ECDC TECHNICAL REPORT

Migrant health:
Sexual transmission of HIV within migrant groups in the EU/EEA and implications for effective interventions

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Contents

Abbreviations

AIDS	Acquired immunodeficiency syndrome
ART	Antiretroviral therapy
BME	Black and minority ethnic
COB	Country of birth
ECDC	European Centre for Disease Prevention and Control
EEA	European Economic Area
EFTA	European Free Trade Association
HFA-DB	Health For All database
HIV	Human immunodeficiency virus
MSM	Men who have sex with men
PCOI	Probable country of infection
ROB	Region of birth
UAPMP	Unlinked Anonymous Prevalence Monitoring Programme
WHO	World Health Organization

Executive summary

This report presents the published evidence of sexual transmission of HIV among populations from countries with generalised HIV epidemics in the European Union/European Economic Area (EU/EEA). Member states' surveillance systems for monitoring the sexual transmission of HIV in the EU/EEA among migrant populations are also profiled. The implications of this evidence are summarised and recommendations provided for those Member States that wish to improve their surveillance systems in order to assess the sexual transmission of HIV in their at-risk migrant populations. The evidence can also be used as a basis for policy and programmatic activities targeted toward migrant populations.

This report consists of a systematic review of the literature to examine the evidence for sexual transmission of HIV among persons from countries with generalised HIV epidemics after they have arrived in Europe. Additionally, a survey of EU/EEA Member States on the subject of sexual transmission of HIV in populations of migrants was conducted.

Twenty-seven papers (representing 26 studies) were included in the literature review. Papers were included from six EU countries: United Kingdom (9); the Netherlands (5); France (3); Spain (3); Belgium (1) and Italy (1). Two papers were also included from Switzerland (2). Three further papers covered the entire WHO European Region[i].

Many of the papers provided evidence pointing toward ongoing HIV acquisition and hence transmission post-migration to Europe, most notably providing estimates of probable country of infection or of incident infection. Figures for HIV infections acquired post-migration ranged from as low as 2% among sub-Saharan Africans in Switzerland, to 62% among black Caribbean men who have sex with men (MSM) in the UK.

All 30 Member States of the EU/EEA[ii] were invited to take part in the survey which explored HIV surveillance, evidence of sexual transmission of HIV, and gave some Member States the opportunity to expand on data that had previously been submitted to ECDC with regard to HIV among migrants.

Twenty-four countries responded to the survey; a response rate of 80%. The proportion of new HIV diagnoses in 2011 among migrants varied by country, from 75% of new infections in Sweden being diagnosed among migrants to fewer than 5% of infections diagnosed among migrants in Poland, Slovakia, Romania, Lithuania, and Estonia. Similarly there were differences in the type of surveillance and behavioural data that had been obtained by each country. Member States that estimated probable country of infection used a variety of different methods.

There is evidence to show that some ongoing post-migration HIV acquisition is occurring in EU/EEA countries. The difficulty is in quantifying the degree to which this is occurring. First, understanding and quantifying HIV transmission in a given population is very challenging. New tests that determine whether an HIV infection was recently acquired may provide greater insights into real-time transmission dynamics. Second, it is difficult to understand the dynamics around classifying the place of infection, since migration is not a static process.

Based on the findings of this report the following areas for further action have been identified.

Improving HIV surveillance data to monitor HIV among migrant populations

1. Member States should consider which surveillance variables to collect and analyse in order to better understand and monitor the degree to which sexual transmission of HIV occurs among migrant populations.

How these data are gathered will vary by country according to national resources and surveillance structures. Member States should focus on collecting variables such as 'CD4 cell counts', 'date or year of arrival' and 'country of birth' in order to estimate probable country of infection. In some settings, sentinel surveillance or repeat cross-sectional surveys could play an important role in providing this necessary evidence.

2. For those EU/EEA countries that identify migrants as an important part of their HIV epidemic, the application of an objective method for assigning probable country of HIV infection should be considered. This will inform prevention programming at the national level and enable comparisons between countries.

Although a substantive number of EU/EEA countries can provide an estimate of likely place of HIV acquisition among migrant populations, it is often largely subjective. ECDC is providing technical support to countries wanting to further improve assignment of probable country of HIV infection.

[i] The World Health Organization European Region comprises 53 countries. See http://www.who.int/about/regions/euro/en/ for details.

[ii] The survey was carried out before Croatia's accession to the European Union on 1 July 2013.

3. In order to better understand HIV transmission dynamics, Member States should consider expanding the measurement of HIV incidence.

Given the challenges in measuring incident infections and the multiple models in use to achieve this, EU-level guidance on methods for estimating incidence in at-risk groups including migrants could be considered.

Improving HIV prevention programming among migrants

4. Those EU/EEA countries that identify migrants as an important sub-population in their response to HIV, should consider developing an evidence-based, long-term strategic policy to reduce post-migration HIV-acquisition and transmission.

These policies would ideally include a focus on increasing resources for research to explore and understand post-migration patterns of sexual transmission, as well as sexual knowledge, attitudes and behaviours. Underestimating the degree of HIV transmission among migrants in the EU/EEA countries will undermine the potential for averting HIV through targeted policy and programmatic activity surrounding both primary and secondary prevention.

5. Those EU/EEA countries that identify migrants as an important sub-population in their response to HIV, need to consider developing and delivering targeted primary prevention programmes at sufficient scale.

Given the evidence for ongoing HIV transmission among at-risk migrant groups in some countries of the EU/EEA, policy makers and programme implementers in these countries need to:

- be aware that transmission among migrants may be taking place in their countries,
- direct additional attention and resources to improve primary prevention programmes targeted to the specific needs of migrants, and
- involve affected migrant communities in developing and delivering migrant-sensitive HIV prevention services.

6. As migrant MSM are at particular risk of HIV acquisition and transmission after migrating to the EU/EEA, policies and programmes should be considered that place specific emphasis on this.

MSM are often invisible in discussions about HIV prevention among migrants, yet data suggest that migrant MSM are at particular risk of HIV acquisition and transmission post-migration. The needs of migrant MSM should therefore be included in HIV prevention and treatment programming.

7. To best achieve population-wide incidence of HIV transmission, equitable access to prevention and treatment services should be provided to all categories of migrants, including irregular migrants.

More than 50% of EU/EEA Member States do not provide antiretroviral therapy to irregular migrants. Treatment as a means of reducing the sexual transmission of HIV now forms a key part of the HIV prevention paradigm. Improving access to HIV treatment for all infected persons, regardless of immigration status, could positively impact on reducing incident infections both within and beyond migrant communities. This would necessitate addressing the already identified barriers to HIV prevention, testing and care that exist for migrant communities. Failure to ensure access to HIV treatment for all persons in need could prove detrimental to efforts to ameliorate the HIV epidemic.

Background

A large proportion of all HIV and AIDS cases in most European Union (EU) countries originate from countries outside of Europe, and, as highlighted during the Portuguese Presidency of the Council of the European Union in 2007, the health of migrant communities is linked to that of all EU citizens [1].

Heterosexual transmission is an important mode of HIV acquisition in many EU countries [2]. Between 2004 and 2011 there were a total of 142 447 newly diagnosed persons infected via heterosexual contact in the EU/EEA [3]. Across Europe a large proportion of the HIV infections acquired through heterosexual transmission is in persons born in countries with generalised HIV epidemics, mainly in sub-Saharan Africa. In 2011 in the EU/EEA, about 37% of HIV cases reported among people infected through heterosexual contact were among people from sub-Saharan African countries with a generalised HIV epidemic (3 744 cases) [3]. While most of these infections were diagnosed for the first time in Europe, it is thought that they were predominantly acquired in the home country [2]. This assumption is often based on clinical report but the combination of data from CD4 cell counts, time of arrival in the country and inferences on natural history are also used. These estimates do not take into account the fact that seroconversion of non-B HIV-1 viral subtypes, (most prevalent among migrants from outside Europe) seems to occur at lower CD4 counts [4].

Not all migrants from countries with generalised epidemics are heterosexual, and migrant men who have sex with men (MSM) may be at particular risk of HIV acquisition and transmission post-migration. The stigma associated with homosexuality in many countries with generalised HIV epidemics, may impact upon the sexual knowledge and behaviours of migrant MSM, as well as their willingness to access sexual health services [5].

Studies suggest that people are most likely to form sexual partnerships with those from their own cultural and ethnic group, sometimes referred to as assortative sexual mixing [6;7]. As HIV prevalence among heterosexuals in many parts of Europe (and particularly western Europe) is highest in African communities, assortative sexual mixing places people of African origin living in Europe at increased risk of acquisition of HIV compared with others. Taken in conjunction with other recognised features of HIV within migrant communities, namely high rates of undiagnosed infection and advanced disease at diagnosis (important components in facilitating the onward transmission of the infection) [8;9], it becomes evident that an African migrant resident in the EU is at substantially higher risk of HIV exposure than a non-African resident. Therefore, it is possible that a significant proportion of HIV transmission is occurring post-migration, and many countries may be underestimating the degree to which this is occurring. Underestimating the degree of transmission within the EU will undermine the potential for averting HIV through targeted policy and programmatic activity surrounding both primary and secondary prevention.

This report presents the published evidence of sexual transmission of HIV within Europe among populations from countries with generalised epidemics. Member States' surveillance systems for monitoring sexual transmission of HIV are also profiled. The implications of this evidence are summarised and recommendations provided for surveillance, policy and programmatic activities.

The questions addressed by this report are:

- What is the evidence for ongoing sexual transmission of HIV among migrants from countries with generalised epidemics after they have arrived in the EU/EEA?
- What are the implications for HIV surveillance, prevention strategies and programmes of such transmission?

Methods

This project consists of a systematic review of the literature to examine the evidence for sexual transmission of HIV among persons from countries with generalised HIV epidemics after they have arrived in the EU/EEA. Additionally, a survey of EU/EEA Member States on the subject of sexual transmission of HIV in migrant populations was conducted.

Systematic review

Studies that describe or estimate the sexual transmission of HIV among persons from countries with generalised epidemics after they have arrived in the EU/EEA were systematically reviewed. Evidence from a literature review that focused solely on estimating post-migration sexual transmission of HIV was anticipated to be poor. Therefore, the review sought to provide additional evidence by including studies that focused on the sexual behaviour of migrants from countries with generalised HIV epidemics.

The search approach focused on the two clear domains:

- Patterns of HIV transmission among migrants from countries with generalised HIV epidemics living in EU/EFTA countries.
- Sexual mixing patterns among migrants from countries with generalised HIV epidemics living in the EU/EFTA.

Twelve databases were searched using detailed search strategies (see Appendix A). Given that migration patterns are fluid and continually changing, searches were limited to studies conducted within the last decade (since 2002). Only studies written in English, French, Italian, Portuguese and Spanish were included. The results were downloaded into a de-duplicated database in Reference Manager 11 (Thomson ResearchSoft). All searches were undertaken between 7 and 8 May 2012. Items which were not able to be downloaded were saved into separate Microsoft Word or Excel documents.

Electronic databases

The following databases were searched using the OVID SP database host:

- Allied and Complementary Medicine
- Cochrane Database of Systematic Reviews
- Cumulative Index to Nursing & Allied Health Literature
- Database of Abstracts of Reviews of Effects
- EMBASE
- Health Management Information Consortium
- Health Technology Assessment
- Medline includes Medline In-Process & other Non-Indexed Citations
- PsychInfo

Additional grey literature was retrieved from the following websites:

- The United Nations Department of Economic and Social Affairs Population Division
- European health for all database (HFA-DB), World Health Organization Regional Office for Europe.
- ECDC website.

The search process was documented by compiling the search strategies used to explore each resource.

Inclusion criteria

Only studies conducted in an EU/EEA[iii] country or Switzerland were included in this review.

Population

Studies were eligible for inclusion if the study population included:

- migrant men or women from countries with generalised HIV-1 epidemics (see Appendix B for list of countries)

[iii] Austria; Belgium; Bulgaria; Cyprus; the Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Iceland; Ireland; Italy; Latvia; Liechtenstein; Lithuania; Luxembourg; Malta; the Netherlands; Norway; Poland; Portugal; Romania; Slovakia; Slovenia; Spain; Sweden; the United Kingdom.

AND

- the study included a sub-group analysis based on race/ethnicity or country/region of origin OR at least 80% of the study populations were from countries with generalised HIV epidemics.

Outcomes

Studies were included if they reported on any of the following outcomes:

- Proportion of target population infected with HIV in country of origin
- Proportion of target population infected in country of migration
- Estimate of incident HIV infections (not diagnoses) in target population in country of migration
- Probable country of infection / HIV acquisition
- Evidence of sexual mixing
- Sexual attitudes and lifestyles of target population (only: estimates of condom use; number of partners in a period of time; and ethnicity of sexual partners).

Studies that reported mode of transmission but made no reference to whether sexual transmission took place pre- or post-migration were excluded at full paper screening stage.

Study designs

The following types of studies were considered for inclusion:

- Randomised or non-randomised controlled trials
- Prospective or retrospective cohorts
- Cross-sectional studies / prevalence studies
- Mathematical models
- Surveillance studies.

Qualitative studies (using in-depth interviews, focus group discussions, and document analysis), conference communications, pilots or feasibility studies were excluded.

Implementation process

Studies were selected using a two-stage screening approach. Three reviewers devised a checklist to independently screen titles and abstracts. Where a consensus could not be reached about study inclusion a fourth reviewer was used. Full paper copies of the selected studies were screened and assessed independently by two teams of reviewers. The teams used a full paper screening tool developed by the review team (Appendix C) to select papers. Where agreement could not be reached by one team of reviewers, a member of the other team acted as third reviewer.

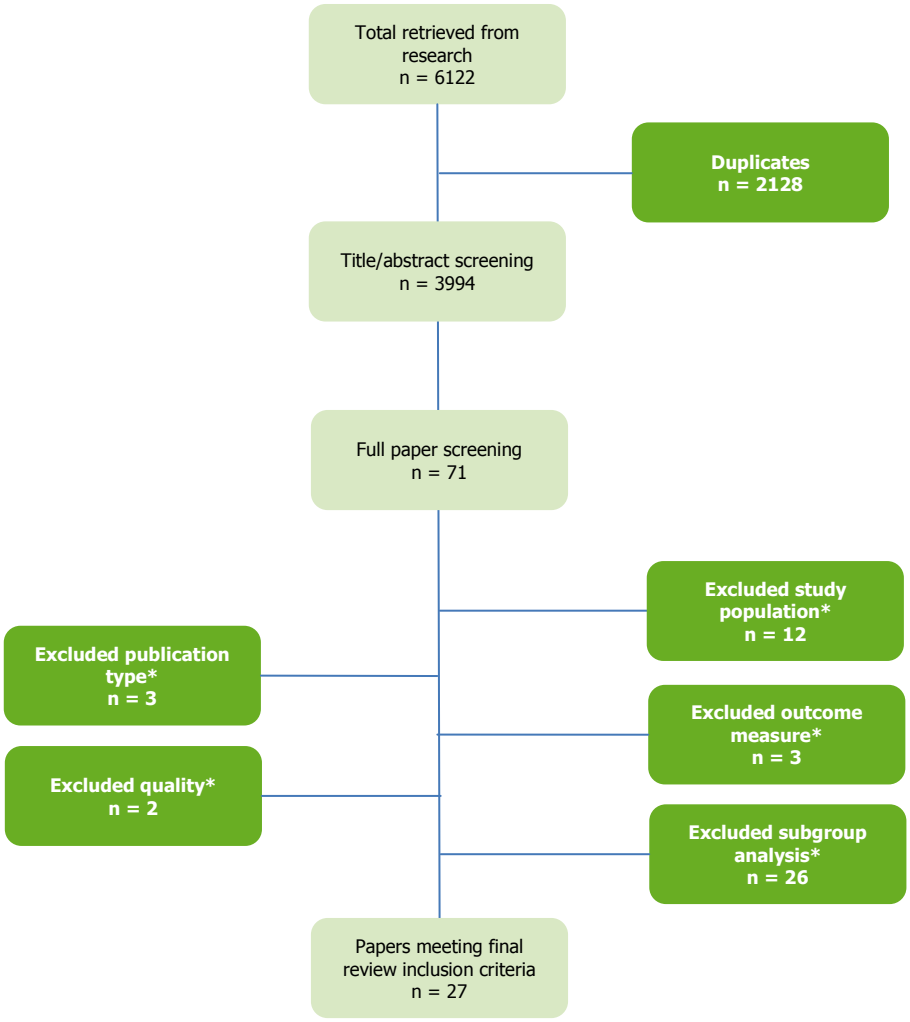
In total 6 122 documents were retrieved: 6 040 peer-reviewed references were returned from databases of which 2 128 were duplicates and a further 82 grey literature documents were identified. Eighteen of the grey literature sources were provided by key informants who responded to the survey: 53 were from ECDC, four were from the United Nations Department of Economic and Social Affairs Population Division, and seven were from the European health for all database (HFA-DB), World Health Organization Regional Office for Europe.

