



HIV Testing Services: Analysis of guidelines and perceptions of practice across the WHO European Region

Summary Report

Never Stand Still

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1 Introduction

In many European countries, current HIV testing efforts are insufficient to identify new HIV infections early enough, and substantial proportions of people with HIV are unaware of their infection. In 2014, over 142,000 people were newly diagnosed with HIV in the World Health Organisation (WHO) European Region, and this is noted to be the highest annual number of new diagnoses since reporting began [1]. The most rapidly growing HIV epidemic in the world is occurring in the eastern part of the WHO European Region [2, 3]. In Eastern Europe and Central Asia, where HIV is predominantly transmitted through heterosexual contact and injection drug use accounts for about a quarter of new infections [1], new HIV diagnoses have increased by 30% between 2000-2014 [4]. In Western Europe, stable high rates of new HIV diagnoses are observed among men who have sex with men in Western Europe who remain most affected in this region, despite high treatment coverage [5].

A third of individuals living with HIV in Europe have been estimated as being unaware of their infection, whilst up to 50% may be diagnosed long after they should have started receiving treatment and care [6, 7]. The problem of under- and late diagnosis of HIV in some European countries is compounded by punitive laws and restrictive law enforcement practices deterring those who are undiagnosed or most at risk of infection (e.g., people who inject drugs, gay men and other men who have sex with men, and sex workers) from accessing HIV-related information and services [2]. In light of these concerns, a key objective outlined in the WHO's European Action Plan for HIV/AIDS 2012-2015 [3] is to reduce the size of undiagnosed populations and the number of late HIV diagnoses by expanding access to and increasing early uptake of HIV testing services.

HIV testing guideline documents aim to assist national programme managers, service providers and people delivering community-based programmes with planning and providing HIV testing services. Regional guidelines relevant to the WHO European Region are published by the European Centre for Disease Prevention and Control (ECDC) [8], the European Office of the International Union against Sexually Transmitted Infections (IUSTI) [9] and the WHO Regional Office for Europe [10]. New global guidelines have recently been published by the WHO [11], to replace previous guidelines by WHO/UNAIDS [12]. Clear guidelines for HIV testing services are important in relation to meeting the new global 90-90-90 targets, the first of which refers to the diagnosis of 90% of people with HIV by 2020. This is an essential prerequisite to achieving the second target that 90% of people with diagnosed HIV are on antiretroviral treatment (ART) and the third target that 90% of people on ART have sustainably suppressed viral load, through effective linkage of people newly diagnosed with HIV to treatment services [11, 13].

To map current HIV testing policy and practice, the HIV in Europe initiative commissioned the Centre for Social Research in Health, UNSW Australia, to undertake a review of HIV testing guidelines that are relevant to HIV testing services across the WHO European Region, and to conduct an online survey to gather the perceptions of HIV testing practices held by health professionals (e.g. national policy makers, health service providers, NGO representatives) involved in HIV testing policy and practice in national settings across the WHO European Region. This report presents the research findings arising from the project that are also reported in detail in published peer-reviewed papers [14-17]. This project contributes to the evidence base that can be used to guide the development of future guidelines for HIV testing services in the WHO European Region.

2 Methods

This report documents findings from two separate but related studies: a review of current HIV testing guidelines relevant to the WHO European Region and a survey assessing health professionals' perceptions of HIV testing practices across the WHO European Region.

2.1. Review of HIV testing guidelines

HIV testing guideline documents relevant to the WHO European Region documents were identified in a targeted internet-based search of documents published on websites of organisations known to be involved in providing guidelines around HIV service delivery in health care settings. National guidelines, which are designed for specific country contexts, were outside the scope of this review. Guidelines that were not published in English or focused on the delivery of HIV testing and counselling outside the WHO Europe Region were also excluded from the review. Further, guidance on HIV indicator conditions developed by the HIV in Europe initiative [18] was excluded as this focussed primarily on the identification of people at increased risk of HIV. Guidelines that specifically focussed on issues pertaining to particular population groups (e.g., couples [19], people who use drug [20, 21], refugees [22], institutionalised adolescents or adults [23]) were also excluded.

We identified four guideline documents that were relevant to countries in the WHO European Region: 'Scaling up HIV testing and counselling in the WHO European Region as an essential component of efforts to achieve universal access to HIV prevention, treatment, care and support – Policy framework' by WHO Europe [10]; 'ECDC Guidance - HIV testing: increasing uptake and effectiveness in the European Union' by the ECDC [8]; '2014 European Guidance on HIV testing' by IUSTI [9]; and 'Guidance on provider-initiated HIV testing and counselling in Health Facilities' by WHO/UNAIDS [12]. Since the review was conducted, new global guidelines, entitled 'Consolidated guidelines on HIV testing Services – 5Cs: consent, confidentiality, counseling, correct results and connection', have been published in 2015 by WHO [11], to replace earlier WHO/UNAIDS guidelines [12]. In this report, we note any changes related to these latest WHO guidelines.

The review of guideline documents consisted of two consecutive steps:

1. All recommendations included across all guideline documents were listed. Recommendations were divided into five components of HIV testing: delivery of pre-test information, discussion or counselling; gaining informed consent; delivery of HIV test results; provision of post-test discussion and counselling; and referral pathways.
2. A comparative analysis of recommendations examined similarities and differences between guideline documents.

