Evidence for optimal HIV testing intervals in HIV-negative individuals from various risk groups: a systematic review protocol

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Abstract

Background: Evidence-based recommendations for HIV testing are essential for health care providers. However, it is unclear whether there is sufficient evidence to support recommendations for HIV testing frequencies in a variety of HIV risk groups.

Objective: The aim of this document is to outline the methodological protocol of a systematic review that would gather evidence for the optimal frequency of HIV testing among individuals in various HIV risk groups with respect to personal and public health outcomes and cost-effectiveness.

Methods: This protocol adheres to the PRISMA-P reporting items, and the review is registered with PROSPERO. The target population includes individuals who may have undiagnosed HIV infection. Different frequencies of HIV testing will be compared and outcomes to do with personal and public health, patient values/preferences and costs will be examined. The search strategy will encompass searches in MEDLINE/Pubmed, Scopus, Embase, Cochrane, PsychINFO, and EconLit, as well as grey literature sources. Articles will be screened by title/abstract, and subsequently by full-text, in duplicate. Extraction of pertinent data from the screened references will be carried out by one reviewer and verified by a second. Multiple critical appraisal tools will be used to assess individual study quality, and the GRADE approach will be used to appraise the overall quality of the evidence. Data will be synthesized narratively, and the results will be published in a peer-reviewed journal.

Discussion: This systematic review, designed with extensive input from content experts, will help to identify key evidence to inform recommendations for HIV testing frequency.

Suggested citation: Traversy GP, Austin T, Yau J, Timmerman K. Evidence for optimal HIV testing intervals in HIV-negative individuals from various risk groups: a systematic review protocol. Can Commun Dis Rep. 2017;43(2):38-48. https://doi.org/10.14745/ccdr.v43i02a02

Background

HIV testing is a key element of the HIV cascade of care, representing the first "90" of the Joint United Nations Programme on HIV/AIDS (UNAIDS) 90–90–90 global strategy for addressing HIV/AIDS (1). HIV diagnosis is essential for linkage to care and initiation of antiretroviral therapy (ART), which may subsequently lead to decreased viral load, reduced infectivity and improved personal health outcomes (2,3). Low rates of screening and testing are therefore a potential limiting factor for the success of HIV prevention strategies. Up to 50% of new HIV infections may be attributed to those who are unaware of their infection (4-7). In Canada, it is estimated that individuals who are unaware of their infection represent 21% of all those who are HIV-infected (8).

Certain populations who are at higher risk for HIV infection, such as men who have sex with men (MSM), injection drug users (IDU) or Indigenous peoples, may benefit from more frequent HIV testing. Accordingly, an important question in developing recommendations and strategies for HIV testing is how often should individuals from different risk groups be tested for HIV. Answering this question requires balancing the potential benefits of enhanced screening with the increased costs of the screening, as well as considerations of patient values and preferences.

Clear and specific guidance for how often to test individuals from different risk groups may help health care providers improve their testing behaviours and normalize this practice. A recent systematic review of guidelines found that a number of the guidelines recommend annual screening for groups including MSM and IDU but that others cite a paucity of data frequency of testing for HIV in certain groups, leading to some inconsistencies in guidance (9). At the federal level, the Public Health Agency of Canada's *HIV Screening and Testing Guide* states that individuals involved in high-risk practices should be screened for HIV at least annually but that there is insufficient evidence to provide recommendations for individual scenarios (10).

Many of the guidelines reviewed in the systematic review of guidelines mentioned above are several years old. In addition, guideline developers do not always describe the basis for their recommendations (e.g. systematic review versus expert opinion). A thorough, up-to-date review of scientific evidence related to HIV testing frequency is warranted and will be useful for developing timely quality guidance in Canada and abroad. The purpose of this article is to describe the protocol for a systematic review aimed at answering a number of questions related to how often to test for HIV.

Objective

The objective of the systematic review is to examine the scientific evidence that supports different frequencies of HIV testing for individuals in various risk groups who may have undiagnosed HIV.

The over-arching research question is: What is the optimal frequency of testing for HIV in individuals from various HIV risk groups with respect to personal and public health outcomes and cost-effectiveness? The sub-questions relevant to this include:

- What is the most effective frequency or interval of testing for HIV in people who have unknown or previously confirmed negative serostatus, with respect to personal/public health outcomes?
- What are patients' values and preferences with respect to how often to test/re-test for HIV?
- What are the potential harms associated with different HIV testing frequencies?
- What is the most cost-effective frequency or interval of re-testing for HIV in people who have an unknown or a previously confirmed negative serostatus?