Reviewers identified 71 peer-reviewed and grey literature documents eligible for full paper screening. Twenty-seven papers and grey literature documents were found to fulfil the inclusion criteria and quality assessment (see below) and were therefore included in the final review. Papers excluded at the full paper review stage are listed in Appendix D. Figure 1 summarises the process and outcome of the paper selection process.

Data extraction

After full paper screening, data about each included study's population, settings, methodology, analysis and results were extracted using a screening tool (see Appendix C). Data extraction was performed by one reviewer and checked for accuracy by another.

Figure 1. Summary of study selection process



** Studies excluded for more than one reason.*

Quality appraisal

Papers were assessed by one reviewer and checked for accuracy by another using a quality appraisal checklist devised by the review team (Appendix C). Studies received an overall quality score which incorporated a number of factors including both internal and external validity. External validity was assessed by examining the extent to which the study findings were generalisable to the whole population from which the sample population was drawn. Internal validity was assessed according to a range of criteria (see Box 1 below) which established whether potential sources of bias had been minimised and if study conclusions were open to any degree of doubt.

Papers were graded as having an overall quality score of 'low' (+), 'medium' (++) or 'high' (+++). Since all articles retrieved were based on observational data, study type was not taken into account when conducting quality appraisal. Instead, studies were rated within the paradigm of their study type. As a result, studies based on surveillance or cross-sectional data were able to achieve overall quality scores of 'medium' or 'high'. Studies that received a 'low' score or for which the information necessary to perform quality assessment was not available were excluded from the final review.

Box 1. Criteria used to assess the quality of papers included in full paper review

Criterion 1: Research question

Paper is based on a clearly defined research question, which is clearly discussed and referenced throughout the paper.

Criterion 2: Internal validity

The study design was appropriate for the research question and stated study objectives. Selection bias has been minimised; confounding factors have been identified and/or controlled; explanatory variables are based on sound scientific principles; outcome measures are complete and reliable.

Criterion 3: Clarity of results

Results well described and clear appropriate analytical methods used. The precision of association is given or calculable and is meaningful.

Criterion 4: External validity

Source population is well described and the eligible population represent the source population. Selected participants represent eligible population and the results are consistent with results from other studies. The study results are generalisable to the source population.

Criterion 5: Strength of association and statistical significance

The study sufficiently powered and precise outcomes have been measured. There are narrow confidence intervals and/or low p-values.

Inter-reviewer reliability

Inter-reviewer reliability scores for the different stages of the review were calculated using Kappa in Microsoft Excel.

- Title/Abstract screening Kappa score: 0.65
- Full paper screening Kappa score: 0.68
- Quality appraisal score: 0.64

These scores indicate a high level of agreement between reviewers.

Data synthesis

After data extraction and quality assessment for each paper, studies were grouped according to outcomes of interest. Narrative summaries of each outcome of interest are presented below alongside graphical representations.

Member State survey

The online survey of selected Members States was conducted to:

- assess what descriptive national data are collected on the transmission of HIV among migrants from countries with generalised HIV epidemics
- provide an opportunity for additional information on national HIV prevention strategies not already captured by ECDC through the Dublin Declaration process.

An online survey was conducted among 30 EU/EEA Member States. The survey was developed to gather information from national representatives regarding their knowledge of surveillance of HIV and HIV transmission among migrants from countries with generalised HIV epidemics. Survey questions were tailored to each country based on information that had been recently submitted to ECDC as part of the 2012 Dublin Declaration reporting process [10].

An online survey software package SelectSurveyNet (ClassApps) was used to design the questionnaire in which questions could be allocated specifically to different countries (see Appendix E for list of survey questions). ECDC-nominated HIV surveillance contact points received an email invitation to take part in the survey and to access it using login details. Participants completed a range of closed and open, matrix and radio button style questions, to which options were available for entering alternate or additional information. Options were also available for participants to upload documents to support their responses. Some survey respondents provided further information about within-country sexual transmission in the form of grey literature or peer-reviewed papers. These documents were added to the systematic literature review process described above and only included if they met

the eligibility criteria. After a three-week period during August 2012, a reminder email was sent to countries who had not responded to the initial email invitation. Participants were then allowed an additional week in which to submit their data online.

Data were stored in a central repository and downloaded into an Excel database for analysis. Where available, data are presented combining responses from both the online survey and the migrant section of the 2012 Dublin Declaration progress report.

Findings

Transmission of HIV among migrants from countries with generalised HIV epidemics

Systematic review

Overview of selected studies

Twenty-seven papers (representing 26 studies) that underwent quality appraisal were found to have an overall quality score of 'medium' (++) or 'high' (+++) and were therefore included in the final review. Papers were included from six EU countries: the United Kingdom (9); the Netherlands (5); France (3); Spain (3); Belgium (1) and Italy (1). Two papers were also included from Switzerland (2). Three further papers covered the entire WHO European Region. Studies were grouped into four categories according to outcome of interest:

- Probable country of infection
- Estimates of incident HIV infections
- Sexual mixing
- Sexual attitudes and lifestyles

Table 1 provides an overview of the selected studies according to study region, outcome of interest and quality rating.

Table 1. Overview of selected papers

Study region	N identified	Quality rating	
		++	+++
Belgium	1	1	-
Europe	3	2	1
France	3	2	1
Italy	1	1	-
Netherlands	5	4	1
Spain	3	3	-
Switzerland	2	-	2
United Kingdom	9	3	6
Total	**27**	**16**	**11**
*Outcomes of interest**			
Estimates of the incident HIV infections (not diagnoses) in the target population in the country of migration	4	2	2
Evidence of sexual mixing.	6	3	3
Probable country of infection / HIV acquisition	12	8	4
Sexual attitudes and lifestyles of target populations (only estimates of condom use; number of partners in a period of time; ethnicity of sexual partners).	8	6	2

**Includes papers with multiple outcomes.*

Probable country of infection and estimates of incident HIV infection

Data on probable country of infection are often estimates provided via HIV reporting systems. The methodology for calculating this variable and the reporting systems used differ across countries (see below). Missing data, and other factors, can lead to over- or underestimation of post-migration sexual transmission.

In addition to calculating the probable country of infection, post-migration HIV acquisition can be estimated by measuring incident HIV infections. Using an immunoassay to look for antibody markers of recent infection, it is possible to determine whether an individual acquired their HIV infection in the past six months. It is then possible to extrapolate, in conjunction with date of arrival in the host country, that these infections were acquired in the host country.

There are, of course, caveats associated with this assumption. First, we assume that migrants have neither arrived nor travelled back home within that time period. Second, some of the immunoassays and algorithms used have a large margin of error and are less accurate in relation to non-B subtypes and in people with very low CD4 cell counts [11]. Given that both non-B subtypes and late diagnoses are particularly prevalent within migrant populations from countries with generalised epidemics it is possible that inaccurate estimates are obtained with this method.

Estimates of probable country of infection and/or estimates of incident infection were found in 17 of the 27 papers selected for systematic review (See Appendix F, Table F1). In most of the papers, the study population included migrants from countries not considered to have a generalised HIV epidemic but subgroup analysis was sufficient to allow for data extraction and therefore comparison across countries. The estimates varied both within countries and across Europe, and covered a range of subgroups, including men who have sex with men as well as heterosexuals. Table 2 shows the proportion of infections acquired among sub-Saharan Africans post-migration in France, the Netherlands, Switzerland and the UK. Table 3 shows infections acquired post-migration among migrants from the Caribbean and Asia in Italy, the Netherlands, Switzerland and the UK.

Table 2. Estimates of the proportion of infections acquired in European countries among people born in Africa or with Black African ethnicity

Author and year	Country/city/region	Profile	Proportion (%)
Xiridou M [12]	The Netherlands	African migrants	32
Burns FM [13]	London (UK)	Africans	25–35
Dougan S [14]	England and Wales	MSM born in Africa	46
Dougan S [15]	England and Wales	MSM black African	39
Sinka K [16]	United Kingdom	Black Africans	3
Aggarwal I [17]	London (UK)	Black Africans	11
Rice BD [18]	England, Wales and Northern Ireland	Black Africans	29
Staehelin C [19]	Switzerland	Sub-Saharan Africans	2
Valin N [20]	Ile-de-France (France)	Sub-Saharan Africans	29

Table 3. Estimates of the proportion of infections acquired in European countries among people born in the Caribbean or Asia or with Black Caribbean ethnicity

Author and year	Country/city/region	Profile	Proportion (%)
Xiridou M [12]	The Netherlands	Caribbean migrant	18
Rice BD [18]	England, Wales, Northern Ireland	Black Caribbean	59
Dougan S [14]	England and Wales	MSM born in Caribbean	43
Dougan S [15]	England and Wales	MSM black Caribbeans	61
Dougan S [21]	England, Wales and Northern Ireland	Black Caribbean male heterosexuals	24
Dougan S [21]	England Wales and Northern Ireland	Black Caribbean women	41
Dougan S [21]	England Wales and Northern Ireland	Black Caribbean MSM	62
Aggarwal I [17]	United Kingdom	Black Caribbeans	62
Dougan S [14]	England and Wales	Asia-born MSM	61
Pezzoli MC [22]	Italy	SSA, Eastern Europe and Latin America	22
Staehelin C [19]	Switzerland	Southeast Asians	25

Europe

Two review studies provide an overview of probable country of infection in Europe. In their 2011 systematic review, del Amo, et al, examine 37 peer-reviewed articles and summarise that most studies relating to HIV among sub-Saharan Africans refer to infections being acquired in the country of origin [23]. Similarly, Hamers and Downs in a review of surveillance data from 12 countries, report that in the UK, Germany, Sweden, Demark and Belgium most HIV infections among migrants were acquired abroad [24].

France

Three papers estimating HIV acquisition in France were included in the review (Lot, et al, Semaille, et al, and Valin, et al) [25;26;20]. Valin, et al conducted a cross-sectional survey with 250 people from sub-Saharan Africa attending hospital appointments for HIV care. Twenty-nine per cent of respondents were thought to have been infected in France; however, the authors reported that the study population may not be representative of sub-Saharan Africans living in France.

Lot, et al presented preliminary results from the then new HIV surveillance system in France which had been operating for six months. Just over a quarter of infections in sub-Saharan Africans were recently acquired (26%). In a follow-up study, Semaille, et al analysed the national surveillance between 2003 and 2006. Again the authors did not report on probable country of infection, but did report that 8% of sub-Saharan African heterosexuals had been infected within the previous six months, possibly indicating they had been infected in France. In addition, they found that one out of five newly diagnosed HIV cases of African origin were infected by subtype B, although this subtype is not common in Africa.

The results of these surveillance studies are difficult to interpret, particularly given the very different estimates of recent infection (26% in Lot, et al versus 8% in Semaille, et al). Both studies used the same dataset but it is possible that the preliminary data was somehow biased or that there were changes in testing patterns or the immunoassays used to calculate recent infections. It is also possible that there was a large change in the proportion of recent infections due to changes in migration or testing patterns.

Italy

Pezzoli, et al [22] conducted a cross-sectional survey in primary healthcare centres in three cities in Italy to examine HIV infection among undocumented migrants. All adult migrants from a non-European country were included in the sample (total sample n=3003: 674 sub-Saharan Africans (22%)). The prevalence of HIV in the whole sample was relatively low (0.97%). Avidity testing was carried out on 27 of the 29 HIV-positive participants and the results show that 22% of migrants probably acquired their infection in Italy. Three of those recently infected were from sub-Saharan Africa (3/27; 11%). Place of infection could not be determined for the majority (63%) of the 27 persons with avidity test results. Although the authors included univariate and multivariate analyses to determine factors associated with HIV infection, this has not been included in the review due to the very small sample size.

The Netherlands

Two papers based on the same study provide evidence for the Netherlands. Xiridou, et al [12;27] used a mathematical model to estimate whether sexual mixing between migrants and Dutch nationals could lead to HIV outbreaks among Dutch heterosexuals. The model was based on data from an HIV survey among migrants in Amsterdam and took into account infection before migration, travel to country of origin and sexual mixing patterns. It showed that within each ethnic sub-population, the incidence would be 67.18 new infections per 100 000 African migrants, 12.12 per 100 000 Caribbean migrants and 0.47 per 100 000 Dutch individuals. The dynamics of the model took account of infections both within and outside the Netherlands and the authors estimated that 32% of 'new' infections among migrant Africans and 18% among Caribbean migrants would be acquired in the Netherlands. The authors provide little information about the data used to source the model nor do they discuss the consequent limitations such data place on the model.

Switzerland

Two cohort studies were available from Switzerland (von Wyl, et al and Staehelin, et al) [28;19]. Staehlin, et al [19] conducted a retrospective chart review of patients enrolled in the Swiss HIV cohort study at an HIV clinic. They calculated the proportion of those infected post-migration by taking into account a range of clinical data. Ninety-two patients from sub-Saharan Africa were included, two of whom were presumed to have been infected post-migration. Six of the 24 patients from South-east Asia were thought to have been infected post-migration.

In the second Swiss HIV cohort study, von Wyl, et al [28] conducted phylogenetic analysis on 1 143 individuals infected with non-B subtypes and diagnosed between 1996 and 2009. They found that the proportion of non-B subtypes had increased from 22% in 1996 to 33% in 2009. In their discussion of the results the authors report that '80% and more of all non-B infections among Africans may have originated outside of Switzerland, given that only 20% of all sequences from this group were contained within Swiss-specific clusters'. It is possible however, that the results may be subject to sampling bias and therefore not entirely representative.

The United Kingdom

Seven studies were conducted in the UK: five were based on national surveillance data (Sinka, et al [16]; Dougan, et al [14;15;21], Rice, et al [18]) and two were surveys based in HIV clinics (Burns, et al [13], Aggarwal, et al [17]). Four of the studies included data on HIV acquisition in migrant MSM (Dougan, et al [14;15;21]), Burns, et al [13]).

Sinka, et al [16] analysed voluntary confidential reports of new diagnoses gathered via the UK surveillance system between 1985 and 2001. The authors determined that an estimated 523 (7%) of black Africans and black 'other' probably acquired their infection in the UK. In a similar study, Dougan, et al [21] looked at reports of new HIV diagnoses between 1997 and 2001 to examine the HIV epidemic among black Caribbean adults in England, Wales and Northern Ireland. They found a larger proportion of heterosexual Caribbean women were infected in the UK than heterosexual Caribbean men (41% versus 24%). This paper also shows that during that time the majority (62%) of Caribbean MSM were infected in the UK. However, this figure includes black Caribbean men born in the UK.

In another study, Dougan, et al [15] combined ethnicity data from two national HIV surveillance systems with data from the Unlinked Anonymous Prevalence Monitoring Programme (UAPMP) to determine probable country of infection for black and minority ethnic (BME) MSM in England and Wales. Over a third (39%) of black African and 61% of black Caribbean MSM were infected in the UK. In addition to estimating probable country of infection, the authors used the UAPMP to determine that an estimated 5% (4% – 5%) of black African and 16% (12% – 21%) of black Caribbean MSM left genitourinary medicine clinics with undiagnosed HIV.

The final paper from Dougan, et al [14] used national surveillance data to describe the epidemiology of HIV among MSM born outside the UK who were diagnosed with HIV in England and Wales between 2000 and 2003. Among African-born MSM, 46% were infected in the UK, 43% of Caribbean-born MSM and 61% of Asian-born MSM were also infected in the UK.

A London study by Aggarwal, et al [17] based in an HIV clinic examined evidence of onward transmission of HIV-1 non-B subtype strains. Three hundred and eighty-four patients infected with HIV-1 were subtyped using an enzyme-linked immunoassay. The study found that around 11% of black African and 62% of black Caribbean patients in the study were infected in the UK.

Burns, et al [13] collected socio-demographic, behavioural and clinical data from newly diagnosed HIV-positive Africans in 15 clinics across London to assess the likelihood of HIV acquisition in the UK. The authors modified an algorithm used to determine the country of acquisition by the UK national surveillance reporting system to incorporate additional data about sexual behaviour, sexually transmitted infections, and HIV testing. Using this algorithm they then classified survey respondents by degree of likelihood of acquisition within the UK. Estimates of post-migration HIV acquisition ranged from 24.4% for heterosexuals to 47.4% for MSM.