2.2 Survey of perceived HIV testing practices

2.2.1 Participants and recruitment

An online survey among health professionals involved in HIV testing policy and practice in the WHO European Region was conducted between May-August 2014. An opportunistic sample was recruited by contacting

stakeholders identified through the National Focal Points, the European Commission HIV/AIDS Civil Society Forum, the HIV in Europe initiative, nam aidsmap, the Global Fund Grants Portfolio, and the UNAIDS 'know your response' website. Experts contacted included policy makers with responsibility for the design of HIV policies and associated HIV testing guidelines; health service providers working in HIV testing services, STI clinics and other health services providing HIV testing; and NGO representatives responsible for delivering HIV testing or working as advocates on behalf of HIV positive people and key populations. We aimed to identify and contact at least two individuals working in each of the three roles in each country.

Three repeat invitations were sent which explained the purpose of the survey and provided access to the purpose-built study website that held detailed participant information and provided access to a self-completion questionnaire in five languages (English, Spanish, Portuguese, German and Russian). No incentive was offered for participation. Invites were sent to 990 people, of which 338 (34.1%) were eligible for inclusion in data analysis. This response rate is similar to other online health professional surveys [24]. Responses were excluded if no consent was provided; respondents reported being 'not at all' or 'rarely' involved in HIV testing and counselling; respondents did not provide information about the country in which they worked, were located in a country that was not in the WHO European Region, or worked in a role that took them across multiple countries; or respondents did not think that national, regional or global HIV testing guidelines were available in their national setting.

Responses were received from individuals working in each of the WHO European Region Countries, with the exception of San Marino and Iceland; 102 respondents (30.2%) were from Western Europe, 126 (37.3%) were from Central Europe; and 110 (32.5%) were from Eastern Europe and Central Asia. These sub-regions are based on regional categorisations used by the United Nations Environment Programme's GEO5 [25] and UNAIDS [26].¹ Over half (49.4%) of respondents worked for NGOs, 32.8% worked in health services, 6.2% were policy makers working in non-health government agencies, and 11.5% worked in other organisations (e.g. prisons, education and research, or international development organisation). Health sector employees included medical doctors (54.1%), health service managers (18.0%), and workers in other roles (27.9%) (e.g. nurses, health care assistants, counsellors, psychologists, social workers). Health sector respondents worked in standalone HIV testing services (38%), STI clinics (20%), drug related services (17%) or community outreach/testing promotion (10%).

The gender of respondents was reported as male (48.2%), female (50.3%), transgender (0.9%) and intersex (0.6%). Respondents represented a wide age range (22-30 year old: 9.2%; 31-40 year old: 28.7%; 41-50 year old: 31.1%; >50: 31.1%). Three quarters (74%) had postgraduate qualifications, and 22% had undergraduate qualifications. Over a third (36.1%) had up to 10 years work experience, 42.9% had between 11-20 years of work experience, and 21% had more than 20 years' work experience.

2.2.2 Data collection and analysis

Participants completed a self-report questionnaire assessing their perceived practices regarding five distinct components of testing and counselling: providing pre-test information, obtaining informed consent, delivery of test results, post-test discussion, and referral to specialist services. Questionnaire design was based on an analysis of all recommendations contained in HIV testing guidelines written by IUSTI [9], ECDC [8], WHO Europe [10], HIV in Europe [18] and WHO/UNAIDS [12]. Responses were given in the form of yes/no answers.

Descriptive analyses were conducted to assess respondents' perceptions regarding HIV testing and counselling practices in their country of employment. Chi-square tests were performed to examine any differences in perceived practice by sub-region (i.e., Western Europe, Central Europe, and Eastern Europe

1 Western Europe consists of Andorra, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Liechtenstein, Luxembourg, Monaco, Netherlands, Norway, Portugal, San Marino, Spain, Sweden, Switzerland, and United Kingdom. Central Europe consists of Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Former Yugoslav Republic of Macedonia, Hungary, Kosovo, Latvia, Lithuania, Malta, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia, and Turkey. Eastern Europe and Central Asia consists of Armenia, Azerbaijan, Belarus, Turkmenistan, Georgia, Kazakhstan, Kyrgyzstan, Republic of Moldova, Russian Federation, Tajikistan, Ukraine, and Uzbekistan.

and Central Asia) as well as by the sector in which respondents were employed. In view of the small number of participants working in government agencies or other organisations, this comparison was limited to health sector and NGO sector workers. In view of the large number of differences, in particular between sub-regions, only highly significant differences ($p < .001$) are discussed in the text; all significant differences are noted in the tables. IBM SPSS Statistics version 20 was used for data analysis.

3 Results

3.1 Perceived availability and remit of HIV testing guidelines

We were unable to ascertain conclusively whether national guidelines exist for each of the countries in the WHO European Region, as this information is not readily available. For this reason, respondents were asked about the availability of HIV testing guidelines in their country of employment (see Table 1). A large majority of respondents (79.6%) indicated that national HIV testing guidelines were available in their country of employment. Of respondents who thought no national guidelines were available in their country of employment (20.4%), half (54%) reported that other guidelines were available to guide HIV testing practice in their country of employment.