Methods

Prior to the development of this protocol, a scoping search was completed to help guide protocol development and identify any similar works. This scoping search included a review of the reference lists from key guidelines identified in a systematic review of HIV testing guidelines (9) as well as searches for the term "HIV testing" on the websites of the following organizations/registries: Cochrane, the National Institute for Health and Care Excellence (NICE), the Canadian Agency for Drugs and Technologies in Health (CADTH), the UK Department of Health (NHS), the International Resource for Infection Control (iNRIC) and the PROSPERO International Prospective Register of systematic reviews.

This systematic review protocol has been designed in alignment with the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) (11). See **Appendix 1** for a list of the PRISMA-P reporting items.

Drafts of the protocol were peer-reviewed by several experts in infectious disease guideline development from the Public Health Agency of Canada prior to registration of the review with the PROSPERO International Prospective Register of systematic reviews (http://www.crd.york.ac.uk/PROSPERO; registration number CRD42016046575) (12). In addition, a health economist was consulted.

Search strategy

A comprehensive search strategy was designed in consultation with a research librarian. The search strategy was also peer-reviewed by an external research librarian prior to execution of the search. The full search strategy can be found in **Appendix 2**.

The following databases will be searched:

- MEDLINE/PubMed
- Scopus
- Embase
- Cochrane Library
- PsycINFO
- EconLit

The following sources of grey literature will be searched:

- Open Grey
- ClinicalTrials.gov
- All relevant sources from the CADTH Grey Matters checklist (13)

The search strategies that will be used for Open Grey and ClinicalTrials.gov can be found in **Appendix 3**.

The CADTH Grey Matters tool is a checklist used to guide online searches for grey literature. It includes national and international health technology assessment websites, drug and device regulatory agencies, clinical trial registries, health economics resources, Canadian health prevalence or incidence databases and drug formulary web sites (13). A total of 40 relevant websites from the checklist were identified by the research team (drug formulary, drug advisory and warning, and surveillance databases were not considered relevant to the research question, for example). Many of the websites in the checklist do not include an advanced search option, so the large majority will be searched using the term "HIV" to provide the widest range of potentially relevant results. Websites with advanced search functions will be searched with combinations of "HIV" and "testing" or "screening" or "test" or "screen."

Grey literature searches will be carried out by two members of the research team independently, and all articles deemed potentially relevant will be added to the results of the database searches for further screening.

Data management

All references will be uploaded into the DistillerSR, a secure, internet-based systematic review management software (Evidence Partners). This software platform will be used for screening eligible articles, data extraction and quality assessment.

Eligibility criteria

Language

Articles published in English or French will be considered for the review.

Study design

Eligible study designs will vary depending on the specific research sub-question. For all search questions, other systematic reviews will not be explicitly excluded. Rather, the reference lists will be scanned for relevant articles that may have otherwise been missed.

Table 1 outlines the study designs that will be considered for each of the research sub-questions.

Table 1: Study designs eligible for inclusion in the review, by research sub-question

Research sub-question	Eligible study designs
With respect to personal/public health outcomes, what is the most effective frequency or interval of re-testing for HIV in people who have unknown or previously confirmed negative serostatus?	Quantitative (particularly comparative) studies: • Randomized controlled trials (RCTs) • Non-randomized controlled trials • Longitudinal observational studies (e.g. cohort/registry studies) • Before/after designs (e.g. interrupted time series) • Retrospective studies • Intervention studies • Cross-sectional studies • Modelling studies
What are patients' values and preferences with respect to how often to test/re-test for HIV?	Qualitative studies Surveys
What are the potential harms associated with different HIV testing frequencies?	Quantitative and qualitative studies will be considered
What is the most cost-effective frequency or interval of re-testing for HIV in people who have an unknown or a previously confirmed negative serostatus?	Costing studies: • Cost-effectiveness studies, cost-benefit, cost-consequence, cost-utility, cost minimization • Modelling studies

Abbreviation: HIV, human immunodeficiency virus

Population

The target population includes individuals who may have undiagnosed HIV infection.

Intervention

The intervention of interest is HIV screening/testing at varying intervals.

Comparison

The effects of the intervention will be compared to any the following:

- Other interventions
- "Normal" or "standard" state of care (as defined in a given study)
- Before/after comparisons

Setting

Studies will be considered if they are held in any setting where HIV testing could be conducted.

