse with a known HIV positive current regular partner in the last 6 months; 2014 survey(19)</td>
</tr>
<tr>
<td>Proportion eligible</td>
<td>17.9%</td>
<td>Any of above criteria^A</td>
</tr>
</tbody>
</table>

^A We assumed those reporting above criteria will be likely to engage in condomless anal intercourse in the next 3 months.
Fig. 1. Estimating the number of individuals eligible for publicly funded PrEP in New Zealand by varying the assumptions regarding population denominator, proportion diagnosed with HIV and proportion treated.

Notes. Dark bar is summary estimate. Acronyms for each estimate are as follows: GAY= males identifying as gay only; GBM= males identifying as gay or bisexual; SSB= males reporting same-sex behavior in last five years; DIAG67= 67% estimated people living with HIV (PLWH) are diagnosed; DIAG79= 79% estimated PLWH are diagnosed; DIAG88= 88% estimated PLWH are diagnosed; ART85= 85% of diagnosed PLWH receiving antiretroviral therapy; ART89= 89% of diagnosed PLWH receiving antiretroviral therapy.