Table 1: Perceived availability of HIV testing guidelines by country of employment

Guideline availability	Country
National guidelines available	35 countries: Albania, Armenia, Austria, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Denmark, Estonia, Finland, France, Georgia, Germany, Italy, Kyrgyzstan, Kazakhstan, Lithuania, Monaco, Netherlands, Poland, Republic of Moldova, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Tajikistan, Macedonia, Ukraine, UK, Uzbekistan, Kosovo
National guidelines not available and other national, regional and global guidelines are used instead	6 countries: Malta (British HIV Association (BHIVA) guidelines used); Ireland (European Centre for Disease Prevention and Control (ECDC) guidelines used); Portugal (European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) guidelines used); Turkey (US Centers for Disease Control and Prevention (CDC) and World Health Organisation (WHO) guidelines used); Turkmenistan (WHO guidelines used); Latvia (ECDC guidelines used)
National guidelines not available but national strategies are available that include statements regarding HIV testing but do not detail procedures	5 Countries: Belgium, Greece, Hungary, Israel, Montenegro
National guidelines not available and no other guidelines or strategies are noted	6 countries: Andorra, Azerbaijan, Cyprus, Czech Republic, Luxembourg, Norway

As illustrated in Table 2, survey findings point to perceived HIV testing recommendation gaps in relation to:

- Settings, in particular community and closed settings, and home-based/self testing;
- Population groups, in particular migrants from high prevalence settings, and children and adolescents aged under 18 years of age;
- HIV testing components, in particular pre-test information/counselling, and post-test counselling for HIV-negative clients.

Table 2: HIV testing professionals' perceived remit of HIV testing guidelines in their country of employment

	Total	Sub-regional comparison			Significance level
		Western Europe	Central Europe	Eastern Europe & Central Asia	
Settings covered in guidelines					
Patient-initiated testing in health care settings (VCT)	85.3	82.1	81.7	92.4	#
Provider-initiated testing in health care settings	72.4	76.9	68.8	72.8	-
HIV testing in community settings	51.3	60.3	54.1	40.2	*
HIV testing in closed settings	47.4	41.0	44.0	57.6	#
Home-based testing/ self testing	11.8	21.8	10.1	5.4	**
Population groups included in guidelines					
People who inject drugs	84.7	74.0	87.0	91.1	**
MSM	80.4	71.4	84.3	83.3	#
Pregnant women	77.1	79.2	65.7	88.9	***
Sex workers	75.6	59.7	78.7	85.6	***
General population attending health services	65.8	64.9	65.7	66.7	-
Migrants from high prevalence settings	44.4	66.2	32.4	40.0	***
Children and adolescents <18	37.5	29.9	42.6	37.8	-
Components of HIV testing included in guidelines					
Pre-test information or pre-test counselling	61.5	81.1	85.4	17.0	***
Informed consent	83.0	77.0	78.6	93.2	**
Delivery of HIV- test results	81.5	71.6	79.6	92.0	**
Delivery of HIV+ test results	82.6	78.4	83.5	85.2	-
Post-test counselling (HIV-)	74.3	62.2	76.7	81.8	**
Post-test counselling (HIV+)	84.5	78.4	82.5	92.0	*
Referral of people testing HIV+ to specialist treatment/care services	84.9	78.4	84.5	90.9	-

Note: # = $p < 0.10$, * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$

A large number of sub-regional differences were identified in respondents' perceptions about the remit of available guidelines. Most significant differences were that:

- Respondents from Central Europe thought that pregnant women were less likely to be addressed in guidelines than respondents from Western Europe and from Eastern Europe and Central Asia;
- Respondents from Eastern Europe and Central Asia and from Central Europe thought that sex workers were more likely to be included in guidelines than respondents from Western Europe;
- Respondents from Western Europe thought that migrants from high prevalence settings were more likely to be included in guidelines than respondents from Eastern Europe and Central Asia and from Central Europe;
- Respondents from Eastern Europe and Central Asia thought that information about pre-test information was less likely to be addressed in guidelines than respondents from Western Europe and from Central Europe.

3.2 Pre-test information

3.2.1 Recommendations in current guidelines

All reviewed guidelines recommend providing pre-test information during a pre-test discussion or assessment, with the basic aim of providing sufficient information to a client to gain informed consent before testing [8, 9]. This is in contrast to undertaking pre-test counselling, which has been defined as a “longer intervention including a sexual history and risk assessment designed to perform the same functions as pre-test discussion, but also to establish the person’s likely response to the possible result” (p. v) [8]. The latest WHO guidelines define pre-test information as “a dialogue and the provision of accurate information by a trained lay provider or health worker before an HIV test performed” (p. xiv), and explain that the provision of pre-test information is part of the full range of HIV testing services [11]. The guidelines we reviewed all suggest that pre-test information can be delivered verbally or via other methods (e.g., an information sheet). The latest WHO guidelines also suggest that pre-test counselling can be delivered in a group setting, provided all individuals can ask questions in private, if required [11].

Table 3 outlines the different aspects of pre-test information included in the reviewed guidelines. In these guidelines, two types of informational content can be distinguished in recommendations regarding pre-test discussions/assessments: (1) issues related to taking an HIV test; and (2) issues related to the possible test result and its implications.