Exclusion criteria

Articles will also be excluded if they are:

- Published prior to 2000
- Commentaries, editorials, letters to the editor, conference abstracts, poster presentations
- Guidelines/ policy papers/ policy documents

Outcomes

Several potential outcomes that could be relevant for each of the research sub-questions have been identified. However, the possibility exists that not all of the outcomes will be represented in the literature, as some may not have been examined. The primary and secondary outcomes of interest for each research question are outlined in **Table 2**.

Table 2: Potential outcomes for each of the research sub-questions

Research sub-question	Outcomes
With respect to personal/public health outcomes, what is the most effective frequency or interval of re-testing for HIV in people who have unknown or previously confirmed negative serostatus?	Primary outcomes: • Time between HIV exposure/infection and diagnosis • CD4 cell count and/or viral load at diagnosis • Number/percent of patients receiving HIV tests • Number of new HIV diagnoses among varying groups • Change in number/percent of individuals with undiagnosed HIV infection (modelling)
	Secondary outcomes: • Number of patients successfully linked to care • Number of patients beginning ART • Number of HIV infections averted (modelling)
What are patients' values and preferences with respect to how often to test/re-test for HIV?	• Patient level of comfort with testing • Uptake of HIV testing • Acceptability of a given testing frequency
What are the potential harms associated with different HIV testing frequencies?	• Psychological distress or other psychosocial harms • Labelling • Feelings of stigmatization • False positives • False negatives Note: Studies of outcomes on psychosocial or other harms related to **true positives** or **true negatives** will not be included.
What is the most cost-effective frequency or interval of re-testing for HIV in people who have an unknown or a previously confirmed negative serostatus?	• All outcomes from the pertinent study types will be considered

Abbreviations: CD4, cluster of differentiation 4; HIV, human immunodeficiency virus; ART, antiretroviral therapy

Screening/selection of articles

All references identified in the search will be screened based on title and abstract following removal of duplicates. The eligibility criteria above will be used to determine inclusion and exclusion

of articles at the title/abstract-screening stage. Screening of titles and abstracts will be performed in duplicate by two reviewers. Disagreements will be reconciled through discussion with a third reviewer.

Full-text screening will be performed on titles with abstracts that meet the above criteria or for cases in which it is unclear whether this is the case. At the full-text screening stage, the eligibility criteria, as well as the outcomes listed above, will guide exclusion of irrelevant articles. Full-text screening will be performed in duplicate by two reviewers. Disagreements will be reconciled through discussion with a third reviewer.

Reasons for exclusion will be recorded at each step of the screening process. The results of the screening will be presented in a flowchart consistent with PRISMA recommendations (14).

Data extraction

Extraction of pertinent data from the screened references will be carried out by one reviewer and verified by another in order to reduce bias or errors in extraction. Any disagreements will be resolved through discussion with one or two other reviewers. Study authors may be contacted if there are any major uncertainties. All pertinent data (i.e. year of publication, period of data collection, study population, sample size, location, study setting, study design, intervention, comparison, results/outcomes, quality assessment score, etc.) will be extracted into evidence tables.

Duplicate, overlapping or companion studies, if identified during the screening process, will be dealt with by extracting the data into a single collection form or by extracting the data separately and combining these into a single input afterwards, as per the Cochrane Handbook for Systematic Reviews of Interventions (15).

Quality assessment

Quality assessment will be carried out for individual studies included in the review, as well as for the overall body of evidence. Different methods of assessment will be used as appropriate for the study type.

The following assessment tools will be used for individual studies:

- Cochrane risk of bias for RCTs (15)
- Effective Public Health Practice Project (EPHPP) Quality Assessment Tool for other quantitative studies (16-18)
- Critical Appraisal Skills Programme (CASP) Qualitative Checklist for qualitative studies (19)

For the overall body of evidence, the quality of evidence will be assessed using the GRADE approach (15).

Data synthesis

Data will be synthesized narratively. If there is sufficient homogeneity among the evidence, a meta-analysis may be considered, although this is unlikely due to the variety of evidence sources being sought.

Subgroup analysis

The initial search will not target any specific subgroups. If evidence emerges for specific subgroups (e.g. MSM, IDU, Indigenous peoples, etc.) then the results will be disaggregated and reported narratively in separate sections for each subgroup.