While the generalisability and validity of all these papers were medium or high, there are some limitations to the data presented. All authors using surveillance data suggested that missing data, particularly around the country of birth and probable country of infection, may have led to an underestimation of UK-acquired infections.

Dougan, et al [21] note that if exposure to HIV has occurred in more than one country, national surveillance reports assign the country with the highest prevalence as the most likely country of infection. In their paper, Burns, et al [13] cite the ability to systematically draw on richer sources of demographic, behavioural and clinical information than is found in routine surveillance data as a way of improving estimates of probable country of infection. Nonetheless, Burns, et al still report that they may have underestimated UK-acquired infections. This is because their sample consisted of a large proportion of respondents who were diagnosed late and late diagnosis is negatively associated with HIV acquisition in the UK. Additionally, since this sample only included Africans living in London, it may not be representative of all HIV-positive Africans across the UK.

These limitations are addressed in a 2012 paper by Rice, et al [18]. This study, based on the analyses of heterosexual migrant adults diagnosed with HIV in the UK between 2004 and 2010, applied a new method to ascertain probable country of infection. The authors used statistical modelling to estimate the year of infection for each of the 10 612 adults in their study population (9 065 of black African ethnicity). By taking into account the year of immigration they determined place of HIV acquisition (See Box 2 for more details). They compared this new method, based on CD4 cell counts, with estimates based on clinical reports where the probable place of infection is assigned by a clinician or health advisor based on a conversation with the patient at the time of diagnosis. The method based on CD4 cell counts estimated that 33% of the study population (26% – 39%) acquired HIV while living in the UK, three times higher than national estimates of HIV based on clinical reports (11%). The study also found that the proportion of persons who had acquired their HIV infection whilst living in the UK had increased from 24% (16% – 39%) in 2004 to 46% (31% – 50% in 2010 ($p<0.01$).

The estimates using the CD4 count method are similar to those reported by Burns, et al [13]. It is possible, however, that this method may have over-estimated UK-acquired infections, since it does not take into account the possibility of travelling abroad from the UK. Also, approximately 40% of eligible adults were excluded from the

analysis due to missing data. While the authors report that the demographic and clinical characteristics of those included were similar to those excluded, the possibility remains that this may have had an impact on the findings. It is also unclear from the paper whether this method can be reliably applied to all viral clades.

Box 2. Method for assigning place of HIV infection based on CD4 cell count

Estimating year of infection

The authors (Rice, et al [26]) conducted a longitudinal analysis of CD4 cell decline among diagnosed adults (≥15 years of age at diagnosis) reported to the UK national HIV diagnoses database with an HIV-negative test result up to two years prior to diagnosis, and at least two CD4 counts during a period of up to ten years follow-up, or prior to commencement of antiretroviral therapy or death. Counts taken within four weeks of an HIV diagnosis were excluded from the analyses.

They analysed the trajectories of 28 613 CD4 cell counts of 3 133 adults diagnosed with HIV between 1996 and 2010 (era of antiretroviral therapy) in England, Wales and Northern Ireland by fitting multilevel linear regression models with random effects on both the intercept (CD4 cell count at sero-conversion) and slope (CD4 cell decline during the follow-up period). The square root transformation of CD4 cell counts were used (to linearise the slope over time), with counts expressed per mm^3.

A proxy date of HIV sero-conversion was calculated for each adult based on the midpoint between the date of the last negative HIV test and the date of first HIV diagnosis. Population-level estimates of CD4 count at HIV sero-conversion were attained by extrapolating calculated rates of CD4 decline from the first CD4 cell counts to these proxy dates of sero-conversion.

To explore differences in CD4 cell decline over time among groups of HIV diagnosed adults, age at HIV sero-conversion, sex, ethnicity and probable route of infection were included in regression models.

Estimating probable place of infection

In a multivariate analysis, the rate of CD4 cell decline and CD4 cell count at infection differed significantly by ethnicity. To estimate the probable place of HIV infection, the authors estimated the rate of CD4 cell decline according to an individual's age and ethnicity. They then took their CD4 cell count at diagnosis and estimated CD4 cell count at infection. An adult was assigned as having UK-acquired HIV when the estimated year of infection was after their year of arrival. If the estimated year of infection was prior to, or at the same time as, their arrival in the UK they were assigned as having acquired their HIV abroad. Central, lower and upper estimates of UK-acquired HIV were attained by applying three estimates of CD4 cell count at infection.

Sexual behaviour

In examining sexual transmission of HIV post-migration, additional evidence can be derived from data describing sexual mixing patterns and sexual behaviour. Although these are not directly applicable indicators, the gathered evidence provides some data for use in prevention programmes. This section provides a brief overview of the selected studies. Fourteen studies conducted in five countries (Belgium, the Netherlands, Spain, Switzerland and the UK) were included (Appendix F, Table F2).

Sexual mixing

Most of the evidence on sexual mixing included in this review comes from studies which use molecular epidemiology to describe the distribution of non-B subtypes and HIV transmission networks. These studies show that non-B subtypes are prevalent among both migrants and non-migrants living in Europe. In Switzerland, the proportion of non-B subtype virus increased from 22% in 1996 to 33% in 2009 [28]. Holguin, et al [29] found that 53% of migrants and 14% of native Spaniards in their study on Gran Canaria were infected with non-B strains. Snoeck, et al [30] found a small number of non-B subtypes that originated in Belgium (16%; 3/19). The increasing proportion of non-B subtypes may, of course, reflect ongoing migration rather than post-migration transmission.

Elford, et al [31] reported that 80% of black African heterosexuals reported sexual partners of the same ethnicity and van Veen, et al [32] found that 41% of their sample had partners with different ethnicity (15% with Dutch partners).

Condom use and partner numbers

One review paper [33] reported that condom use among Africans living in Europe is higher than in the general population but is low, considering the risk of HIV in African communities. In the UK, among heterosexuals taking part in a London clinic-based study, unprotected intercourse in the previous three months was reported by 14% of black African men and women [31]. Among MSM, black MSM were 1.46 times more likely to report insertive unprotected anal intercourse than white MSM in the same study [34]. Two studies from Spain found that the majority of migrant female sex workers consistently used condoms with clients, but only 12 to 25% of them used condoms with their regular partner.

Two cross-sectional surveys examined sexual risk behaviour among Surinamese and Antillean migrants in the Netherlands [35;36]. In both studies, the authors describe the travel patterns of migrants and estimate the proportion of migrants having unprotected sex in their country of origin. They found that a small proportion (9.2%) was having unprotected sex in both countries.

Member State survey

Twenty-four countries responded to the survey representing a response rate of 80%. Five countries reported having data on, or estimates of, sexual transmission of HIV in migrant communities: Denmark and Germany provided some contextual information about sexual transmission of HIV; the Netherlands provided grey literature and peer-reviewed papers showing in-country sexual transmission in migrant communities; specific estimates of country of infection were provided by Norway and the UK.

In Denmark, only a small (and stable) proportion of newly diagnosed HIV cases among immigrants is estimated to have been the result of transmission in Denmark from another migrant. Denmark did not provide an estimate of the number or proportion of migrants acquiring HIV through sexual transmission whilst resident in Denmark. In Germany, the national HIV surveillance system covers migration status as well as probable mode of infection. Thus data are available that show that most migrants from sub-Saharan Africa and Thailand acquired HIV through heterosexual transmission; however, no estimate of the number or proportion of migrants acquiring HIV through sexual transmission whilst resident in Germany is provided.

Reports from Norway suggest that, in 2011, of the 152 migrants diagnosed with HIV, 22 (14%) are believed to have acquired their infection via sexual transmission whilst resident in Norway. In the UK, in 2011, among persons born abroad, approximately 46% of heterosexually-acquired infections were acquired in the UK; this has increased from 24% in 2004.

The remaining Member State respondents did not provide data on, or estimates of, sexual transmission of HIV in migrant communities.

Data collected for disease surveillance

The survey findings demonstrate that countries collect a range of surveillance and other data which are used to describe the HIV epidemic in migrant groups and some of these may be used to provide insights into HIV transmission dynamics in these populations (Table 4).

The first part of the survey gathered information about the type of data fields included in HIV surveillance systems. The majority (19 countries; 79%) of the 24 countries who took part in the survey record 'Country of Birth' (COB) while 'Region of Birth' (ROB) is recorded by 13 of them (54%). No country records ROB without also collecting COB. Nationality of the case is recorded by 16 (67%) countries including three that do not record COB or ROB. Collectively these data suggest that all but two countries (Latvia and Romania) collect data to describe the HIV epidemic in migrant populations at the national level, albeit using different variables to define migrants.

Additional data fields that can provide insight into the timing and place of the HIV infection are also collected. The date of arrival in the host country is recorded by 12 countries (50%); probable country of infection by 15 countries (63%), year of previous HIV test by 17 countries (71%); and country of HIV test by eight countries (33%). Of the 12 countries that record the date of arrival, all collect the year of arrival, six of them also collect the month and two the day of arrival (see Appendix G, Table G1 for full details). Seven countries record HIV testing uptake rates among migrants.

In the second part of the survey, countries indicated whether specified clinical data fields pertaining to HIV-diagnosed persons are collected by national public health authorities (Table 5). Nineteen (79%) countries record clinical information including: the collection of CD4 count at time of diagnosis (18 countries, 75%); date of first CD4 count (14 countries, 58%); subsequent (post-diagnosis) CD4 counts (ten countries, 42%), and viral load (16 countries, 67%).

Table 4. Summary of relevant surveillance data items collected nationally by EU/EEA countries

	Country of birth	Region of birth	Nationality	Date of arrival into country of diagnosis	Probable country of infection	Date of previous HIV test	Country where previous test taken	HIV testing uptake among migrants
Belgium	×	×	✓	✓	✓	×	×	×
Czech Republic[a]	-	-	-	-	-	-	-	×
Cyprus	✓	✓	✓	×	✓	✓	×	×
Denmark[b]	✓	✓	✓	✓	✓	✓	✓	×
Estonia	✓	×	✓	×	✓	×	×	×
Finland	✓	×	✓	×	✓	✓	×	×
France	✓	✓	✓	✓	✓	✓	×	✓
Germany	✓	✓	×	×	✓	✓	×	×
Greece	✓	✓	✓	×	×	×	×	✓
Hungary	✓	✓	✓	×	×	×	×	×
Iceland	✓	✓	✓	×	✓	×	×	×
Ireland	✓	✓	×	×	✓	✓	✓	×
Italy	×	×	✓	×	×	✓	×	×
Latvia	×	×	×	×	✓	✓	✓	×
Lithuania	✓	✓	✓	✓	-	✓	✓	✓
Luxembourg	✓	×	✓	✓	×	✓	×	✓
Malta	✓	×	✓	✓	×	✓	✓	×
Netherlands	✓	✓	✓	×	✓	✓	×	✓
Norway	✓	✓	×	✓	-	✓	×	×
Poland	×	×	✓	✓	×	×	×	×
Portugal[c]	-	-	-	-	-	-	-	✓
Romania[d]	×	×	×	✓	✓	✓	✓	×
Slovakia	✓	✓	✓	✓	✓	✓	✓	×
Spain	✓	×	×	×	×	×	×	×
Sweden	✓	×	×	✓	✓	✓ (if negative in Sweden)	×	×
United Kingdom	✓	✓	×	✓	✓	✓	✓	✓
Total	**19**	**13**	**16**	**12**	**15**	**17**	**8**	**7**

×·Not collected; ✓·Collected.
(a) Data from Dublin Declaration response as Czech Republic did not respond to the Member State survey.
(b) Denmark does not use date on nationality directly, rather they look at country of birth, nationality, country of entry (before Denmark), nationality of parents in order to assign 'country of belonging' as relates to the disease in question.
(c) Data from Dublin Declaration response as Portugal did not respond to the Member State survey.
(d) Although Romania reports that 'country of birth' is not collected, 'country of origin' is collected; this data is referenced in Box 3.

Table 5. Summary of relevant clinical data items collected nationally by EU/EEA countries

	CD4 at diagnosis	Date of first CD4 count	Subsequent CD4 counts	Dates of subsequent CD4 counts	Viral load
Belgium	✓	✓	✓	✓	✓
Cyprus	×	✓	×	×	✓·
Denmark	✓	×	×	×	✓
Estonia	×	×	×	×	×
Finland	✓	×	×	×	×
France	✓	✓	×	×	✓
Germany	✓	✓	×	×	✓
Greece	✓	×	✓	✓	✓
Hungary	×	×	×	×	×
Iceland	×	×	×	×	×
Ireland	✓	×	×	×	✓
Italy	✓	✓	×	×	✓
Latvia	✓	×	×	×	×
Lithuania	✓	✓	✓	✓	✓
Luxembourg	✓	✓	✓	✓	✓
Malta	✓	✓	✓	✓	✓
Netherlands	✓	✓	✓	✓	✓
Norway	×	×	×	×	×
Poland	×	×	×	×	×
Romania	✓	✓	✓	✓	✓
Slovakia	✓	✓	✓	✓	✓
Spain	✓	✓	×	×	×
Sweden[(a)]	✓	✓	✓	✓	✓
United Kingdom	✓	✓	✓	✓	✓
Total number of countries	18	14	10	10	16

×·Not collected; ✓·Collected.
(a) Sweden commented that none of this information is collected in the notification form. However, all of this information is available in aggregated form in the healthcare quality register InfCareHIV containing data on all people living with a diagnosed HIV infection in Sweden.

Ascertaining probable country of infection

The survey findings indicate that a large number of countries collect data which can be used to ascertain the probable country of infection (PCOI) of newly diagnosed migrants.

Fifteen countries have a 'probable country of infection' data field in their databases of new diagnoses. PCOI is established by direct interview of the case or indirectly through a clinician's report. A range of data are used to assign PCOI; three countries in particular use a combination of clinical (such as CD4 count and viral load at time of diagnosis) as well patient demographic information (COB and date of arrival; see Box 3).

The Health Protection Agency[iv] (HPA), UK, has recently developed a public health approach to assign PCOI (see Box 3). The method relies on an algorithm which includes country of birth, year of arrival in the UK and estimated year of infection (based on CD4 count at diagnosis and estimated rate of CD4 cell count decline after diagnosis). According to the information provided in this survey, the HPA algorithm for estimating year of infection could potentially be applied in nine countries: Belgium, Denmark, France, Greece, Lithuania, Luxembourg, Malta, Romania and Slovakia.

Box 3. Examples of data used to assign probable country of HIV infection of migrants

Romania: country of origin, whether or not the region of origin is experiencing a generalised epidemic (Y/N), clinical assessment, CD4 count and viral load at diagnosis.

Sweden: information on partner notification, previous HIV test result, travel history, risk behaviours, country of birth and CD4 count at diagnosis.

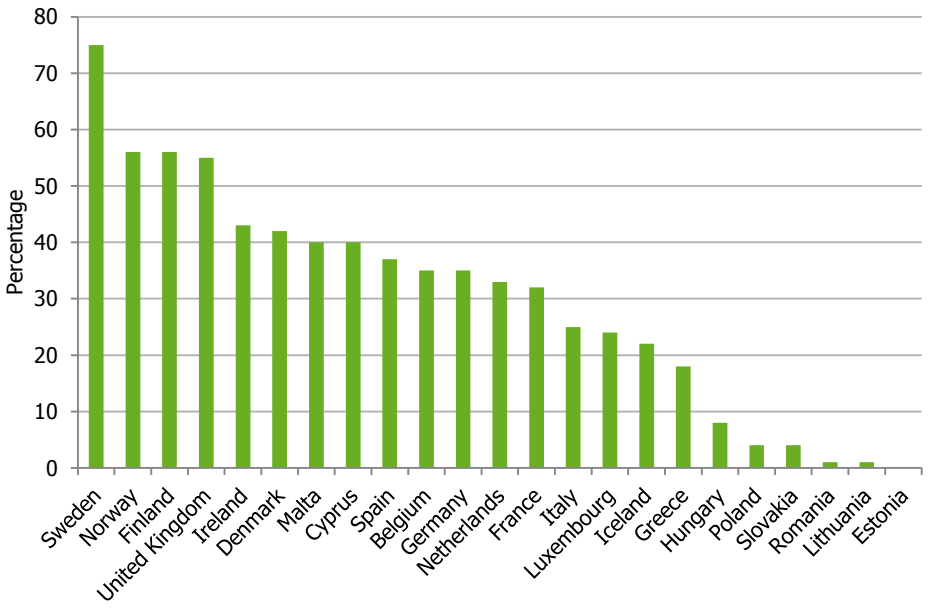
United Kingdom: year of arrival, country of birth, CD4 count and established rate of CD4 cell count decline after diagnosis.