Table 3. Recommendations regarding pre-test information provision in reviewed HIV testing guidelines

	European regional guidelines			Global guidelines
	ECDC	IUSTI	WHO Europe	WHO/UNAIDS
Issues related to taking an HIV test				
Confirm voluntary nature of test	Y		Y	Y
Confirm confidentiality	Y	Y	Y	Y
Explain benefits of testing/reason for testing	Y	Y	Y	Y
Provide details of test result delivery	Y	Y		

	European regional guidelines			Global guidelines
	ECDC	IUSTI	WHO Europe	WHO/UNAIDS
Explain right to decline tests		Y	Y	Y
Offer time for patient's questions		Y	Y	Y
Issues relating to HIV test result				
Explain window period/repeat test		Y		
Offer testing for other STIs		Y		
Offer post-exposure prophylaxis after sexual exposure if indicated and available		Y		
Services available post test			Y	Y
Explain need for partner notification (HIV+ test)			Y	Y
Discuss risk reduction and need for referral to other services		Y		
Obtain sexual history		Y		
Obtain HIV testing history		Y		
Advise patient to adopt safe sex behaviours and to follow national blood donation policies until testing process is over		Y		
Assess knowledge of condom use to prevent HIV infection		Y		
Explain potential risks of testing (stigma, discrimination)			Y	Y
Explain national laws impacting a person receiving a HIV+ result			Y	Y

Note: Y = yes, recommendation included in guidelines

There was general agreement across guidelines with respect to recommended informational content of pre-test discussion/assessment regarding taking an HIV test takes place, including explaining:

- the voluntary, confidential nature of the test;
- the reason for testing;
- what the test procedure consists of
- how test results will be delivered;
- the patient's right to decline a test;
- the possibility for patients to ask questions.

In addition, the latest WHO guidelines [11] recommend providing information about the potential for incorrect test results if a person is on ART, and including a brief description of prevention options and encouragement of partner testing.

The ECDC guidelines [8] only provide guidance about issues to be discussed in relation to taking an HIV test. In contrast, regional guidelines by IUSTI [9] and WHO Europe [10], and global guidelines by WHO/UNAIDS [12], recommend that pre-test information is provided about issues related to taking an HIV test as well as issues related to the possible test result and its implications. There are no shared recommendations with respect issues that might be discussed to encourage patients to think about the possible the test result and its implications. The IUSTI guidelines [9] recommend that information be provided about the window period and the possible need for a repeat test, and that STI testing and post-exposure prophylaxis (after sexual exposure, if indicated and available) may need discussing. IUSTI guidelines also recommend that a client's sexual history and HIV testing history may need to be obtained, and that risk reduction, condom use, safe sex behaviours, the need for referral to other services, and national blood donation policies may need to be discussed [9]. Guidelines by UNAIDS/WHO [12] and WHO Europe [10] recommend that pre-test discussion specifically includes information about issues that might arise after receiving an HIV positive test result. This includes post-test services available, the need for partner notification, potential risks of testing (stigma, discrimination), and information on relevant national laws. The latest WHO guidelines note that individual risk assessment and individualised counselling during the delivery of pre-test information is no longer recommended [11].

3.2.2 Perceived current practices

Respondents in the online stakeholder survey thought that pre-test information was typically delivered verbally (37.9%), or through a combination of verbal communication and an information sheet (62.1%). Respondents from Eastern Europe and Central Asia thought that the combined practice of using verbal and written communication was more common in their national settings than respondents from Western Europe and from Central Europe. Table 4 describes respondents' perceptions regarding which issues are addressed as part of the provision of pre-test information, including issues relevant before taking an HIV test and those relate to the possible HIV test result and its implications.

Table 4: HIV testing professionals' perceived practices regarding delivery of pre-test information

	Total	Sub-regional comparison			Significance level	Sector comparison		
		Western Europe	Central Europe	Eastern Europe & Central Asia		Health	NGO	Significance level
Issues related to taking an HIV test								
Assurance that the test and result will remain confidential	82.8	71.1	86.5	89.7	**	87.9	80.6	-
Assurance that the HIV test is voluntary	78.5	68.7	82.7	82.8	*	80.2	79.8	-
Discussion of clinical benefits of testing (positive result)	72.6	71.1	73.1	73.6	-	79.1	70.5	-
Opportunity for the person to ask questions	71.9	66.3	78.8	69.0	-	78.0	70.5	-
Discussion of the preventative benefits of testing	70.1	56.6	76.0	75.9	**	72.5	73.6	-
Explanation of the reason for testing if initiated by provider	69.3	54.2	76.0	75.9	**	75.8	64.3	#
Making arrangements for the person to collect the test results	64.6	63.9	70.2	58.6	-	74.7	58.9	*
Information about the person's right to decline a test, and implications	62.8	44.6	66.3	75.9	***	70.3	59.7	-
Issues relating to HIV test result								
Explaining and assessing the window period for HIV testing	79.6	67.5	86.5	82.8	**	81.3	81.4	-
Information of services available after a positive test result	77.4	66.3	76.0	89.7	***	76.9	81.4	-