Assessment of meta-biases

Statistical assessment of meta-biases such as publication bias across studies (e.g. Egger's test) will likely not be possible given the wide variety of evidence being sought and the likelihood of inclusion of a large proportion of studies with observational designs (20). The potential for publication bias will however be reduced by employing a rigorous search of grey literature, and the potential for substantial publication bias in observational studies will be taken into account when assessing the overall body of evidence using the GRADE approach (20). Selective outcome reporting will be assessed in RCTs by comparing the reported results of studies with the outcomes reported in the methods section of the protocol of the study. This will factor into quality assessment with the Cochrane risk of bias tool (15).

Amendments

The research team does not foresee any amendments to the protocol prior to carrying out the systematic review. However, if this is necessary, all amendments will be recorded as they occur and reflected in the PROSPERO record for this review. Amendments will also be documented in the final publication.

Dissemination

A manuscript of the results of the systematic review will be prepared and submitted for publication in a peer-reviewed journal. The results will be presented according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (14).

Discussion

To the best of our knowledge, this will be the first published systematic review examining evidence supporting recommendations for HIV testing frequency. The evidence identified in this review may be useful to update or create new guidance around HIV testing in Canada; groups outside Canada may also find it useful. The development of specific, evidence-based recommendations will help health care providers streamline and improve their HIV testing practices. Such recommendations can also be used by the public to manage their own sexual health.

Enhanced HIV screening and testing will help decrease the substantial portion of individuals with HIV who are unaware of their infection. This group contributes to a substantial proportion of new HIV infections, and evidence suggests that once these individuals are aware of their infection, they will be more likely to take steps to minimize the likelihood of transmission (4,21). HIV diagnosis is also the first step toward obtaining treatment, and thus, enhanced screening and testing yields benefits for personal and public health.

The strengths of this systematic review protocol include extensive input from content experts in the development of HIV and sexually transmitted infection guidelines and health economics. Another strength is the external peer review of the research librarian–designed search strategy.

One limitation of the review could be the potential inclusion of predominantly observational studies, given the difficulty of carrying out experimental studies on the topic. This may raise concerns regarding the quality of evidence; however, the results of the quality assessments will be published, and thus assessment of bias in the evidence will be transparent.

If this systematic review fails to find evidence to answer one or more of the research questions, this will be documented in the results. A "negative" finding will still be of use to guideline developers as it provides validity to those guidelines that cite a lack of evidence for HIV-testing interval recommendations (9) and suggests that such recommendations may need to be made on a jurisdiction-by-jurisdiction basis, based on expert opinion. It would also help highlight gaps in evidence, which could be useful for guiding future research.

Acknowledgements

We would like to thank Michèle Sabourin, Kelsey Young, Lisa Pogany, Rachel Bennett, Ulrick Auguste, Cathy Latham-Carmanico, Bakhtiar Anwar, Jun Wu and Margaret Gale-Rowe for their constructive review and feedback on the draft protocol. We would also like to thank the research librarians, Connie Barrowclough and Katherine Merucci, who helped design and carry out our systematic search, and Margaret Sampson for peer-reviewing the search strategy.

Authors' contributions

KT is the guarantor. GT drafted the protocol for the review, and all authors made substantial contributions to refine the research question/sub-questions, the study eligibility and exclusion criteria, the outcomes of interest, the screening, extraction and quality assessment processes, and the search strategy (with the help of a trained research librarian). GT, TA and JY will draft the manuscript. All authors will read, provide feedback and approve the final manuscript.

Conflict of interest

None.

Funding

This study was supported by the Public Health Agency of Canada. The authors have no sources of external funding to declare.

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Appendix 1: Completed PRISMA-P checklist for the systematic review