Evidence that HIV disproportionately affects migrants

Eighteen countries provided estimates of the proportion of migrants among all newly diagnosed persons in 2011 (Figure 2). West European countries report a higher proportion of migrants among newly diagnosed HIV cases compared with Central and East European countries. In Sweden, Norway, Finland and the UK, over half of all new HIV diagnoses made in 2011 were among migrants. Between 25% and 49% of new diagnoses were among migrants in Ireland, Denmark, Malta, Cyprus, Spain, Belgium, Germany, the Netherlands, France and Italy. This contrasts with Luxembourg, Iceland and Greece where less than 25% of new diagnoses were among migrants; Hungary, where less than 10% of new diagnoses were among migrants; and other countries in Central Europe where less than 5% of new HIV diagnoses were among migrants. However, because different definitions of migrant populations are used, it is difficult to truly compare these proportions. Belgium, France and the UK also explicitly stated the proportion of HIV-diagnosed migrants born in sub-Saharan Africa (35%, 32% and 27%, respectively).

Nearly all (23/24, 96%) countries reported the existence of national HIV prevention plans that specifically mentioned migrants, and many (i.e. Bulgaria, Denmark, France, Greece, Lithuania, the Netherlands, Norway, Spain, Sweden and the UK) use indicators to monitor the response to HIV prevention efforts among migrants.

Figure 2. Proportion of all reported new HIV diagnoses which were among migrants, by country, 2011



Note: Data in this table relate to country-reported data detailed in Appendix G, Table G3. These proportions differ from those in the ECDC/WHO HIV/AIDS surveillance in Europe 2011 *Figure 2.4, which includes the proportion of HIV cases among migrants from countries with generalised HIV epidemics from sub-Saharan Africa only.*

[iv] From 1 April 2013, part of Public Health England.

Discussion

This report draws together existing evidence in order to ascertain the extent to which sexual acquisition and transmission of HIV is occurring among migrants from countries with generalised HIV epidemics after they have migrated to the EU/EEA. However, it remains difficult to gain a nuanced picture for the entire EU/EEA. Published literature is relatively sparse: 27 papers were retrieved covering information from just seven countries. Pan-European studies were also included, but these were low on detail and did not provide specific estimates.

Many of the papers were able to provide evidence pointing towards ongoing acquisition and hence transmission, most notably providing estimates of probable country of infection or of incident infection. The methodology for calculating these estimates varied across studies. Figures for infections acquired post-migration ranged from as low as 2% among sub-Saharan Africans in Switzerland, to 62% among black Caribbean MSM in the UK. As this example demonstrates, study populations also varied, with some samples based on country of birth, others on ethnicity and some using both definitions as surrogate markers for migration. Such heterogeneity in the retrieved data makes it difficult to construct a succinct and clear understanding of ongoing sexual acquisition and transmission both in host countries and across the EU/EEA.

It is possible that limitations in the review methodology led to a failure to obtain relevant information. No papers were retrieved from the eastern part of the EU. While this is not unexpected – Eastern Europe does not have a large population of migrants from countries with generalised HIV epidemics – it may also reflect the fact that papers were not included if they were published in languages other than English.

The Member State survey and the Dublin Declaration were expedient and cost-effective ways of gathering data about specific countries. Nonetheless, these often relied on the knowledge and experience of one representative from a national body who may not have been aware of all the information that might have been retrieved from a more exhaustive trawl of the grey literature.

Implications for HIV surveillance

This study found evidence of ongoing post-migration HIV acquisition in EU/EEA countries. However, it is challenging to quantify the degree to which this is occurring. The difficulty arises for several reasons. First, understanding and quantifying HIV transmission in a given population is complex. Ideal practice would be to monitor trends in HIV incidence in the population. Incidence measures, however, are not straightforward and are often beyond the scope of routine surveillance systems. While trends in new HIV diagnoses are sometimes used as a proxy for incident cases, these are subject to testing biases. New tests of recent or incident infections may provide greater insights into real-time transmission dynamics. The second challenge is specific to surveillance of HIV among migrants. Since migration as a process is not static, it is difficult to understand the dynamics around 'place of infection'. Many migrants travel backwards and forward between their country of origin and country of residence. This makes estimates of place of infection subject to measurement error.

The study found that more countries collect data that could be used to estimate probable country of infection than have published data. The lack of published evidence of HIV acquisition and transmission within migrant communities could indicate that this is an area requiring technical support or guidance for countries to carry out this work.

Member States might be encouraged to analyse and publish such data if standardised methods of calculating probable country of infection were developed and implemented in HIV surveillance systems across the EU/EEA. Data relevant to post-migration sexual acquisition could be collected, analysed and published so that policy makers and HIV programme managers can use this evidence in planning and monitoring HIV prevention interventions. ECDC is exploring revisions to the enhanced surveillance of HIV/AIDS and these variables could be modified in order to gain a better insight into the timing and probable country of HIV infection among migrant populations.

Implications for prevention programming

Despite the lack of definitive data on post-migration acquisition and transmission, we were able to retrieve data on sexual mixing and sexual behaviour that support the likelihood of continuing transmission post-migration. Many migrants remain sexually active after they have reached their destination country. Papers examining sexual mixing show that the number and proportion of non-B HIV-1 subtypes are increasing both among non-migrants and established minority ethnic communities across Europe [37–40]. While this is some indication that sexual mixing is occurring between migrants and non-migrants, for heterosexuals the majority of migrants have sexual partners of the same ethnicity. The propensity for assortative sexual mixing means that migrants may be effectively continuing to live in a community with a generalised epidemic even after they have moved to Europe. The background prevalence within African and other migrant communities remains high, and as one study showed, many remain undiagnosed [41]. Despite this, condom use remains relatively low and the limited evidence suggests that some sexual risk behaviour (increased number of partners or unprotected sex) is higher among some migrant groups.

Migrant MSM appear at particular risk of HIV acquisition and transmission post-migration. Behavioural data suggest that assortative sexual mixing according to country of origin is not a prevailing feature of sex between men [42;43], as reflected in the predominance of B subtypes in these communities [37]. Acquisition of viral clades not prevalent in home countries supports post-migration acquisition and highlights the need for primary prevention programmes targeting these communities, recognising that many MSM from countries with generalised epidemics may not self-identify as gay men or disclose their sexual identity. Surveillance data do not routinely report on migrant MSM and as such are unable to inform prevention programmes for this at-risk population.

Given the evidence of ongoing HIV acquisition and transmission, countries need to consider what policy and programmatic efforts are in place for migrants.

Implications for policy

While it is clear that more work is required to fully map the prevention activities that are taking place, all Member States who identify migrants as an important part of the national HIV epidemic should review their prevention policies and programmes targeted toward migrant populations. Research that aims to explore and understand pre- and post-migration patterns of sexual transmission, as well as sexual attitudes and lifestyles, would be of benefit. For countries to increase their efforts to reduce acquisition and onward transmission, they would need to include policies around combination prevention. This involves the coordinated use of biomedical (including pre- and post-exposure prophylaxis), behavioural and structural prevention strategies.

In the latest report on implementation of the Dublin Declaration, approximately 50% of reporting EU/EEA countries report that they do not provide ART to irregular migrants [10]. Treatment as a means of reducing sexual transmission of HIV now forms a key part of the prevention paradigm [44]. Improving access to HIV treatment for all infected persons, regardless of immigration status, could positively impact on reducing incident infections both within and beyond migrant communities. This would necessitate addressing the already identified barriers to HIV prevention, testing and care that exist for migrant communities [23]. Failure to ensure access to HIV treatment for all persons in need could prove detrimental to efforts to ameliorate the HIV epidemic.

Conclusion

This report presents the scant published evidence of sexual transmission of HIV within Europe among populations from countries with generalised HIV epidemics. Among the countries that responded to the survey, the majority identify migrants as an important population for HIV infection and have put in place monitoring systems to track infection in these groups. Unfortunately there is no standard way of defining 'migrants' and the description of the HIV epidemic among migrants across Europe is therefore inconsistent and difficult to compare.

Sexual acquisition and transmission of HIV is occurring among migrants after they have migrated to the EU/EEA. However, few countries collect and publish data that would enable robust estimates to quantify this. The best way to understand HIV transmission is to measure incidence. New diagnoses are not a good proxy of new infections, particularly when HIV testing patterns change. Incidence is difficult to measure, however, and a variety of models and methods are used across Europe. Many countries within the EU/EEA face budgetary constraints which may prevent them from undertaking new and challenging surveillance tasks. Even with incidence measures, various biases in the data may lead to the over- or underestimation of sexual acquisition of HIV post-migration.

Despite the many areas of concordance and agreement in national surveillance systems and methods for monitoring sexual transmission of HIV, there remain a number of gaps in the processing and availability of these data which limits the ability of policy makers and programme managers to target HIV prevention interventions accurately. The following actions could be considered to address current limitations.

Improving HIV surveillance data to monitor HIV among migrant populations

Member States need to consider which surveillance variables should be collected and analysed in order to better understand the degree to which sexual transmission of HIV occurs among migrant populations. How these data are gathered will vary by country according to national resources and surveillance structures. Member States should focus on collecting variables such as 'CD4 cell count', 'date or year of arrival' and 'country of birth'. Wider implementation of these variables could allow countries to estimate probable country of infection and to better direct prevention policies. In some settings, sentinel surveillance or repeat cross-sectional surveys, could play an important role in providing this necessary evidence.

For those countries that identify migrants as an important part of the national HIV epidemic and response, the application of an objective method for assigning probable country of HIV infection should be considered to inform prevention policy and programming at national level. Although a substantive number of countries can provide an estimate of probable place of HIV infection among migrant populations, the assignment of probable country of infection is often largely subjective.

In order to better understand HIV transmission dynamics, countries could consider expanding the measurement of HIV incidence. Given the challenges in measuring incident infections and the multiple models in use to achieve this, ECDC is in the process of carrying out a project to provide countries with technical input on methods for estimating incidence in at-risk groups.

Improving HIV prevention programming among migrants

Those EU/EEA countries that identify migrants as an important sub-population in the national response to HIV, should consider developing an evidence-based, long-term strategic policy to reduce post-migration HIV-acquisition and transmission. These policies would ideally include a focus on increasing resources for research that aims to explore and understand post-migration patterns of sexual transmission, as well as sexual knowledge, attitudes and behaviours. Underestimating the degree of HIV transmission among migrants in EU/EEA countries will undermine efforts to prevent HIV through targeted policy and programmatic activity surrounding both primary and secondary prevention. Additionally, targeted primary prevention programmes delivered at sufficient scale should be considered.

Given the evidence for ongoing HIV transmission among migrant groups in some countries of the EU/EEA, policy makers and programme implementers need to be informed and become aware that transmission among migrants may be taking place in their countries, that additional attention and resources are needed to improve primary prevention programmes targeted to the specific needs of migrants, and that migrant communities need to be involved in developing and delivering migrant-sensitive HIV prevention services, with a special focus on migrant MSM.

There is a need to provide equitable access to prevention and treatment services to all categories of migrants, since more than 50% of EU/EEA countries do not provide antiretroviral therapy to irregular migrants. Treatment as

a means of reducing the sexual transmission of HIV forms a key part of the HIV prevention paradigm. Improving access to HIV treatment for all infected persons, regardless of immigration status, could positively impact on reducing incident infections both within and beyond migrant communities. This would necessitate addressing the barriers to HIV prevention, testing and care that have already been identified for migrant communities. Failure to ensure access to HIV treatment for all persons in need could prove detrimental to efforts to ameliorate the HIV epidemic.

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Appendix A: Sample search strategy

Database(s): PsycINFO 1806 to July Week 2 2012

Search Strategy:

#	Searches	Results
1	*Sexual Behavior/	15369
2	sexual mixing.ti,ab.	32
3	Marriage/ or Adult/	5824
4	Assortative mating.mp.	626
5	Assortative mixing.ti,ab.	7
6	disassortative mixing.ti,ab.	6
7	concurren*.ti,ab.	25845
8	Homosexuality/	5098
9	sexual transmission.ti,ab.	295
10	Heterosexuality/	3670
11	heterosexual.ti,ab.	10146
12	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11	60374
13	HIV Infections/	0
14	(HIV adj3 ("HIV/AIDS Concurrently diagnosed" or "sexual transmission" or "late diagnos*" or import* or abroad)).ti,ab.	558
15	13 or 14	558
16	12 and 15	213
17	(migrant* or migration).ti,ab.	10994
18	immigra*.ti,ab.	16315
19	minorit*.ti,ab.	29419
20	(european union adj3 accession).ti,ab.	21
21	"Emigrants and Immigrants"/	0
22	Minority groups/	9219
23	refugee/	3054
24	(asylum seeker* or refugee*).ti,ab.	4310
25	(Afro Caribbean* or Caribbean* or afrocaribbean*).ti,ab.	2082
26	(Angolan* or Beninese or Motswana or Batswana or Burkinabe or Burundian* or Cameroonian* or Cape Verdian* or Cape Verdean* or Central African* or Chadian* or Congolese or Ivorian* or Djibouti or Equatorial Guinean* or Equatoguinean* or Eritrean* or Ethiopian* or Gabonese or Gambian* or Ghanaian* or Guinean* or Guinea-Bissauan* or Jamaican* or Kenyan* or Mosotho or Basotho or Liberian* or Libyan* or Malagasy or Malawian* or Malian* or Marshallese or Mauritanian* or Mauritian* or Mozambican* or Namibian* or Nigerien* or Nigerian* or Rwandan* or Senegalese or Seychellois or Sierra Leonean* or Somali* or South African* or Sudanese or Swazi or Tanzanian* or Togolese or Ugandan* or Zambian* or Zimbabwean*).ti,ab.	9684
27	or/17-26	67264
28	16 and 27	21
29	animals/	5457
30	humans/	0
31	29 not 30	5457
32	28 not 31	21
33	limit 32 to yr="2002 -Current"	18

Appendix B: List of HIV-endemic countries

Caribbean, Bermuda and Central/South America	Africa	Asia
Anguilla	Angola	Cambodia
Antigua and Barbuda	Benin	Myanmar (Burma)
Bahamas	Botswana	Thailand
Barbados	Burkina Faso	
Bermuda	Burundi	
British Virgin Islands	Cameroon	
Cayman Islands	Cape Verde	
Dominica	Central African Republic	
Dominican Republic	Chad	
French Guiana	Congo	
Grenada	Djibouti	
Guadeloupe	Equatorial Guinea	
Guyana	Eritrea	
Haiti	Ethiopia	
Honduras	Gabon	
Jamaica	Gambia	
Martinique	Ghana	
Montserrat	Guinea	
Netherlands Antilles	Guinea-Bissau	
St. Lucia	Ivory Coast	
St. Kitts and Nevis	Kenya	
St. Vincent and the Grenadines	Lesotho	
Surinam	Liberia	
Trinidad and Tobago	Malawi	
Turks and Caicos Islands	Mali	
U.S. Virgin Islands	Mozambique	
	Namibia	
	Niger	
	Nigeria	
	Rwanda	
	Senegal	
	Sierra Leone	
	Somalia	
	South Africa	
	Sudan	
	Swaziland	
	Tanzania	
	Togo	
	Uganda	
	Zaire	
	Zambia	
	Zimbabwe	

Source: Public Health Agency of Canada. http://www.phac-aspc.gc.ca/aids-sida/publication/ps-pd/africacaribbe/app-annA-eng.php