	Total	Sub-regional comparison			Significance level	Sector comparison		
		Western Europe	Central Europe	Eastern Europe & Central Asia		Health	NGO	Significance level
Assessing the client's knowledge of risk reduction strategies	70.8	55.4	77.9	77.0	***	75.8	70.5	-
Exploration of client's misperceptions about HIV infection and transmission	65.7	48.2	76.0	70.1	***	67.0	65.9	-
Explanation of possible need for partner notification after positive test	62.4	42.2	71.2	71.3	***	63.7	60.5	-
Obtaining a person's sexual history	58.8	54.2	69.2	50.6	*	59.3	60.5	-
Information of services available after a negative test result	53.6	38.6	62.5	57.5	**	57.1	53.5	-
Information about potential risks for client taking a test (e.g. stigma, discrimination)	44.9	22.9	58.7	49.4	***	45.1	47.3	-
Information about laws/regulations impacting the person taking a test and receiving a positive result	40.1	18.1	45.2	55.2	***	48.4	38.0	-

Note: # = $p < 0.10$, * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$

Comparative analysis showed a range of significant sub-regional differences in respondents' perceived practice regarding delivering pre-test information. Highly significant differences include that, in relation to issues related to taking an HIV test, fewer respondents from Western Europe than from other sub-regions thought that information was provided about the person's right to decline a test and the implications of doing so. Highly significant differences were also found in relation to pre-test discussion about a number of issues relating to a possible HIV test result and its implications, including:

- The provision of information about services available in case of a positive test result ;
- The provision of information about the potential risks for a client taking an HIV test (e.g., stigma, discrimination);
- The provision of information about laws/regulations impacting a person taking a test and receiving a positive test result;
- The provision of information about the possible need for partner notification after a positive test result;
- An assessment of a client's knowledge of risk reduction strategies;
- A discussion of a client's misperceptions about HIV infection and transmission.

3.3 Informed consent

3.3.1 Recommendations in current guidelines

There was general consensus across guidance from WHO/UNAIDS [12], WHO Europe [10], ECDC [8] and IUSTI [9] that informed consent must be obtained from all individuals prior to an HIV test and that this consent must be obtained individually, in private and confidentially. There is also consensus that verbal consent is sufficient; written consent is not required. The latest WHO guidelines recommend that, during the consent process, people should be informed of both the testing process and their right to decline testing [11].

3.3.2 Perceived current practices

Respondents generally thought that confidentiality of the test and the result was often or always assured (86.3%), and that informed consent was often or always obtained on an individual basis (83.1%), in private (75.7%), and in the presence of a health care provider (67.8%). Respondents from Central Europe (66.7%) thought that the privacy of informed consent practices was less likely to be guaranteed than respondents from Western Europe (69.6%) and from Eastern Europe and Central Asia (88.3%). One third (34%) of respondents thought that, in their country of employment, written informed consent was required before an HIV test. Respondents from Eastern Europe and Central Asia (59%) were more likely to think that informed consent was obtained in writing than respondents from Central Europe (28%) and from Western Europe (14.1%).

3.4 Delivery of HIV test results

3.4.1 Recommendations in current guidelines

Table 5 illustrates that a shared focus of the reviewed HIV testing guidelines is on the confidential delivery of test results in person or via other secure communication channels, although recommended strategies depend on whether a positive or negative HIV test result is being delivered. There is general agreement that a positive HIV test should be given in person, in private and confidentially [8-10, 12]. Whereas the ECDC guidance states that a positive result should preferably be given to the patient by the health care worker who performed the test [8], the old WHO/UNAIDS guidelines recommended that positive test results should be conveyed by

other health care providers or trained lay personnel [12]. The latest WHO guidelines suggest that a positive test result can be provided by a health worker, trained lay provider or counsellor, whilst keeping in mind the 5 Cs of HIV testing services – consent, confidentiality, counselling, correct results and connection [11].

ECDC and IUSTI guidelines suggest it may be appropriate for a health care professional to inform a patient of a negative test result via telephone, text message or letter [8, 9], if this helps to streamline service delivery and reduce the number of occasions on which patients do not receive test results because they do not return to the health service [8]. IUSTI guidance specifies that face-to-face delivery of HIV test results is generally preferred, but alternative methods may be appropriate in some (unspecified) circumstances [9]. Most guidelines recognise that providing an HIV-negative result in person provides opportunities to engage patients in conversations about sexual health promotion and risk reduction [8, 9, 12]. Some people may however prefer not having to return to healthcare settings to receive a HIV-negative test result [27]. The latest WHO guidelines [11] do not specify which means of communicating test results is considered most appropriate.

Table 5: Recommendations regarding delivery of HIV test results in reviewed HIV testing guidelines

	European regional guidelines			Global guidelines
	WHO Europe	IUSTI	ECDC	WHO/UNAIDS
Any test result				
Always deliver result			Y	Y
Test result given clearly/directly		Y		Y
Confidential delivery in private	Y	Y	Y	Y
HIV-positive test result				
Always provided in person		Y	Y	Y
Provided by health care worker who performed the test, or by other trained health care providers			Y	Y
Positive test result with sufficient time for discussion			Y	Y
HIV-negative test result				
Face to face, with possible delivery by telephone, SMS, post		Y	Y	
Face to face delivery of a negative result enables health promotion		Y	Y	Y

Note: Y = yes, recommendation included in guidelines

3.4.2 Perceived current practices

Compared to HIV negative test results, respondents thought it was more likely that positive test results are delivered in person, in private, confidentially assured and with sufficient time to discuss the results (see Table 6). In terms of delivery mode, 63.9% of respondents thought that positive test results were delivered by the health care worker who performed the test and 60.9% of respondents thought that negative test results were delivered by the health care worker who performed the test; fewer respondents thought that results were delivered by another health care worker (24.1% for positive and 23.2% for negative results).