Section and topic	Item	Checklist item	Line no(s).
ADMINISTRATIVE INFORMATION			
Title:			
Identification	1a	Identify the report as a protocol of a systematic review	1, 67
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	N/A
Registration	2	If registered, provide the name of the registry (such as PROSPERO) and registration number	103
Authors:			
Contact	3a	Provide name, institutional affiliation, email address of all protocol authors; provide physical mailing address of corresponding author	4-7
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	262-267
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	220-224
Support:			
Sources	5a	Indicate sources of financial or other support for the review	270-273
Sponsor	5b	Provide name for the review funder and/or sponsor	270-273
Role of sponsor or funder	5c	Describe roles of funder(s), sponsor(s) and/or institution(s), if any, in developing the protocol	N/A
INTRODUCTION			
Rationale	6	Describe the rationale for the review in the context of what is already known	52-68
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	151-174
METHODS			
Eligibility criteria	8	Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review	140-174
Information sources	9	Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage	109-129, 145, 191-192
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, so that it could be repeated	344
Study records:			
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	137
Selection process	11b	State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)	175-187
Data collection process	11c	Describe planned method of extracting data from reports (such as piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	188-199
Data items	12	List and define all variables for which data will be sought (such as PICO items, funding sources), any pre-planned data assumptions and simplifications	192-194
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	173
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	200-209
Data synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	213
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I^2, Kendall's τ)	N/A
	15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)	216-219
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	212-219
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)	220-229
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (such as GRADE)	210-211

Abbreviation: Line no(s), Line numbers

Appendix 2: Search Strategy

All searches run and downloaded on September 16, 2016.

Database(s): Econlit 1886 to August 2016

Search Strategy:

No.	Searches	Results
1	(hiv or hiv+ or hiv-1 or hiv-2 or hiv1 or hiv2 or hivaids or (human immun* adj2 virus) or virus de l'immunodeficience humaine or vih or vih+ or vih1 or vih2 or vih-1 or vih-2).af.	1713
2	(screen* or rescreen* or test or tests or testing or tested or retest* or depistage or "diagnostic du VIH").af.	91581
3	(freque* or interval*).af.	26404
4	((time or timing or moment or temps or often or souvent*) adj3 (screen* or rescreen* or test* or retest* or depistage or "diagnostic du VIH")).af.	1484
5	1 and 2 and 3	5
6	1 and 4	2
7	or/5-6	7
8	limit 7 to yr="2000 -Current"	6

Abbreviation: No., Number

Database(s): PsycINFO 1806 to July Week 4 2016

Search Strategy:

No.	Searches	Results
1	exp hiv/	36417
2	(hiv or hiv+ or hiv-1 or hiv-2 or hiv1 or hiv2 or hivaids or (human immun* adj2 virus) or virus de l'immunodeficience humaine or vih or vih+ or vih1 or vih2 or vih-1 or vih-2).ti.	27738
3	(hiv or hiv+ or hiv-1 or hiv-2 or hiv1 or hiv2 or hivaids or (human immun* adj2 virus) or virus de l'immunodeficience humaine or vih or vih+ or vih1 or vih2 or vih-1 or vih-2).ab. /freq=2	31713
4	or/1-3	41632
5	screening/	8117
6	screening tests/	5000
7	health screening/	2451
8	(screen* or rescreen* or test or tests or testing or tested or retest* or depistage or "diagnostic du VIH"). ti.	102858
9	(screen* or rescreen* or test or tests or testing or tested or retest* or depistage or "diagnostic du VIH"). ab. /freq=2	258239
10	or/5-9	304851
11	hiv test/	1880
12	(freque* or interval*).ti.	22666
13	(freque* or interval*).ab. /freq=2	91053
14	or/12-13	100641
15	((time or timing or moment or temps or often or souvent*) adj3 (screen* or rescreen* or test* or retest* or depistage or "diagnostic du VIH")).ti.	575
16	((time or timing or moment or temps or often or souvent*) adj3 (screen* or rescreen* or test* or retest* or depistage or "diagnostic du VIH")).ab. /freq=2	918
17	or/15-16	1366
18	(10 and 14) or 17	10859
19	4 and 18	197
20	11 and (14 or 17)	69
21	or/19-20	200
22	Dissertation Abstract.pt.	413976
23	animals/	6443
24	case report/ or case report.tw.	36249
25	or/22-24	456006
26	21 not 25	176
27	limit 26 to yr="2000 -Current"	164

Abbreviation: No., Number

Database(s): Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) 1946 to Present (20151216.up)

Search Strategy:

No.	Searches	Results
1	(hiv or hiv+ or hiv-1 or hiv-2 or hiv1 or hiv2 or hivaids or (human immun* adj2 virus) or virus de l'immunodeficience humaine or vih or vih+ or vih1 or vih2 or vih-1 or vih-2).ti,kf.	204027
2	(hiv or hiv+ or hiv-1 or hiv-2 or hiv1 or hiv2 or hivaids or (human immun* adj2 virus) or virus de l'immunodeficience humaine or vih or vih+ or vih1 or vih2 or vih-1 or vih-2).ab. /freq=2	178603
3	exp HIV Infections/	252533
4	exp HIV/	89772
5	HIV Antibodies/	10284
6	or/1-5	326372
7	mass screening/	90016
8	Serologic Tests/	18348
9	(screen* or rescreen* or test or tests or testing or tested or retest* or depistage or "diagnostic du VIH").ti,kf.	470662
10	(screen* or rescreen* or test or tests or testing or tested or retest* or depistage or "diagnostic du VIH").ab. /freq=2	935790
11	or/7-10	1246845
12	AIDS serodiagnosis/	6381
13	(freque* or interval*).ti,kf.	132544
14	(freque* or interval*).ab. /freq=2	521701
15	or/13-14	594802
16	((time or timing or moment or temps or often or souvent*) adj3 (screen* or rescreen* or test or tests or testing or tested or retest* or depistage or "diagnostic du VIH")).ti,kf.	2150
17	((time or timing or moment or temps or often or souvent*) adj3 (screen* or rescreen* or test or tests or testing or tested or retest* or depistage or "diagnostic du VIH")).ab. /freq=2	2569
18	or/16-17	4359
19	(11 and 15) or 18	54568
20	6 and 19	1580
21	12 and (15 or 18)	157
22	20 or 21	1610
23	(letter or editorial).pt.	1360656
24	animal/	5981714
25	human/	16333570
26	24 not (24 and 25)	4284662
27	case reports/ or case report.tw.	1885376
28	or/23,26-27	7265507
29	22 not 28	1567
30	limit 29 to yr="2000 -Current"	1171

Abbreviation: No., Number

Scopus : Run September 16, 2016

TITLE ("**hiv**" OR "**hiv1**" OR "**hiv2** " OR "**hivaids**" OR "**human immune deficiency virus**" OR "**human immunodeficiency virus**" OR "**virus de l'immunodeficience humaine**" OR "**vih**" OR "**vih1**" OR "**vih2**")

AND ((TITLE ((**time** OR **timing** OR **moment** OR **temps** OR often OR **souvent***) W/3 (**screen*** OR **rescreen*** OR **test** OR **tests** OR **tested** OR **testing** OR **retest*** OR "**diagnostic du VIH**" OR **depistage**))) OR ((TITLE-ABS (**screen*** OR **rescreen*** OR **test** OR **tests** OR **tested** OR **testing** OR **retest*** OR "**diagnostic du VIH**" OR **depistage**))

AND (TITLE-ABS (**freque*** OR **interval***))))

AND (PUBYEAR > **1999**)

AND SUBJAREA (**mult** OR **arts** OR **busi** OR **deci** OR **econ** OR **psyc** OR **soci**)

429 records

Database(s): Embase 1974 to 2016 September 15

Search Strategy:

No.	Searches	Results
1	(hiv or hiv+ or hiv-1 or hiv-2 or hiv1 or hiv2 or hivaids or (human immun* adj2 virus) or virus de l'immunodeficience humaine or vih or vih+ or vih1 or vih2 or vih-1 or vih-2).ti,kw.	246105
2	(hiv or hiv+ or hiv-1 or hiv-2 or hiv1 or hiv2 or hivaids or (human immun* adj2 virus) or virus de l'immunodeficience humaine or vih or vih+ or vih1 or vih2 or vih-1 or vih-2).ab. /freq=2	204295
3	exp Human immunodeficiency virus infection/	328710
4	exp Human immunodeficiency virus/	160405
5	Human immunodeficiency virus antigen/	1810
6	Human immunodeficiency virus antibody/	8917
7	Human immunodeficiency virus infected patient/	26547
8	or/1-7	435387
9	mass screening/	52549
10	screening/	149792
11	screening test/	55924
12	rescreening/	227
13	serodiagnosis/	42942
14	(screen* or rescreen* or test or tests or testing or tested or retest* or depistage or "diagnostic du VIH").ti,kw.	608987
15	(screen* or rescreen* or test or tests or testing or tested or retest* or depistage or "diagnostic du VIH").ab. /freq=2	1265723
16	or/9-15	1709594
17	exp hiv test/	6818
18	(freque* or interval*).ti,kw.	162041
19	(freque* or interval*).ab. /freq=2	651528
20	or/18-19	739551
21	((time or timing or moment or temps or often or souvent*) adj3 (screen* or rescreen* or test or tests or testing or tested or retest* or depistage or "diagnostic du VIH")).ti,kw.	2617
22	((time or timing or moment or temps or often or souvent*) adj3 (screen* or rescreen* or test or tests or testing or tested or retest* or depistage or "diagnostic du VIH")).ab. /freq=2	3598
23	or/21-22	5775
24	(16 and 20) or 23	81929
25	8 and 24	2539
26	17 and (20 or 23)	316
27	or/25-26	2607
28	(letter or editorial).pt.	1480511
29	animal/	1803158
30	human/	17470047
31	29 not (29 and 30)	1350042
32	case study/ or case report.tw.	362306
33	or/28,31-32	3168665
34	27 not 33	2557
35	limit 34 to yr="2000 -Current"	2174