Appendix C: Screening checklists

Title/abstract screening checklist

Was the study carried out in any of the following countries? Austria; Belgium; Bulgaria; Cyprus; Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Iceland; Republic of Ireland; Italy; Latvia; Liechtenstein; Lithuania; Luxembourg; Malta; The Netherlands; Norway; Poland; Portugal; Romania; Slovakia; Switzerland; Slovenia; Spain; Sweden; UK	YES/UNCLEAR – go to Q2	NO – exclude
Does the study population include: Black African men and women OR Black men and women OR Migrant populations living in EU/EFTA countries (Austria; Belgium; Bulgaria; Cyprus; Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Iceland; Ireland; Italy; Latvia; Liechtenstein; Lithuania; Luxembourg; Malta; the Netherlands; Norway; Poland; Portugal; Romania; Slovakia; Switzerland; Slovenia; Spain; Sweden; UK)	YES/UNCLEAR – go to Q3	NO – exclude
Does the paper include information on sexual transmission of HIV, country of infection, sexual mixing patterns or sexual attitudes and lifestyles?	YES/UNCLEAR – Q4	NO – Exclude
Was the study published in 2002 or later?	YES/UNCLEAR – go to Q5	NO – exclude
Is the paper a primary study or a review (of primary studies), or based on surveillance or mathematical modelling? E.g. randomised or non-randomised controlled trials, prospective observational, retrospective observational, surveillance	YES/UNCLEAR – go to Q6	NO – go to Q6
Is the paper about case studies or lab based research (excluding molecular epidemiology)?	YES - Exclude	NO/Unclear – Include for Full paper screening

Section I. Full paper screening checklist

I.i. Please, mark the criteria that fulfils the article

		Rwr. 1	*Rwr.2*
1. Was the study carried out in any of the following countries?	Austria; Belgium; Bulgaria; Cyprus; Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Iceland; Ireland; Italy; Latvia; Liechtenstein; Lithuania; Luxembourg; Malta; The Netherlands; Norway; Poland; Portugal; Romania; Slovakia; Switzerland; Slovenia; Spain; Sweden; UK	☐	☐
2. Does the study population include:	a. Black African men and women	☐	☐
	b. Black men and women	☐	☐
	c. Migrant populations from countries with generalised epidemics	☐	☐
3. Do outcome measures in the study include one of the following:	a. Proportion of target population infected with HIV in country of origin	☐	☐
	b. Proportion of target population infected in country of migration	☐	☐
	c. Estimates of the incident HIV infections (NOT diagnoses) in target population in country of migration	☐	☐
	d. Probable country of infection / HIV acquisition	☐	☐
	e. Evidence of sexual mixing	☐	☐
	f. Sexual attitudes and lifestyles of target populations (only estimates of condom use; number of partners in a period of time; ethnicity of sexual partners).	☐	☐
4. Does the study include:	a. Sub-group analysis based on race/ethnicity or country/region of origin and include target populations	☐	☐
	b. Were at least 80% of the study population from countries with a generalized HIV epidemic?	☐	☐
5. Was the study published in 2002 or later?		☐	☐
6. The document is a scientific paper based on a primary study, a review (of primary studies), or on surveillance data? *Include only: randomised or non-randomised controlled trials, cross sectional, prospective observational, retrospective observational, surveillance. Do not include: qualitative research, conference communications, pilots or feasibility studies*		☐	☐

7. Reviewer 2: please click if there are agreement between reviewers	☐

IF THE ARTICLE DOES NOT FULFIL ALL CRITERIA (1 to 6), PLEASE STOP HERE!

Data extraction form		
Reviewer name: Select one	Reference manager Ref ID: _____	Year of publication: _____ Language:_____
Article title: _____	Journal _____	Date of data collection: 15/10 /2012

Section II. Quality assessment

II.i. Evaluation of data quality.

	Reviewer 1						*Reviewer 2-Check*					
	Very well	*Well*	*Moderate*	*Poor*	*Without info.*	*Not apply*	*Very well*	*Well*	*Moderate*	*Poor*	*Without info.*	*Not apply*
Q1. Article is based in a research question clearly defined.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Q2. Internal validity. The study has a good design, appropriate for their objectives and minimizing design bias.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Q3. Results are well described, useful and accurate described.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Q4. External validity. Results are generalizable to the population and the context which is interesting to apply them.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Q5. Strength of association and statistical significance. Outcomes are precise, whit narrow confidence intervals and/or low p-values.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

	Reviewer 1			*Reviewer 2-Check*		
	High	***Moderate***	***Low***	***High***	***Moderate***	***Low***
Q6. Average quality of the article	☐	☐	☐	☐	☐	☐

Q7. Other important issues related with article quality.

_____

8. Reviewer 2. Please, summarise results of quality checking:

	Concordance	***Not concordance***
Q1	☐	☐
Q2	☐	☐
Q3	☐	☐
Q4	☐	☐
Q5	☐	☐
Q6	☐	☐
Total	_____	_____

IF THE AVERAGE QUALITY OF THE ARTICLE IS POOR, PLEASE STOP HERE!

Section III. Data collection form

P1. - Brief summary of the purpose of the article.

_____

P2. Thematic area/s

	Mark with "X"
a. Proportion of target population infected with HIV in country of origin	☐
b. Proportion of target population infected in country of migration	☐
c. Estimates of the incident HIV infections (NOT diagnoses) in target population in country of migration	☐
d. Probable country of infection / HIV acquisition	☐
e. Evidence of sexual mixing	☐
f. Sexual attitudes and lifestyles of target populations (only estimates of condom use; number of partners in a period of time; ethnicity of sexual partners).	☐
Other (specify)_____	☐

P3. Article basic data

Country/ies where the research was developed	_____
Year/s of data collection	_____
Duration of the data collection	_____

P4. Methods

Study design: *Brief summary of research design: indicate whether is qualitative or quantitative, cross sectional or longitudinal, etc. .*	_____
Setting: *hospital, STI clinic, community…*	_____
Study population: *target/s description*	_____
Sample: *Sample size of each group*	_____
Study scope: *international, national, local, other…*	_____

P5. Results/Outcomes

	Outcome	**Result**
Primary Outcomes:	_____	_____
Outcomes of interest:	_____	_____

P6.Measures / interventions aimed at reducing sexual transmission among migrant/ethnic minorities. *Please, specify clearly.*

_____

P7. The article includes gender-specific issues? If so, please describe:.

_____

P8. Strengths and limitations

Strengths:	**Study design:**_____ **Internal validity:**_____ **Generalisability:**_____
Limitations:	**Author:**_____ **Reviewer:**_____

P9. Please, add other relevant issues

_____

Appendix D: Papers excluded at full paper review

Title	Authors	Reason for rejection
Uma Tori! Evaluation of an STI/HIV-prevention intervention for Afro-Caribbean women in the Netherlands	Bertens MG	Outcome measure not of interest
The sexual health of migrants from central and eastern European countries in London: new methods and new data	Del AJ	Not about population of interest, Outcome measure not of interest, No/inappropriate sub-group analysis
HIV prevalence and route of transmission in Turkish immigrants living in North-Rhine Westphalia, Germany	Schulter E	Not about population of interest,
HIV infection in immigrants: clinical and epidemiological differences as compared to the native population in a Health Area in Madrid (2002-2004)	Jerez AH	Outcome measure not of interest
Characteristics of newly managed HIV-infected patients: hospital Saint-Antoine, Paris 2002-2003	Fonquernie L	Outcome measure not of interest, No/inappropriate sub-group analysis
Present situation and future perspectives of the epidemic of HIV and AIDS in Spain	Castilla J	Eliminated at quality appraisal stage
Migrants from Sub-Saharan Africa in the Swiss HIV Cohort Study: access to antiretroviral therapy, disease progression and survival	Staehelin C	Outcome measure not of interest
HIV infection among people of foreign origin voluntarily tested in Spain	Castilla J	Outcome measure not of interest
Incidence of new HIV diagnoses in Spain, 2004-2009	Diez M	Outcome measure not of interest
Clinical and epidemiological characteristics of human immunodeficiency virus infection in foreigners residing in Elche, Spain (1998-2003)	Ramos JM	Not about population of interest, Outcome measure not of interest, No/inappropriate sub-group analysis
Seroepidemiological survey of the human immunodeficiency Virus, type 2	Pedro ML	Outcome measure not of interest
The epidemiology of HIV and AIDS reports in migrants in the 27 European Union countries, Norway and Iceland: 1999-2006	Del AJ	Outcome measure not of interest
Epidemiology of HIV-1 subtypes in an urban area of northern Italy	De PM	Not about population of interest, No/inappropriate sub-group analysis
Concurrent partnerships and sexual risk taking among African and Caribbean migrant populations in the Netherlands	van Veen MG	No/inappropriate sub-group analysis
Mirror, mirror on the wall: the face of HIV + women in Europe today	Nostlinger C	Not about population of interest, Outcome measure not of interest, No/inappropriate sub-group analysis
Human Immunodeficiency Virus (HIV) and migrant "risk environments": the case of the Ethiopian and Eritrean immigrant community in the West Midlands of the UK	Barrett HR	Outcome measure not of interest, Research type not of interest
Sexual risk behaviour and its determinants among men who have sex with men in Catalonia, Spain	Folch C	Not about population of interest, No/inappropriate sub-group analysis
Recently acquired HIV infection in Spain (2003-2005): introduction of the serological testing algorithm for recent HIV seroconversion	Romero A	No/inappropriate sub-group analysis
Interpreting declines in HIV prevalence: impact of spatial aggregation and migration on expected declines in prevalence	Walker PT	Not about population of interest, Outcome measure not of interest, No/inappropriate sub-group analysis
Fever after a stay in the tropics: clinical spectrum and outcome in HIV-infected travelers and migrants	Bottieau E	Not about population of interest, Outcome measure not of interest
Communicable diseases in the immigrant population attended to in a tropical medicine unit: epidemiological aspects and public health issues	Manzardo C	Outcome measure not of interest
Evolution of the HIV-1 V3 region in the Italian epidemic	Buonaguro L	No/inappropriate sub-group analysis
Mayisha II: pilot of a community-based survey of sexual attitudes and lifestyles and anonymous HIV testing within African communities in London	Sadler KE	Research type not of interest
HIV/AIDS knowledge and condom use among Somali and Sudanese immigrants in Denmark	Lazarus JV	Eliminated at quality appraisal stage
Immigration and HIV/AIDS prevention in Germany - an interdisciplinary challenge	Steffan E	Outcome measure not of interest, No/inappropriate sub-group analysis

Title	Authors	Reason for rejection
Human immunodeficiency virus acquired heterosexually abroad: expert panel assessment of the "indigenous/nonindigenous to the United kingdom status" of cases	Livingston MR	Not about population of interest, No/inappropriate sub-group analysis
HIV-1 subtypes and circulating recombinant forms (CRFs) from HIV-infected patients residing in two regions of central and southern Italy	Monno L	No/inappropriate sub-group analysis
Immigration, HIV infection, and antiretroviral therapy in Italy	Manfredi R	No/inappropriate sub-group analysis
Surveillance of HIV-1 subtypes among heterosexuals in England and Wales, 1997-2000	Tatt ID	No/inappropriate sub-group analysis
Temporal trend of HIV infection: an update of the HIV surveillance system in Lazio, Italy, 1985-2000	Porta D	Not about population of interest, No/inappropriate sub-group analysis
The sociodemographic profile, risk categories and prevalence of HIV infection among people attending a London same-day testing clinic, 2000-2001	Sinclair M	No/inappropriate sub-group analysis
No evidence of an epidemic of locally acquired heterosexual HIV infection in Norway	Aavitsland P	No/inappropriate sub-group analysis
Profile of the immigrant patient with HIV infection in Alicante city	Ezsol S	Outcome measure not of interest
Global HIV epidemiology and current migration	Brustenga JG	Outcome measure not of interest, No/inappropriate sub-group analysis
Black and minority ethnic men who have sex with men: A London genitourinary medicine clinic experience	Soni S	No/inappropriate sub-group analysis
HIV/AIDS in Europe: trends and EU-wide priorities	Hamers FF	Outcome measure not of interest, No/inappropriate sub-group analysis
The late diagnosis and consequent short-term mortality of HIV-infected heterosexuals (England and Wales, 2000-2004)	Chadborn TR	Outcome measure not of interest
Differences between Nonnational and Indigenous Patients with Sexually Transmitted Infections in Italy and Insight into the Control of Sexually Transmitted Infections	Giuliani M	No/inappropriate sub-group analysis
Les populations africaines d'Ile-de-France face au VIH/sida. Connaissances, attitudes, croyances et comportements	Nathalie Lydié	Outcome measure not of interest
HIV and living conditions – a survey of living conditions and quality of life of people living with HIV in Denmark	MIE CARSTENSEN	No/inappropriate sub-group analysis
Le recours tardif aux soins des personnes séropositives pour le VIH. Modalités d'accès et contextes socioculturels	Marcel Calvez	Outcome measure not of interest, No/inappropriate sub-group analysis
Differences in hiv-1 infection in Portuguese immigrants to Luxembourg and in Luxembourg natives: implications for prevention and treatment?	J.C. Schmit	Not about population of interest, No/inappropriate sub-group analysis , Research type not of interest
HIV-1 subtypes in Luxembourg, 1983-2000.	S. Deroo	Outcome measure not of interest
Tracing the HIV-1 subtype B mobility in Europe: a phylogeographic approach	D Paraskevis	Not about population of interest, No/inappropriate sub-group analysis

Appendix E: List of questions in Member State survey

1. Are migrants considered an important sub-population in the national response to HIV?
1a. Do government and civil society use the term migrant to identify a specific population in the national response to HIV?
1b. Are other terms used to identify this same population?
1bt. If Yes, list the other term(s).
1Ct. How is the term migrant defined in your coutry
1d. Is data available on the total number of migrants in your country?
1dt. If Yes, what is the overall size of the migrant population?
1e. Is disaggregated data collected on the migrant population (e.g. country of origin, health issues)?
1et. If Yes, what disaggregated data is collected?
1et2. If No, why is disaggregated data not collected?
2. Are migrants specifically mentioned in your country's national strategic plan for HIV and AIDS?
2t. If Yes, please provide a brief summary (i.e. 100-200 words) of the context.
2t2. If No, why not?
3. Is there evidence that HIV disproportionately affects migrants in your country?
3t. If Yes, please provide a brief summary of the evidence.
4-1. People who inject drugs
4-2. Men who have sex with men
4-3. Prisoners
4-4. Sex workers
4-5. Other
4-5t. Other
4-6. Other
4-6t. Other
5. What barriers do migrants face in accessing HIV prevention, treatment and care services in your country?
6. How do legal status, laws and policies affect migrants' access to HIV prevention, treatment and care services in your country?
7. Is progress in your country's response to HIV among migrants monitored?
7t. If Yes, please provide a brief summary of how progress is monitored.
8. Are indicators used to monitor progress in your country's response to HIV among migrants?
8t. If Yes, please provide a brief overview of the indicators and the relevant data sources.
8t2. If Yes, what are the data sources for the indicators?
9. Are there targeted prevention programmes for migrants in your country?
9t. If Yes, please provide a brief summary of the programmes.
10. Does your country have data on the uptake of HIV testing among migrants?
10t. If Yes, please provide a brief summary of the data.
11. Does your country have data on access to ART among migrants?
11t. If Yes, please provide a brief summary of the data.
12. Are migrant communities involved in the policy/programming response in your country?
12. If Yes, please provide a brief summary of the extent of their involvement.
13. Do you have any HIV-related programmes for migrants in your country that are considered particularly useful and/or effective that could be seen as a 'best practice'?
13t. If Yes, please provide a brief summary of the programme(s). You may also include an attachment with a description of the programme(s).
14. Is additional information being submitted in an attachment?
14t. If Yes, what is the name of the attachment?