Respondents thought that communication technology (e.g. telephone, text message, email or website) was used infrequently for test result delivery.

Table 6 shows sub-regional differences in respondents' perceived test result delivery practices. Most significant differences include that:

- Respondents from Western Europe and from Central Europe thought that positive (80.8% and 78.9%, respectively) and negative (79.5% and 84.0%, respectively) HIV test results were more likely to be delivered in a clear, direct manner than respondents from Eastern Europe and Central Asia (44.7% for positive and 50.0% for negative test results).
- Respondents from Western Europe (64.1%) thought that a negative test result was less likely to be delivered in person than respondents from Central Europe (86.2%) and from Eastern Europe and Central Asia (89.2%).

Sector-based comparisons show that respondents working in health services (85.9%) were more likely to think there is sufficient time to discuss a positive test result than respondents working with NGOs (65.8%).

Table 6: HIV testing professionals' perceived practices regarding delivery of positive and negative test results

	Total	Sub-regional comparison			Significance level	Sector comparison		
		Western Europe	Central Europe	Eastern Europe & Central Asia		Health	NGO	Significance level
Positive HIV test results								
A positive test result is delivered in person	91.2	89.7	89.5	94.7	-	92.9	89.5	-
A positive test result is delivered in private	90.4	87.2	87.4	97.4	*	90.6	92.1	-
Confidentiality of the test and the result is assured	87.1	85.9	87.4	88.2	-	90.6	84.2	-
There is sufficient time to discuss a positive test result	73.1	66.7	80.0	71.1	-	85.9	65.8	***
A positive test result is delivered in a clear, direct manner	69.1	80.8	78.9	44.7	***	76.5	64.0	#
A positive test result is delivered by the health care worker who performed the test	63.9	53.8	69.5	67.1	#	64.7	64.9	-
A positive test result is delivered by another health care professional	24.1	21.8	25.3	25.0	-	24.7	23.7	-
Positive test results can be delivered by telephone	3.2	3.8	4.2	1.3	-	2.4	2.6	-
Positive test results can be delivered by text message	0.4	0.0	1.1	0.0	-	1.2	0.0	-
Positive test results can be delivered by letter	2.0	0.0	5.3	0.0	*	2.4	1.8	-
Positive test results can be delivered by email	0.4	0.0	1.1	0.0	-	0.0	0.9	-
Positive test results can be delivered via a secure website	0.4	0.0	1.1	0.0	-	1.2	0.0	-

	Total	Sub-regional comparison			Significance level	Sector comparison		
		Western Europe	Central Europe	Eastern Europe & Central Asia		Health	NGO	Significance level
Negative HIV test results								
Confidentiality of the test and the result is assured	82.5	80.8	86.2	79.7	-	85.9	81.1	-
A negative test result is delivered in private	80.9	78.2	80.9	83.8	-	80.0	83.8	-
A negative test result is delivered in person	80.1	64.1	86.2	89.2	***	78.8	82.9	-
A negative test result is delivered in a clear, direct manner	72.4	79.5	84.0	50.0	***	72.9	71.2	-
A negative test result is delivered by the health care worker who performed the test	60.9	46.2	71.3	63.5	**	58.8	65.8	-
There is sufficient time to discuss a negative test result	54.1	46.2	62.8	51.4	#	58.8	48.6	-
A negative test result is delivered by another health care professional	23.2	19.2	24.5	25.7	-	17.6	27.9	#
Negative test results can be delivered by telephone	8.5	15.4	4.3	6.8	*	9.4	7.2	-
Negative test results can be delivered by text message	4.5	10.3	2.1	1.4	*	5.9	3.6	-
Negative test results can be delivered by letter	4.5	5.1	4.3	4.1	-	7.1	3.6	-
Negative test results can be delivered by email	2.0	1.3	3.2	1.4	-	2.4	2.7	-
Negative test results can be delivered via a secure website	2.0	5.1	1.1	0.0	#	0.0	1.8	-

Note: # = $p < 0.10$, * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$

3.5 Post-test discussion

3.5.1 Recommendations in current guidelines

Guidelines concur that, during post-test discussion after a positive HIV-test result, patients should be provided with information about the follow-up treatment services available in the health facility and at other services in the community, and an appointment should be made for immediate referral to specialist services. The latest WHO guidelines recommend making an 'active referral' for a specific date and time, whereby an appointment is made for the client or the client is accompanied to an appointment, including appointments at co-located services and regarding enrolment into HIV clinical care [11]. Guidelines also recommend that a patient receiving an HIV-positive test result should be assisted with determining which friends or family may be available to offer support, and the health professional should provide information about transmission prevention and discuss possible disclosure of the test result [9-11]. Whereas the latest WHO guidelines [11] advise that post-test discussion after an HIV-positive test result should be provided by a health worker or a trained lay provider/counsellor at the time of test result delivery, ECDC guidelines recommend that this be done by a specialist HIV team after referral [8].