Abbreviation: No., Number

Cochrane

Date Run: 16/09/16 19:05:13.171
Description:

ID	Search	Hits
#1	[mh "HIV Infections"] or [mh HIV]	9272
#2	[mh ^"HIV Antibodies"]	238
#3	(hiv or hiv-1 or hiv-2 or hiv1 or hiv2 or hivaids or human immune deficiency virus or human immunodeficiency virus or human immuno-deficiency virus or human immune-deficiency virus or virus de l'immunodeficience humaine or vih or vih1 or vih2 or vih-1 or vih-2):ti	9923
#4	#1 or #2 or #3	12575
#5	[mh ^"mass screening"] or [mh ^"serologic tests"]	4877
#6	(screen* or rescreen* or test or tests or tested or testing or retest* or depistage or "diagnostic du VIH"):ti	21763
#7	#5 or #6	22979
#8	(freque* or interval*):ti	6568
#9	((time or timing or moment or temps or souvent*) near/3 (screen* or rescreen* or test or tests or tested or testing or retest* or "diagnostic du VIH" or depistage)):ti	147
#10	#8 or #9	6710
#11	[mh ^"AIDS serodiagnosis"]	143
#12	(#7 and #8) or #9	332
#13	#10 and #11	3
#14	#4 and #12	17
#15	#13 or #14 Publication Year from 2000 to 2016	3

Abbreviation: ID, Identification number

Appendix 3: Grey Literature Searches

All grey literature searches run on October 27, 2016.

Open Grey

("HIV" OR "HIV+" or "HIV-1" OR "HIV-2" OR "HIV1" OR "HIV2" OR "HIVAIDS" OR ("human immun*" NEAR/2 "virus") OR "human immunodeficiency virus" OR "human immunodeficiency virus infection") AND ("screening" OR "test*" OR "retest*" OR "rescreen*" OR "re-test*" OR "re-screen*")

Results: 163 items returned

Link to results:
http://www.opengrey.eu/search/request?q=%28%22HIV%22+OR+%22HIV%2B%22+or+%22HIV-1%22+OR+%22HIV-2%22+OR+%22HIV1%22+OR+%22HIV2%22+OR+%22HIVAIDS%22+OR+%28%22human+immun*%22+NEAR%2F2+%22virus%22%29+OR+%22human+immunodeficiency+virus%22+OR+%22human+immunodeficiency+virus+infection%22%29+AND+%28%22screening%22+OR+%22test*%22+OR+%22retest*%22+OR+%22rescreen*%22+OR+%22re-test*%22+OR+%22re-screen*%22%29+

ClinicalTrials.gov

Advanced search:

Conditions: "HIV" OR "HIV+" or "HIV-1" OR "HIV-2" OR "HIV1" OR "HIV2" OR "HIVAIDS" OR "human immunodeficiency virus"

Interventions: "screening" OR "testing" OR "retesting" OR "rescreening" OR "re-testing" OR "re-screening"

Timeframe: Studies received on or after 01/01/2000

Results: 649 items returned

Link to results: Clinical Trials.gov (https://clinicaltrials.gov/ct2/results/displayOpt?flds=a&flds=b&flds=t&submit_fld_opt=on&=Update+Display&cond=%22HIV%22+OR+%22HIV%2B%22+or+%22HIV-1%22+OR+%22HIV-2%22+OR+%22HIV1%22+OR+%22HIV2%22+OR+%22HIVAIDS%22+OR+%22human+immunodeficiency+virus%22&intr=%22screening%22+OR+%22testing%22+OR+%22retesting%22+OR+%22rescreening%22+OR+%22re-testing%22+OR+%22re-screening%22&rcv_s=01%2F01%2F2000&show_flds=Y)