Appendix F: Evidence tables

Table F1. Papers reporting probable country of infection and estimates of incident infection

Study details	Study type	Population and settings	Results/outcomes	Strengths	Limitations
Authors: Aggarwal I, Smith M, Tatt ID et al. **Year:** 2006 **Citation:** Evidence for onward transmission of HIV-1 non-B subtype strains in the United Kingdom. Journal of Acquired Immune Deficiency Syndromes; 41(2): February.	**Study design:** Cross sectional survey **Methods:** Local HIV clinic database was used to obtain demographic, clinical, and laboratory data. Most likely country of HIV infection determined by 2 researchers for each patient based on a review of key epidemiologic data obtained from the medical records or, from the patient's physician.	**Country:** United Kingdom **Study population:** Black African, white UK-born, and black Caribbean patients who had attended the HIV clinic on at least 1 occasion over a 1-year period between May 1999 and May 2000 that had an HIV identifiable subtype. **Sample size:** 344 patients: 154 black African, 148 white UK-born, and 42 black Caribbean. **Setting** Hospital	**Outcomes of Interest:** *Distribution of non-B subtypes by ethnic group* Black Africans: 96.8% (149/154) Black Caribbeans: 31.0% (13/42) *Country of infection B subtypes* Black Africans (n=5): 3 in UK Black Caribbeans (n= 29):13 UK; 5 Caribbean; 11 undetermined. *Country of infection non-B subtypes* Black Africans: 65.5% (98/149) before migration; 9.4% (14/149) UK; 22.8% (34/149) undetermined Black Caribbeans: 100% (13/13) UK *Overall infected in the UK:* Black Africans: 11.0% (17/154) Black Caribbeans: 61.9% (26/42)	**Study design:** +++ **Validity:** +++ **Generalisability:** +++ **Overall quality of the article:** +++	**Authors:** Poor specificity in differentiating between subtypes B and D by the used test is likely to be a significant factor in limiting the use of serotyping among black Africans, particularly in areas with a high proportion of subtype D infections. No standardized prospective data collection. Designation of likely country of infection based, on poorly documented variables from medical records. Findings may therefore represent an underestimation of the number of infections acquired through overseas travel. **Reviewer:** Reporting bias about sexual partners from areas perceived as high risk, such as sub-Saharan Africa,
Authors: Burns FM, Arthur G, Johnson AM, Nazroo J, Fenton KA, SONHIA collaboration group. **Year:** 2009 **Citation:** United Kingdom acquisition of HIV infection in African residents in London: more than previously thought. AIDS;23(2):262-66.	**Study design:** Cross-sectional survey **Methods:** Patients completed a self-administered questionnaire linked to clinical records.. Data for all respondents then assessed to rank likelihood of acquisition in the UK or abroad. Two independent accessors repeated process on all indeterminate cases.	**Country:** United Kingdom **Study population:** HIV-positive Africans within 12 months of initial HIV diagnosis and aged 18 years or more **Sample size:** 263 patients **Setting** HIV treatment centre in London	**Outcomes of Interest:** *Country of Acquisition* 61 (23.2%) "Definitely acquired HIV abroad" 44 (16.7%) "Probably abroad" 16 (6.1%) "Definitely acquired in the UK" 142 (54.4%) 'Indeterminate cases'. *All cases (determinate and indeterminate)* UK acquired: 25.1% - 35.4% Acquired abroad 60.8% - 67.3% All cases acquired abroad indicated Africa as the region of acquisition	**Study design:** +++ **Validity:** +++ **Generalisability:** +++ **Overall quality of the article:**+++	**Authors:** Acquisition of HIV in UK was negatively associated with late presentation; hence, the findings potentially underestimate infection acquired in UK. **Reviewer:** Sample only includes Africans living in London, therefore may not be representative to all HIV positive Africans in the UK
Authors: del Amo, J., Álvarez, D., Monge, S., Caro, AM. Et al. **Year:** 2011 **Citation:** Migrant health: HIV testing and counselling in migrant populations and ethnic	**Study design:** Systematic review and brief survey among country representatives and in-depth interviews with key informants **Methods:** Literature review of	**Country:** Europe **Study population:** Migrant populations/Ethnic minorities **Sample size:** 37 articles were selected.	**Findings of Interest:** Most studies relating to HIV among sub-Saharan African migrants refer to infections being acquired in the country of origin. These include studies in Denmark, Spain, the UK and Canada. However, some describe evidence showing that people of	**Study design:** +++ **Validity:** +++ **Generalisability:** +++ **Overall quality of the**	**Authors:** None stated **Reviewer:** The search covers only articles in English; research in other languages, the grey literature and conference abstracts are not included.

Study details	Study type	Population and settings	Results/outcomes	Strengths	Limitations
minorities in EU/EEA/EFTA Member States. http://www.iss.it/binary/ccoa/cont/HIV_in_migrants.pdf .. 24-10-2012.	the five main databases of articles in English from Europe, North America and Australia between 2005 and 2009	**Setting** Not applicable	sub-Saharan African origin are becoming infected by HIV in EU countries. In the UK, for example, as many as a quarter of HIV infections diagnosed among heterosexuals and half of infections among men who have sex with men from sub-Saharan Africa may have been acquired in the UK. There is also evidence of acquisition of HIV infection in Europe among men from Latin America and the Caribbean who have sex with men. Several studies also highlight the issue of HIV acquisition among migrants during return visits to their country of origin. UK studies show that men from sub-Saharan Africa report high levels of sexual risk behaviour but perceive HIV prevention interventions as being primarily focused on women and children.	**article:** +++	
Authors: Dougan S, Elford J, Rice B et al. **Year:** 2005 **Citation:** Epidemiology of HIV among black and minority ethnic men who have sex with men in England and Wales. Sexually Transmitted Infections;81(4):345-50.	**Study design:** Surveillance data **Methods:** Ethnicity data from two national HIV/AIDS surveillance systems were reviewed. In addition, undiagnosed HIV prevalence among MSM attending 14 genitourinary medicine (GUM) clinics participating in the Unlinked Anonymous Prevalence Monitoring Programme and having routine syphilis serology was examined by world region of birth.	**Country:** United Kingdom **Study population:** BME MSM newly diagnosed with HIV in E&W between 1997 and 2002 **Sample size:** 1040 Total BME MSM 27% black Caribbean 12% black African 10% black other 8% Indian/Pakistani/Bangladeshi 44% other/mixed **Setting** GUM and laboratories	**Outcomes of Interest:** - New diagnosis: probable country of infection reported for 38% of BME MSM. *Infected in the UK* 58% all All BME 39% of black Africans 61% of black Caribbeans 70% of black other *Born in the UK* 29% of All BME 16% of black Africans 35% of black Caribbeans 48% of black other *Born outside and infected in the UK* 38% of black Africans 27% of black Caribbeans *Born and infected outside the UK* 50% of black Africans 37% of black Caribbeans *Rest were born and infected in the UK* *Undiagnosed prevalence:* All BME: 4.3% (4.1-4.5) Black Africans: 4.6 (3.3-6.2) Black Caribbeans: 15.8% (11.7-20.8)	**Study design:** +++ **Validity:** +++ **Generalisability:** +++ **Overall quality of the article:**++	**Authors:** Incomplete data in some variables (country of birth and infection in the new diagnosis study) **Reviewer:** Comparability: heterogeneous population for each of the outcomes

Study details	Study type	Population and settings	Results/outcomes	Strengths	Limitations
Authors: Dougan S, Payne LJ, Brown AE et al. **Year:** 2004 **Citation:** Black Caribbean adults with HIV in England, Wales, and Northern Ireland: an emerging epidemic? Sexually Transmitted Infections;80(1):18-23.	**Study design:** Surveillance data **Methods:** Voluntary confidential reports of new HIV diagnoses are received from virologists and clinicians	**Country:** United Kingdom **Study population:** HIV positive black Caribbean adults **Sample size:** 528 black Caribbean adults **Setting** Clinics and laboratories	**Outcomes of Interest:** *Probable Country of Infection* Heterosexual males infected in the UK: 37 (country of birth not known for 24) *Heterosexual females infected in the UK* 66 (country of birth not known for 31) *MSM infected in the UK* 48 (Country of birth not known for 24)	**Study design:**+++ **Validity:** +++ **Generalisability:** +++ **Overall quality of the article:** +++	**Authors:** Heterosexual spread of HIV among Caribbeans within England, Wales and Northern Ireland likely to be underestimated. If exposure to HIV has occurred in more than one country, the country with the highest prevalence will be assigned the likely country of infection. Missing data about country of birth may have had an impact on the review. **Reviewer:** The same of the author
Authors: Dougan S, Elford J, Sinka K, Fenton KA, Evans BG. **Year:** 2005 **Citation:** Men who have sex with men who are born abroad and diagnosed with HIV in England and Wales: an epidemiological perspective. International Journal of STD & AIDS;16(9):618-21	**Study design:** Surveillance data **Methods:** Voluntary and confidential reports of HIV diagnoses from laboratories (since 1985) and clinicians (since 2000) in England and Wales. Also Unlinked anonymous prevalence survey using left over dried blood spots from sentinel surveillance in GUM clinics.	**Country:** United Kingdom **Study population:** HIV diagnosed MSM living in England and Wales **Sample size:** 6386 MSM diagnosed in total: 141 born in Africa, 79 in the Caribbean and 24 in Asia. **Setting** Clinics and laboratories	**Outcomes of Interest:** *Probable country of infection* MSM born in Africa: Infected in Africa=46.4%; UK=45.5%; Other= 8.2% MSM born in Caribbean: Infected in Caribbean=50.0%;UK=42.6%; Other: 7.4% MSM born in Asia: Infected in Asia= 30.6%; UK= 61.2%;Other=8.2%	**Study design:** +++ **Validity:** ++ **Generalisability:** +++ **Overall quality of the article:** ++	**Authors:** Country of Birth unknown for almost 50% of the HIV-infected MSM because clinician reports with Country of Birth are only received for about 60% of diagnoses in MSM. Results may underestimate the number of diagnosis among MSM born abroad because of reporting issues. The proportion of MSM born infected and diagnosed abroad is probably underestimated this typically relies on patient self-reporting. Unclear whether these men were permanent migrants or visitors **Reviewer:** Unclear how robust probably country of infection reporting is or how it is conducted at the reporting level.
Authors: Hamers FF, Downs AM. **Year:** 2004 **Citation:** The changing face of the HIV epidemic in western Europe: What are the implications for public health policies? Lancet; 364(9428):03.	**Study design:** Surveillance data **Methods:** Review of surveillance databases on HIV/AIDS case reporting and HIV prevalence maintained by EuroHIV network. Additional searching of PubMed.	**Country:** Europe (18 countries Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, UK) **Study population:** All population with HIV in 12 of 18 countries **Sample size:** 542,380 people living with	**Findings of of Interest:** Most HIV infections diagnosed in migrants were probably acquired in their country of origin. In the UK, three-quarters of heterosexual infections diagnosed in 2002 were probably acquired in Africa. In Germany, the number of new HIV diagnoses increased in 2002 among heterosexuals originating from countries with generalised HIV epidemics, most of who were believed to have been infected in their countries of origin. In Sweden, more than 80% of reported HIV infections acquired through heterosexual contact were probably acquired abroad. In Denmark, immigrants accounted for 37% of all HIV	**Study design:** +++ **Validity:** ++ **Generalisability:** +++ **Overall quality of the article:** +++	**Authors:** None stated **Reviewer:** Based on secondary data. No clear that reviewed literature was quality assessed.

Study details	Study type	Population and settings	Results/outcomes	Strengths	Limitations
		HIV/AIDS 14,077 heterosexual migrants from countries with generalised epidemics. **Setting** Not applicable	infections diagnosed in 2002 and for 59% of those in people infected through heterosexual contact; most seropositive immigrants had been infected abroad. In Belgium, 73% (4016 of 5515) of HIV infections ever diagnosed in heterosexually infected people were in non-Belgian individuals—mostly African people.		
Authors: Lot F,et al. **Year:** 2004 **Citation:** Preliminary results from the new HIV surveillance system in France. Euro Surveillance: Bulletin Europeen sur les Maladies Transmissibles = European Communicable Disease Bulletin; 9(10):34-37.	**Study design:** Surveillance data **Methods:** HIV positive serology confirmed for the first time are notified by the laboratories. Epidemiological and clinical data are then supplied by clinicians.	**Country:** France **Study population:** Newly diagnosed HIV positive people in France **Sample size:** 1301 new HIV diagnoses **Setting** Hospitals and clinics	**Outcomes of Interest:** *Patients infected through heterosexual transmission* 690 patients (47% from SSA). No data on the nationality or ethnicity of MSM *Proportion of recent infections among heterosexuals* SSA 26% vs France 44% (p=0.0001)	**Study design:** +++ **Validity:**+++ **Generalisability:** +++ **Overall quality of the article:** +++	**Authors:** None stated **Reviewer:** This is based on preliminary data. Late reporting and longer follow-up periods could show larger differences in recent infections. Additionally, the authors do not report on the ethnicity of patients just country of origin. No data on the nationality of MSM or IDUs.
Authors: Pezzoli MC, Hamad IE, Scarcella C et al. **Year:** 2009 **Citation:** HIV infection among illegal migrants, Italy,-2007. Emerging Infectious Diseases;15(11):1802-4.	**Study design:** Cross-sectional survey and HIV testing **Methods:** Structured questionnaire in three cities in Italy - Brescia (North), Rome (Central), and Palermo (South).	**Country:** Italy **Study population:** All adult migrants from a non–European Union country who registered at primary healthcare centres offering services to undocumented migrants. . **Sample size:** Total sample: n=3003; SSA sample: n=674 **Setting:** Primary healthcare services	**Outcomes of Interest:** HIV-1 infection detected in 0.97 of participants (29/3,003 - 95% confidence interval [CI] 0.90%–1.2%). *Avidity Testing (n=27)* Six (22.2%) were probably acquired in Italy by migrants from sub-Saharan Africa (n = 3), eastern Europe (n = 2), and Latin America (n = 1). All 4 (14.8%) who acquired infection before migration were migrant sub-Saharan Africans.	**Study design:** +++ **Validity:** +++ **Generalisability:** +++ **Overall quality of the article:**++	**Authors:** Recruitment was not evenly balanced between centres; the study acceptance rate was only 73.6% **Reviewer:** Place of infection could not be determined for 17 (63.0%) of 27 persons (this is presumably due to recall bias). Very small sample size for avidity testing.
Authors: Rice BD, Elford J, Zheng Yin, Delpech VC. **Year:** 2012 **Citation:** A new method to assign country of HIV infection among heterosexuals born abroad and diagnosed with HIV in the UK.	**Study design:** Surveillance data **Methods:** Year of infection assigned to individuals based on mathematical modelling. Person classified having acquired HIV while living in the UK if year of infection later than reported year of migration	**Country:** UK **Study population:** Heterosexual born adults born abroad and diagnosed with HIV in the UK **Sample size:** 10,612 (9065 black Africans) . **Setting** Clinics and laboratories	**Outcomes of Interest:** *Probable place of infection* *33% (26%-39%) acquired HIV while living in the UK* *Percentaged increased from 24% (16%-39%) in 2004 to 46% (31%-50%) in 2010 (p<0.01)*	**Study design:** +++ **Validity:**+++ **Generalizability:** +++ **Overall quality of the article:**+++	**Authors:** CD4 cell method may over estimate UK place of infection since the longer a person is in the UK, the more likely they are to have been assigned UK as place of infection, despite travel habits and behaviour. Missing data for approximately 40% of eligible adults. **Reviewer:** Method used to calculate date of infection not published in peer review. Therefore unclear how robust calculation is.

Study details	Study type	Population and settings	Results/outcomes	Strengths	Limitations
Authors: Semaille C, Cazein F, Pillonel J et al. **Year:** 2008 **Citation:** Four years of surveillance of recent HIV infections at country level, France, mid 2003-2006: experience and perspectives. Euro Surveillance: Bulletin Europeen sur les Maladies Transmissibles = European Communicable Disease Bulletin;13(36):2008.	**Study design:** Surveillance data **Methods:** Mandatory anonymous HIV case reporting	**Country:** France **Study population:** All new HIV diagnosis **Sample size:** 10,855 samples investigated for recent infection. 2,511 were confirmed recent infections. **Setting** Laboratories	**Outcomes of Interest:** *Proportion recent infections* French heterosexuals: 27% Sub-Saharan Africans heterosexuals: 8.4%. OR for French (Ref.SSA): 3.95 (3.36-4.64)	**Study design:** +++ **Validity:**+++ **Generalizability:** +++ **Overall quality of the article:**++	**Authors:** Difficult of interpret available data **Reviewer:** Same as author
Authors: Sinka K, Mortimer J, Evans B, Morgan D. **Year:** 2003 **Citation:** Impact of the HIV epidemic in sub-Saharan Africa on the pattern of HIV in the UK. AIDS;17(11):1683-90.	**Study design:** Surveillance data **Methods:** Voluntary confidential reports of new HIV diagnoses are received from virologists and clinicians	**Country:** United Kingdom **Study population:** People diagnosed with HIV **Sample size:** 48,226 total HIV diagnoses (13,451 acquired through heterosexual sex; 8960 probably acquired in Africa; 5460 described as black African) **Setting** Clinics and laboratories	**Outcomes of Interest:** Probable Country of Infection: Total black African and Black other: 7741 Black Africans and black others who probably acquired their infection in UK or Rest of Europe: 523 (6.76%) Black Africans and black other who probably acquired infection in Africa: 6163 (79.6%)	**Study design:** +++ **Validity:**++ **Generalizability:**+++ **Overall quality of the article:**++	**Authors:** Limitations of surveillance data due to missing variables, particularly related to country of birth, ethnicity and country of acquisition. The extent of heterosexual transmission in the UK underestimated due to how this data is recorded. **Reviewer:** Same as author
Authors: Staehelin C, Egloff N, Rickenbach M, Kopp C, Furrer H. **Year:** 2004 **Citation:** Migrants from sub-Saharan Africa in the Swiss HIV cohort study: A single center study of epidemiologic migration-specific and clinical features. AIDS Patient Care and STDs;18(11):November.	**Study design:** Retrospective Cohort **Methods:** Single centre cohort study. All patient charts with at least one clinical visit including a minimum of laboratory data between 1984 and August 2000 were reviewed. Time of HIV-infection estimated taking into account CD4 cell count, CD4 cell decline over time and plasma RNA level. Estimates categorised into three groups (1) with great certainty before, (2) presumably before, (3) presumably or with great certainty after migration.	**Country:** Switzerland **Study population:** HIV-infected migrants (people living in Switzerland but not of Swiss nationality and not born in Switzerland) that are following up at the HIV clinic of the University Hospital of Berne. **Sample size:** 1331 patient charts reviewed, 1215 patients included: 1045 Northwestern Europe; 116 Southern Europe; 92 Sub-Saharan Africa (SSA); 24 Southeast Asia (SEA)	**Outcomes of Interest:** *Infection pre- migration ("with great certainty "or "presumably")* SSA: 78 (86.5%)" SEA: 13 (50.5%) *Infection post-migration* SSA: 2 (2.2%) SEA: 6 (25%)	**Study design:** +++ **Validity:** +++ **Generalizability:** +++ **Overall quality of the article:** +++	**Authors:** Source of infection not analysed because of poor availability of data. . **Reviewer:** Sample size of SSA: only 92 patients. The robustness of the methodology for "Time of HIV-infection and migration" was not discussed directly, however, the authors do refer to evidence that there is no difference in the natural history of HIV infection in patients of differing ethnicity.