Table 7 shows the various recommendations regarding what should be covered in post-test discussion for positive and negative test results in the guidelines reviewed. The latest WHO [11] guidelines for HIV testing services recommend that individuals who test HIV-negative should receive 'brief health information' about their test results and note the absence of reported research demonstrating the benefits of extensive post-test counselling. These guidelines pragmatically recommend that post-test discussion for those who test HIV-negative should include: an explanation of the test result and HIV status; education on methods to prevent HIV acquisition, and provision of male or female condoms, lubricant and guidance on their use; addressing the importance of knowing the status of sexual partner(s) and providing information about the availability of partner and couples testing; referral and linkage to relevant HIV prevention services; a recommendation of retesting based on the client's level of recent exposure and/or ongoing risk of exposure; and an opportunity for the client to ask questions and request counselling.

Table 7: Recommendations regarding post-test discussion in reviewed HIV testing guidelines

	European regional guidelines			Global guidelines
	WHO Europe	IUSTI	ECDC	WHO/UNAIDS
HIV-positive test result				
Ensure patient understands the result		Y		Y
Arrange second blood sample and repeat test		Y		
Allow patient time to ask questions				Y
Discuss next steps and clarify whether the client wants to talk further at this stage or not		Y		
Help patient cope with emotions arising from the test result		Y		Y
Schedule new consultation in the near future (e.g. next day)		Y		
Assess need for psychological support and contact with other services		Y		Y

	European regional guidelines			Global guidelines
	WHO Europe	IUSTI	ECDC	WHO/UNAIDS
Discuss any immediate concerns				Y
Help patient determine who in social networks may be available and acceptable to offer support		Y	Y	Y
Describe follow up services available in health facility and community (e.g. treatment)	Y	Y	Y	Y
Make appointment for immediate referral to specialist services	Y	Y	Y	Y
Provide information about transmission prevention (e.g. safe sex, use of condoms, not sharing needles)		Y	Y	Y
Discuss possible disclosure of result and contact tracing (including partner notification)		Y	Y	Y
Provide information on other preventative measures (e.g. nutrition, co-trimoxazole)				Y
Encourage/offer referral for testing and counselling of partners/children if needed		Y		Y
HIV-negative test result				
Explanation of window period and retest if recent exposure		Y		Y
Provide basic advice on methods of risk reduction/prevention of HIV transmission		Y		Y
Provide information about prevention services	Y			Y
Encourage safe sex/behaviour change (high risk)		Y		Y
Post-exposure prophylaxis if appropriate				Y
Referral to harm reduction/ prevention services		Y		Y
Jointly assess with patient if needs referral to more extensive post-test counselling or additional prevention support				Y

Note: Y = yes, recommendation included in guidelines

3.5.2 Perceived current practices

Most respondents thought that post-test discussion for positive (78.8%) and negative (83.2%) results was provided by the health care provider who performed the test. Fewer respondents thought that post-test discussion was provided by another HIV health care provider and/or counsellor at the service where the test was done (48.5% for positive results; 49.1% for negative results), or an HIV health care provider and/or counsellor at specialist service the person is referred to (40.7% for positive results; 23.3% for negative results). The majority of respondents thought that post-test discussion was provided to HIV-positive and HIV-negative patients on a face-to-face basis (97.1% and 95.3% respectively).

Most significant sub-regional differences in perceived practices regarding delivery of post-test discussion included:

- More respondents from Central Europe (98.9%) and from Eastern and Central Asia (98.6%) thought that post-test discussion after a negative test result was delivered on a face-to-face basis than respondents from Western Europe (87.5%);
- More respondents from Western Europe (37.5%) thought that post-test information after a negative result was delivered via telephone than respondents from Central Europe (17.8%) and from Eastern and Central Asia (18.6%);
- Relatedly, more respondents from Western Europe (12.5%) thought that post-test information after a negative result was delivered via text message than respondents from Central Europe (1.1%) or from Eastern Europe and Central Asia (0.0%), although the number of responses was much lower; similar differences were found for delivery of post-test information via the internet (Western Europe: 22.2%, Central Europe: 4.4%, Eastern Europe and Central Asia: 2.9%).

Respondents' perceptions regarding the different components of post-test discussion for people receiving positive and negative HIV test results are shown in Table 8. Sub-regional and sector-based differences relating to the components of post-test information and/or counselling are limited.