Study details	Study type	Population and settings	Results/outcomes	Strengths	Limitations
		Setting Hospital			
Authors: Valin, N., Lot, F., Larsen, C., Gouëzel, P., Blanchon, T., and Laporte, A. **Year:** 2004 **Citation:** Parcours sociomédical des personnes originaires d'Afrique subsaharienne atteintes par le VIH, prises en charge dans les hôpitaux d'Ile-de-France,. http://www.invs.sante.fr/publications/2004/vih_afrique/vih_afrique.pd24-10-2012.	**Study design:** Cross sectional survey **Methods:** Structured questionnaire collecting socio-demographic characteristics and information about HIV infection (i.e. country of probably acquisition).	**Country:** France **Study population:** People from Sub Saharan Africa, aged 18+ presenting with HIV at outpatient or inpatient appointments. **Sample size:** 250 **Setting:** Hospital	**Outcomes of Interest:** *Probable country of infection* 44% infected in sub Saharan Africa 29% infected France 27% unknown country of infection	**Study design:** ++ **Validity:** ++ **Generalisability:** +++ **Overall quality of the article:** ++	**Authors:** Proportion of patients who arrived in France after 1999 (34%) has been overestimated. The study population includes naturalized citizens however,this had very little impact on the data, since only 95% (238/250) of respondents were born in sub-Saharan Africa and had foreign nationality. Study population not representative of the entire the HIV-positive population originating from sub-Saharan Africa and living in France. Some questionnaire items may be subject to reporting bias. **Reviewer:** The same of the author
Authors: von Wyl V, Kouyos RD, Yerly S et al. **Year:** 2011 **Citation:** The role of migration and domestic transmission in the spread of HIV-1 non-B subtypes in Switzerland. Journal of Infectious Diseases;204(7):1095-103.	**Study design:** Prospective Cohort **Methods:** Phylogenetic analysis – additional demographic and administrative data were obtained from the Swiss HIV Cohort Study database.	**Country:** Switzerland **Study population:** Patients who received their HIV diagnosis between 1 January 1996 and 31 December 2009. Only HIV-1 non-B subtypes A and C as well as CRF AE and AG included. **Sample size:** 1143 patients individuals infected with one of the subtypes of interest of the 8287 individuals of which subtype information was available **Setting:** Clinics	**Outcomes of Interest:** *Proportion of non-B subtype viruses* Increased from 22% (86 non-B subtypes/385 HIV diagnoses in 1996) to 33% (78 non-B subtypes/237 HIV diagnoses in 2009) 80% and more of all non-B infections among Africans may have originated outside of Switzerland, - 20% of all sequences from this group were contained within Swiss-specific clusters 10/16 (63%) of these possible local transmission events involved white Western European males and non-white females.	**Study design:** +++ **Validity:** +++ **Generalisability:** +++ **Overall quality of the article:** +++	**Authors:** Sampling bias (substantially alleviated by the high representativeness of the SHCS), linkage between individuals can never be established with absolute certainty **Reviewer:** The same of the author
Authors: Xiridou M, van VM, Coutinho R, Prins M. **Year:** 2010 **Citation:** Can migrants from high-endemic countries cause new HIV outbreaks among heterosexuals in low-endemic countries? AIDS;24(13):2081-88.	**Study design:** Mathematical model. **Methods:** The model is parameterized using data from the 'HIV survey among migrants in Amsterdam' and from two national surveys, the second PIENTER study and the surveys of the Rutgers-NISSO Group.	**Country:** Netherlands **Study population:** African migrants, Caribbean migrants, and the remaining 'general' Dutch population. **Sample size:** Not applicable **Setting** Not applicable	**Outcomes of Interest:** *"New" Infections (Estimated 1.50 new infections/100,000 people/year)* 53% of new infections among migrant Africans (32% acquired in The Netherlands) 26% among Caribbean Migrants (18% acquired in the Netherlands)	**Study design:** +++ **Validity:** +++ **Generalisability:** +++ **Overall quality of the article:**++	**Authors:** None stated **Reviewer:** Data used in model taken from different studies, therefore difficulty to assess research quality.

Study details	Study type	Population and settings	Results/outcomes	Strengths	Limitations
Authors: Xiridou M, van Veen M, Prins M, Coutinho R. **Year:** 2011 **Citation:** How patterns of migration may influence heterosexual HIV transmission. Sexually Transmitted Infections Jun;87(4):289-91	**Study design:** Mathematical model. **Methods:** Model describes transmission of HIV in heterosexual partnerships between African migrants, Caribbean migrants and local Dutch population. Details described in separate paper.	**Country:** Netherlands **Study population:** Heterosexuals in the Netherlands **Sample size:** Not applicable **Setting** Not applicable	**Outcomes of Interest:** *Incidence of HIV among heterosexuals* 1.50 new infections per 100,000 individuals per year in 2010 (infections occurring as a result of sexual contacts in The Netherlands or during trips of migrants to their home country). *Sub-group analysis* 67.18 new infections/100,000 African migrants 12.12 /100,000 Caribbean migrants 0.47 /100,000 Dutch locals	**Study design:** +++ **Validity:** +++ **Generalisability:** N/A **Overall quality of the article:** ++	**Authors:** Model does not take into account differences between 1st and 2nd generation migrants. **Reviewer:** The same of the author

Table F2. Papers reporting evidence of sexual mixing

Study details	Study type	Population and settings	Results/outcomes	Strengths	Limitations
Authors: Holguin A, Pena MJ, Troncoso F, Soriano V. **Year:** 2007 **Citation:** Introduction of non-B subtypes among Spaniards newly diagnosed with HIV type 1 in the Canary Islands. AIDS Research & Human Retroviruses; 23(4):498-502.	**Study design:** Cross sectional study with RNA extraction **Methods:** Epidemiological data from the Medical history of the patients	**Country:** Spain **Study population:** Individuals newly diagnosed with HIV-1 infection between 1998 and 2004 in a reference hospital located in Las Palmas, the capital town of Grand Canary **Sample size:** 429 individuals: 342 (79.7%) native Spaniards, and 87 (20.3%) foreigners **Setting** Hospital	**Outcomes of Interest:** *Prevalence of HIV-1 non-B subtypes and recombinants* 40 (28.8%) samples non-B strains Migrants: 28 (53% of all migrants in study - 75% infected by Africans) Native Spaniards: 12 (13.7% of all native Spaniards in the study - 4 most likely acquired HIV-1 through unprotected sex in sub Saharan Africa; 3 with Africans residing in Spain; 2 with partners from Spain; 2 sexual contact with sex workers and 1 MSM with multiple partners)	**Study design:** + **Validity:**++ **Generalisability:** + **Overall quality of the article:**++	**Authors:** Number of non-B subtypes among newly diagnosed native individuals is biased and could be underestimated. Subtyping of a large number of samples would be required to determine if the incidence of HIV- 1 non-B variants is increasing over time in the newly diagnosed native population. **Reviewer:** Same as author
Authors: van Veen MG, Kramer MA, Op de Coul EL et al. **Year:** 2009 **Citation:** Disassortative sexual mixing among migrant populations in The Netherlands: a potential for HIV/STI transmission? AIDS Care;21(6):683-91.	**Study design:** Cross-sectional survey **Methods:** Structured questionnaire	**Country:** Netherlands **Study population:** Migrants from Surinam, Antilles, Cape Verde & Ghana (including second generation), 18-55 years of age. with non-commercial heterosexual relations with at least one partner living in Rotterdam, Amsterdam or The Hague **Sample size:** 1680 **Setting:** Community	**Outcomes of Interest:** *Sexual mixing* Partners from the same ethnicity = 59% Partners with differing ethnicity = 41% (15% with Dutch partners; 21% with partners of "Other" ethnicity; 5% with both Dutch and "Other")	**Study design:** +++ **Validity:**+++ **Generalisability:** ++ **Overall quality of the article:**+++	**Authors:** Desirability bias **Reviewer:** Convenience sample, auto-selection bias
Authors: Snoeck J, Van DS, Van LK et al. **Year:** 2002 **Citation:** Prevalence and origin of HIV-1 group M subtypes among patients attending a Belgian hospital in 1999. Virus Research; 85(1):23.	**Study design:** Cross Sectional **Methods:** Plasma samples, RNA extraction and cDNA synthesis, Polymerase chain reaction and sequencing to perform phylogenetic analysis. Further information about patients obtained from retrospective review of patient records.	**Country:** Belgium **Study population:** Patients HIV+ **Sample size:** 41 samples 74% Belgian Nationality 8% European Other 18% African **Setting** Laboratories	**Outcomes of Interest:** *Country of Infection* 45% of patients infected in Africa 2% in South-America 6% in the rest of Europe or the USA. *Origin of the virus (P=0.0004)* Belgium (19): Subtype B=16; Non-B=3 Other (22): Subtype B=3; Non-B=19 No association between nationality and subtype (P=0.06)	**Study design:** +++ **Validity:** ++ **Generalisability:** ++ **Overall quality of the article:** ++	**Authors:** None stated **Reviewer:** Small sample size. The disproportionate numbers of female non-Belgians than male non-Belgians in the study population may have introduced a bias.

Study details	Study type	Population and settings	Results/outcomes	Strengths	Limitations
Authors: von Wyl V, Kouyos RD, Yerly S et al. **Year:** 2011 **Citation:** The role of migration and domestic transmission in the spread of HIV-1 non-B subtypes in Switzerland. Journal of Infectious Diseases;204(7):1095-103.	**Study design:** Prospective Cohort **Methods:** Phylogenetic analysis – additional demographic and administrative data were obtained from the Swiss HIV Cohort Study database.	**Country:** Switzerland **Study population:** Patients who received their HIV diagnosis between 1 January 1996 and 31 December 2009. Only HIV-1 non-B subtypes A and C as well as CRF AE and AG included. **Sample size:** 1143 patients individuals infected with one of the subtypes of interest of the 8287 individuals of which subtype information was available **Setting:** Clinics	**Outcomes of Interest:** *Proportion of non-B subtype viruses* Increased from 22% (86 non-B subtypes/385 HIV diagnoses in 1996) to 33% (78 non-B subtypes/237 HIV diagnoses in 2009)	**Study design:** +++ **Validity:** +++ **Generalisability:** +++ **Overall quality of the article:** +++	**Authors:** Sampling bias (substantially alleviated by the high representativeness of the SHCS), linkage between individuals can never be established with absolute certainty **Reviewer:** The same of the author
Authors: Elford J, Ibrahim F, Bukutu C, Anderson J. **Year:** 2007 **Citation:** Sexual behaviour of people living with HIV in London: implications for HIV transmission. AIDS;21:Suppl-70.	**Study design:** Cross sectional **Methods:** Self-administered questionnaire	**Country:** United Kingdom **Study population:** People diagnosed with HIV infection aged 18 years and above receiving treatment and care in six east London public hospitals. **Sample size:** 1687 of which: 480 black African heterosexual women, 224 black African heterosexual men and 758 gay/bisexual men (464 white, 112 ethnic minorities). **Setting** Clinics	**Outcomes of Interest:** *Unprotected intercourse in previous 3 months* 14% of black African heterosexual men and women (6.6% only with a partner who was HIV-positive, 5.1% with a partner of unknown or negative HIV status). *Unprotected intercourse with a main partner* 15% of black African men 11.9% of black African heterosexual woman *Unprotected intercourse with a casual partner* 3.1% of Black African Men 3.7% of black African women *Assortative Mixing* 80% of black African heterosexual men and women reported sexual partners were also black African.	**Study design:** +++ **Validity:**+++ **Generalisability:** +++ **Overall quality of the article:**+++	**Authors:** It is possible that high-risk sexual behaviours may be underreported because of social desirability bias or because of the associated stigma. To minimize this bias, all questionnaires were confidential and anonymized for the analysis. The study was restricted to people with diagnosed HIV. As a consequence, it would be underestimated the absolute level of risk. **Reviewer:** Selection bias derived from response rate and not broadly representative of those living with HIV, as sample exclusively from London.
Authors: Folch C, Sanclemente C, Esteve A et al. **Year:** 2009 **Citation:** [Social characteristics, risk behaviours and differences in the prevalence of HIV/sexually transmitted infections between Spanish and immigrant female sex workers in Catalonia, Spain]. [Spanish]. Medicina Clinica;132(10):385-88.	**Study design:** Cross-sectional survey and HIV testing **Methods:** Questionnaire	**Country:** Spain **Study population:** Female sex workers older than 18 years **Sample size:** 400 women, 26% Africans (n=130) **Setting:** Community	**Outcomes of Interest:** *"Always" Condom use with clients (Spanish n=43; SSA: n=104*): Anal sex: Spanish 100% vs SSA 66.7% Vaginal sex: Spanish 83.7% vs SSA 99% *"Always" Condom use with regular partner (Spanish n=15; SSA: n=50):* Anal sex: Spanish 14.3% vs SSA 25% Vaginal sex: Spanish 13.3% vs SSA 20.4%	**Study design:** ++ **Validity:** ++ **Generalisability:** ++ **Overall quality of the article:** ++	**Authors:** Convenience sample; desirability bias **Reviewer:** The same of the author

Study details	Study type	Population and settings	Results/outcomes	Strengths	Limitations
Authors: Folch C, Esteve A, Sanclemente C et al. **Year:** 2008 **Citation:** Prevalence of human immunodeficiency virus, Chlamydia trachomatis, and Neisseria gonorrhoeae and risk factors for sexually transmitted infections among immigrant female sex workers in Catalonia, Spain. Sexually Transmitted Diseases;35(2):February	**Study design:** Cross sectional survey **Methods:** Convenience stratified sampling (according to country of birth and Catalonia's regions) of female sex workers. Trained interviewers administered structured questionnaire.	**Country:** Spain **Study population:** Immigrant female sex workers **Sample size:** 357 women **Setting** Community locations (clubs, bars, private apartments) in Catalonia.	**Outcomes of Interest:** - *Consistent condom use with clients among African FSW [n(%)]* Vaginal sex (last 6 mo) 100 (99) Anal sex (last 6 mo) 2 (66.7) *Consistent condom use with partners among African FSW [n(%)]:* Vaginal sex (last 6 mo) 10 (20.4) Anal sex (last 6 mo) 1 (25) 1 (12.5)	**Study design:** ++ **Validity:** ++ **Generalisability:** ++ **Overall quality of the article:**++	**Authors:** Unable to obtain probability therefore sample may not be representative of the FSW in Catalonia. Refusal bias was very low (7%). Not possible to establish a causal relationship between the risk factors analysed and the prevalence of STI. Authors attempted to create an anonymous atmosphere for the interviews and used simple and understandable language to reduce recall and/or social desirability bias. **Reviewer:** Same as author
Authors: Hickson F, Reid D, Weatherburn P, Stephens M, Nutland W, Boakye P. **Year:** 2004 **Citation:** HIV, sexual risk, and ethnicity among men in England who have sex with men. Sexually Transmitted Infections;80(6):443-50.	**Study design:** Cross sectional **Methods:** Self-administered questionnaire	**Country:** United Kingdom **Study population:** MSM living in the UK **Sample size:** 13,369 MSM; 17% from minority ethnic groups; 2.5% Black **Setting** Community	**Outcomes of Interest:** *Sex with a known HIV+ partner* Black: 9.7% (*IUAI=3.8%; RUAI=1.7%); White British: 9.3% (IUAI= 1.4%; RUAI= 1.2%) *Sex with a known HIV- partner* Black: 54.3% (IUAI=19.9%; RUAI=20.2%) White British: 49% (IUAI=19.5%; RUAI=21.2%) *Sex with a partner of unknown HIV status.* Black: 74.9% (IUAI=26.3%; RUAI=18.6%); White British: 76.6% (IUAI=19.4%; RUAI=17.8%) *OR of IUAI with an HIV positive partner* Black (White ref)2.76 (CI95%: 1.38-5.56) *OR of IUAI with a partner of unknown HIV status* Black (White ref) 1.46 (CI95%: 1.08-1.98) *IUAI=insertive unprotected anal intercourse/ RUAI =receptive unprotected anal intercourse	**Study design:** +++ **Validity:**+++ **Generalisability:** +++ **Overall quality of the article:** +++	**Authors:** Proportion of bisexuals is lower than in the general population so results cannot be generalised to bisexual population, only to MSM. **Reviewer:** "Black" category included, majority of "mixed ethnicity", small representation of black African and Caribbean black men
Authors: Kramer MA, van Veen MG, de Coul EL et al. **Year:** 2008 **Citation:** Migrants travelling to their country of origin: a bridge population for HIV transmission? Sexually Transmitted Infections;84(7):554-55.	**Study design:** Cross-sectional survey and HIV testing **Methods:** Structured questionnaire	**Country:** Netherlands **Study population:** People of Surinamese and Antillean origin (including second generation), 16-70 years of age and heterosexuals living in two large cities (not specified) **Sample size:** 1938 **Setting** Community social venues.	**Outcomes of Interest:** *Risk for cross border contamination (n=1092)* 72.4% - no risk 9.2% low risk 9.2% -moderate risk 9.2% - high risk (unprotected sex in both countries) *Sexual mixing (sexual partner with differing ethnicity)* High risk = 42% (84% unprotected) Moderate risk = 59% (no data) Low risk = 66% (no data)	**Study design:** +++ **Validity:** ++ **Generalisability:** ++ **Overall quality of the article:**++	**Authors:** Convenience sample and social desirability bias **Reviewer:** Includes both first generation and second generation migrant with no distinction drawn between them in analysis.

Study details	Study type	Population and settings	Results/outcomes	Strengths	Limitations
Authors: Kramer MA, Van Den Hoek A, Coutinho RA, Prins M. **Year:** 2005 **Citation:** Sexual risk behaviour among Surinamese and Antillean migrants travelling to their countries of origin. Sexually Transmitted Infections;81(6):December.	**Study design:** Cross sectional survey **Methods:** Structured questionnaire administered to Convenience sample recruited from market places, shopping areas, community houses and churches. Salvia samples taken and tested for antibodies against HIV.	**Country:** Netherlands **Study population:** People aged between 15 years and 55 years and self-identified as Surinamese or Antillean. **Sample size:** 1025: People originating from Surinam (n = 798) and the Netherlands Antilles (n = 227) **Setting** Community locations in Amsterdam.	**Outcomes of Interest:** *Unprotected sex with partner in country of origin* Men: 31/87 (36%) Women: in 12/24 (50%) *Multivariate analysis* Having >1 partner in the past 5 years was, among female travellers, the only variable significantly (OR: 13.57) associated with unprotected sex with local partners. Surinamese men had a 10.7-fold higher odds of having unprotected sex in their homeland than did Antillean men.	**Study design:** +++ **Validity:** +++ **Generalisability:** ++ **Overall quality of the article:** ++	**Authors:** None stated **Reviewer:** Methods not clearly described therefore difficult to evaluate limitations.
Authors: Prost A, Elford J, Imrie J, Petticrew M, Hart GJ. **Year:** 2008 **Citation:** Social, behavioural, and intervention research among people of Sub-Saharan African origin living with HIV in the UK and Europe: Literature review and recommendations for intervention. AIDS and behavior;12(2):March.	**Study design:** Review **Methods:** Keyword search using Embase, Medline and PsychInfo, existing reviews, 'grey literature', as well as expert working group reports	**Country:** Europe **Study population:** African communities affected by HIV **Sample size:** 138 studies met the inclusion criteria; 31 peer-reviewed articles, 107 grey literature. **Setting** N/A	**Findings of Interest:** Studies report that while condom use among Africans living in Western Europe is often higher than in the general population, it is low in relation to the risk of HIV in African communities. There is evidence that low condom use is related to expectations of fidelity. Studies have reported that Africans may believe risk can be avoided by carefully choosing one's partners. This may be linked to the belief that belonging to the same 'community', whether nationally, regionally or religiously, is an assurance of 'safe' status. There is increasing evidence from European studies that some African migrants start new sexual relationships when travelling back to their home countries.	**Study design:** ++ **Validity:** ++ **Generalisability:** N/A **Overall quality of the article:** ++	**Authors:** None stated **Reviewer:** Is entirely descriptive and authors do not evaluate the quality of the documents included. Review was not carried out systematically.

Appendix G: Tables compiled from Member State survey

Table G1. Reported format of collecting data on date of arrival and date and place of previous HIV test among patients newly diagnosed with HIV

State	Date of arrival among persons born abroad	Date of previous HIV test among those newly diagnosed with HIV	Country of previous HIV test among those newly diagnosed with HIV
Belgium	dd/mm/yyyy or mm/dd/yyyy	Not collected	Not collected
Cyprus	Not collected	yyyy	Not collected
Denmark	Yyyy	mm/yyyy	Not collected
Finland	Not collected	yyyy	Not collected
France	Yyyy	mm/yyyy	Not collected
Germany	Not collected	mm/yyyy	Not collected
Greece	Yyyy	Collected	Not collected
Ireland	Not collected	yyyy	Collected
Italy	Not collected	Collected	Not collected
Latvia	Not collected	dd/mm/yyyy or mm/dd/yyyy	Collected
Lithuania	Yyyy	yyyy	Collected
Luxembourg	dd/mm/yyyy or mm/dd/yyyy	dd/mm/yyyy or mm/dd/yyyy	Not collected
Malta	mm/yyyy	Collected	Not routinely collected
Netherlands	Not collected	mm/yyyy	Not collected
Norway	mm/yyyy	mm/yyyy	Not collected
Romania	mm/yyyy	dd/mm/yyyy or mm/dd/yyyy	Collected
Slovakia	mm/yyyy	dd/mm/yyyy or mm/dd/yyyy	Collected
Sweden	free text format	dd/mm/yyyy or mm/dd/yyyy free text format	Not collected
United Kingdom	Yyyy	dd/mm/yyyy or mm/dd/yyyy	Collected

Table G2. States reporting that migrants are mentioned in their national strategic plan
Where States are not included below, this indicates that no data was obtained.

Country	Use of indicators to monitor country response to HIV among migrants	Overview of the indicators and the relevant data sources.	Data sources for the indicators
Bulgaria	Yes	Currently, indicators used to monitor progress include: - Number of people tested for HIV and syphilis; - Number and % of HIV positive people registered annually and cumulatively; - Number of PLHIV receiving follow-up and ARV treatment in HIV treatment sectors; - Number and % of sex workers who have worked/ plan to work abroad; Number and % of MSM who have been abroad - Number and % of contacts for HIV prevention services through outreach activities - The National HIV/STI Programme (2008-2015) includes specific activities on improving the biological and behavioural surveillance system, including the construction of indicators to monitor progress and outcomes of the national HIV response among migrants.	Major data sources include (in the order of the indicators): - routine data from the State agency for Refugees; - database on the provision of Voluntary HIV Counselling and Testing, including a variable on ethnicity/ nationality; - the National HIV Register; - information system for monitoring HIV patients registered in HIV treatment sectors for follow-up and provision of ARV; - national system for second generation HIV surveillance (Integrated Biological and Behavioural HIV Surveillance - IBBS) among groups most-at-risk; - programmatic data on outreach activities implemented by NGOs.
Denmark	Yes	No further information provided	No further information provided
France	Yes	Indicators published by the inVS	InVS, mandatory declaration of HIV
Greece	Yes	No further information provided	No further information provided
Lithuania	Yes	No further information provided	No further information provided
Netherlands	Yes	please refer to Country Progress Report	please refer to Country Progress Report
Norway	Yes	No further information provided	No further information provided
Spain	Yes	The most important epidemiological indicators are: - New diagnoses of HIV and AIDS among migrants in Spain by age, sex, transmission category, etc. - HIV prevalence among new and repeat testers among migrants attending sexually transmitted infections (STI) clinics by age, sex, transmission category etc. - Clinical and social information on migrants with HIV and AIDS attending public hospitals by age, sex, transmission category, etc. - Late diagnosis of HIV infection	- National AIDS Register - National Information System on HIV New Diagnoses - HIV prevalence among migrants attending HIV/sexually transmitted infections (STI) clinics network (EPI-VIH Study) - New HIV diagnoses in clients of a network of HIV/STI centre - One-day, annual cross-sectional survey of HIV patients attending public hospitals
Sweden	Yes	Case based surveillance data, aggregated treatment data and aggregated data on coverage of health examinations among asylum seekers in Sweden	No further information provided
UK	Yes	The HPA measure HIV prevalence, late diagnosis, and clinical outcomes by ethnicity and/or whether born abroad/in sub-Saharan Africa either for all or for sub populations (e.g. for pregnant women).	Q 7 and Q8 http://idoitright.co.uk/wp-content/uploads/2011/09/Assessing-the-feasibility-and-acceptability-of-community-based-prevalence-surveys-of-HIV-among-Black-Africans-in-England.-London-Health-Protection-Agency-Centre-for-Infections.-Mayisha-II-Collaborative-Group-2005.pdf Bass Line = http://www.sigmaresearch.org.uk/go.php?/projects/african/project39 SONHIA = http://discovery.ucl.ac.uk/18907/

States that do not use indicators to monitor country response to HIV among migrants: Belgium, Czech Republic, Cyprus, Estonia, Finland, Germany, Hungary, Iceland, Ireland, Italy, Latvia, Luxembourg, Malta, Poland, Portugal, Romania, and Slovakia.
States that did not provide a response: Albania.

Table G3. Member State survey reports of new HIV diagnoses among migrants

Country	Dublin Declaration data		Member State survey
	Evidence that migrants are disproportionately affected by HIV	Additional information gained from Dublin Declaration Reporting Round	Additional information gained from MS Survey[a]
Albania[b]	No		
Belgium	Yes	An important proportion of the persons diagnosed with HIV in Belgium comes from countries with generalized epidemics	In 2011, "Nationality" was available for 75% of the new HIV diagnoses. Among those with available data, 57.3% were of non-Belgian nationalities: 34.7% were from sub-Saharan Africa, 13.7% Europe, 1.7% North Africa and 7.3% from other regions
Czech Republic	Yes	Foreigners originating from countries with generalised HIV epidemics (East Europe, Sub-Saharan Africa) are particularly affected by HIV/AIDS.	
Cyprus	No[c]		40%
Denmark	Yes	From surveillance data we know, that the prevalence of HIV is higher among some migrant groups than Danes	42%
Estonia	No		
Finland	Yes	The proportion of foreign citizens from all new HIV diagnoses: in 2009 44.1 %, in 2010: 44.2 %. The proportion of foreign citizens from the total population in Finland: in 2009: 2.9 %, in 2010: 3.1 %	56% of new HIV diagnoses were among foreigners (people with no Finnish nationality).
France	Yes	Between 2003 and 2008, persons born outside of France represent 6% of the population (INSEE 2006), but 46% of new HIV diagnoses.	48% of new HIV diagnoses were among migrants (people born abroad) in 2010 and 32% were among migrants from Sub-Saharan Africa (data for 2011 are not yet available)
Germany	Yes	IDU: disproportionally affected are IDU originating from Eastern Europe. These are partly ethnic German immigrants from former Soviet Union who migrated to Germany in the 1990ies. Sex workers: the majority of sex workers in Germany originates from Central European and Eastern European countries (e.g. Romania, Bulgaria, Hungary, Poland, Ukraine). Heterosexually acquired HIV: a large proportion of heterosexually acquired HIV is diagnosed in migrants from Sub-Saharan Africa, a smaller part in migrants from South East Asia (particularly Thailand).	For 15% of all new diagnoses, we do not have info on country of origin. Among all cases with reported country of origin 35% are migrants (have another country of origin than Germany).
Greece	No		18%
Hungary	No[c]		In 2011, 8.4% of the newly diagnosed persons were migrants (10/119; for 129 people, nationality was unknown)
Iceland	Yes	Approximately half of new HIV cases during the last 10 years are migrants.	Five migrants of total of 23 new diagnoses, i.e. approximately 22%.
Ireland	Yes[c]		Our surveillance system does not record migrant status per se; however we do record country of birth information. 43% (139/321) of new diagnoses in 2011 were not born in Ireland.
Italy	Yes	Although care and treatment for HIV positive persons is offered to both nationals and non-nationals (legal and illegal) at no costs, in 2010, the incidence of new HIV infections among non-nationals was 5 times higher than that observed among Italians. These data show that non-nationals represent a vulnerable population disproportionately affected by HIV.	25%

Country	Dublin Declaration data		Member State survey
	Evidence that migrants are disproportionately affected by HIV	Additional information gained from Dublin Declaration Reporting Round	Additional information gained from MS Survey[a]
Latvia	No		In Latvia, the HIV/AIDS epidemiological surveillance system does not hold information about migrants.
Lithuania	No		166 new cases of HIV were diagnosed in 2011, of which one was a migrant.
Luxembourg	No		24%
Malta	Yes	Numbers of HIV in Maltese persons are still relatively low. Migrants mainly come from countries with high prevalence of HIV, so there are a disproportionate number of cases among migrants when compared to Maltese persons.	12 newly diagnosed HIV cases amongst migrants out of the 30 new cases we diagnosed in 2011(40%)
Netherlands	Yes	please refer to Country Progress Report	33%
Norway	Yes		56 % (152/139)
Poland	No		4%
Portugal	No		
Romania	No		In Romania, the number of migrants diagnosed with HIV is very small. In 2011, out of 708 new recorded cases, 8 were diagnosed among migrants: 2 detected outside Romania and 6 in Romania. During 25 years of surveillance, out of >17.000 cases (cumulative total), 51 are migrants.
Slovak Republic	No		4.1% (Two of the 49 cases reported in 2011)
Spain	Yes	In the period 2003-2009, data on new HIV diagnoses in 9 Spanish Regions (coverage: 32% of total Spanish population) showed an increasing trend from 31% in 2004 to 36.3% in 2009.[d]	The proportion of migrants among new HIV diagnoses in 2011 was 37%
Sweden	Yes	There are some indications that among people infected with HIV in Sweden, foreign born persons are disproportionately affected. For example, foreign-born persons are over represented in newly diagnosed HIV cases among MSM and heterosexuals contracting HIV in Sweden.	Out of 463 reported cases in 2011, 75% were foreign born.
UK	Yes	In the UK, HIV disproportionately affects African-born men and women. Although African-born people account for a very small overall percentage of the UK population, African-born men and women accounted for almost 60% of people living with HIV in 2010. Black African men and women living in the UK have a high HIV prevalence, at 47 per 1,000 population (England and Wales). Among black African men, HIV prevalence was 31 per 1,000 population, and among black African women it was 64 per 1,000.	In 2011, approximately 55% of all new HIV diagnoses are made among persons born outside of the UK. This is true for persons where country of birth is known. Twenty-seven per cent of all diagnoses in 2011 were made among persons born in SSA.

(a) The proportions of new HIV case reports among migrants reported in the Member State survey differ from those in the ECDC/WHO HIV Surveillance report (2011), figure 2.4, which includes the proportion of HIV cases among migrants from countries with generalised HIV epidemics from sub-Saharan Africa only.

(b) Not included in the Member State survey.

(c) Data obtained from Member State survey.

(d) Source: Epidemiological surveillance of HIV newly diagnoses in Spain. Period 2003-2009.