Table 8: HIV testing professionals' perceived practices regarding components of post-test discussion

	Total	Sub-regional comparison			Significance level	Sector comparison		
		Western Europe	Central Europe	Eastern Europe & Central Asia		Health	NGO	Significance level
HIV positive test result								
Assistance with referral to specialist HIV services	89.2	88.0	89.1	90.5	-	94.0	87.2	-
Assurance that the person understands the test result	88.4	85.3	90.2	89.2	-	92.9	86.2	-
Information about prevention of HIV transmission	88.0	77.3	91.3	94.6	**	91.7	88.1	-
Making arrangements for a second blood sample and a repeat test, as required	86.3	80.0	89.1	89.2	-	88.1	84.4	-
Discussion of any immediate concerns about the test result	85.1	81.3	85.9	87.8	-	88.1	79.8	-
Discussion of possible disclosure of results to sex partners, partner referral and contact tracing	85.1	77.3	85.9	91.9	*	90.5	81.7	#
Opportunity for the person to ask questions	84.6	84.0	84.8	85.1	-	90.5	80.7	#
Offer of testing and counselling of partner(s) and/or children	79.7	66.7	84.8	86.5	**	86.9	75.2	*
Information about services available in the facility where testing was undertaken, and in other health and community settings	78.0	73.3	76.1	85.1	-	84.5	75.2	-
Assessing the need for psychological support	76.8	76.0	73.9	81.1	-	82.1	71.6	#

	Total	Sub-regional comparison			Sector comparison			
		Western Europe	Central Europe	Eastern Europe & Central Asia	Significance level	Health	NGO	Significance level
Assistance with referral to HIV support services	75.9	74.7	75.0	78.4	-	82.1	70.6	#
Assistance in determining availability of social support	66.0	62.7	62.0	74.3	-	73.8	65.1	-
HIV negative test result								
Explanation of the window period for HIV testing and the need for retesting if recently exposed	90.1	84.7	92.2	93.0	-	92.8	89.3	-
Provision of basic advice on prevention of HIV transmission	85.0	75.0	87.8	91.5	*	88.0	86.4	-
Encouragement of safe practices and behaviour change	79.0	76.4	84.4	74.6	-	81.9	80.6	-
Referral to harm reduction and/or other prevention services, if appropriate	64.4	59.7	70.0	62.0	-	62.7	68.9	-
Provision of, or referral for, post-exposure prophylaxis, if appropriate	57.9	54.2	53.3	67.6	-	71.1	52.4	**
Provision of, or referral for, comprehensive STI screening	56.2	59.7	57.8	50.7	-	63.9	53.4	-
Assessment of client's needs for referral to more extensive post-test counselling or prevention services	45.9	48.6	42.2	47.9	-	55.4	43.7	-

Note: # = $p < 0.10$, * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$

3.6 Referral to specialist HIV services

3.6.1 Recommendations in current guidelines

A referral pathway has been defined as “a series of steps designed to ensure referral of patients to appropriate services [...] developed by establishing relationships between sexual health services and relevant healthcare agencies and involves a shared understanding and agreed ways of working together to better address the sexual health needs of a defined population” (p. v) [8]. The reviewed guidelines agree that referral pathways should be in place prior to undertaking an HIV test and delivering the test result [15]. Recommendations regarding which referral services should be made available for someone receiving a positive HIV test result across guidance documents are summarized in Table 9.

Table 9: Recommendations regarding referral to specialist services for patients receiving a positive test result in reviewed HIV testing guidelines

	European regional guidelines			Global guidelines
	WHO Europe	IUSTI	ECDC	WHO/UNAIDS
Treatment services				
Antiretroviral therapy	Y	Y	Y	Y
Periodic clinical assessment/staging		Y		Y
Management and treatment of opportunistic infections				Y
Co-trimoxazole prophylaxis				Y
TB screening and treatment				Y
STI case management/treatment		Y		Y
Psychosocial support services	Y	Y	Y	Y
Prevention services				
Risk reduction counselling	Y	Y	Y	Y
Voluntary disclosure, partner notification, partner referral and contact tracing	Y	Y	Y	Y
Sexual/reproductive health services	Y		Y	Y
Conception counselling for serodiscordant couples				Y
ART for prevention in serodiscordant couples				Y
Drug treatment access sterile needles, opioid substitution therapy		Y	Y	Y

Note: Y = yes, recommendation included in guidelines

Recommendations for referral services for someone receiving a negative HIV test result in HIV testing were generally lacking from HIV testing guidelines. This gap has been addressed in the latest WHO [11] guidelines that champion ‘connection’, encompassing linkage to prevention, treatment and care services after an HIV test, as one of five principles underlying the recommendations. These latest WHO guidelines provide clear recommendations regarding services that should be included as part of the referral process after both a positive and negative HIV test result, as shown in Table 10.

Table 10: WHO recommended HIV care and prevention services by HIV test result

	HIV-positive	HIV-negative
Treatment	Antiretroviral therapy	
Prevention	Male and female condoms and condom-compatible lubricant	
		PrEP for people at substantial ongoing risk of HIV-infection
		PEP following suspected exposure
		VMMC (in 14 priority countries)
		Harm reduction for people who use drugs (needle and syringe programmes, OST, other drug dependence treatment and opioid overdose prevention and management)
		Behavioural interventions to support risk reduction, particularly for people with HIV and key populations
Sexual and reproductive health		Contraception
		Brief sexuality counselling
		PMTCT
		Cervical cancer screening
		Anal cancer screening (for men who have sex with men)
		STI screening
HIV testing for partners and family members	For all partners and family members (includes partner notification and index case testing)	For partners of people from key populations, where appropriate
Retesting and confirmatory testing	Retest before ART initiation and when linked to care from community-based testing	Retest at least every 12 months if at high ongoing risk, particularly key populations
Other clinical services	Assessment and provision of vaccinations, such as HBV for key populations, pregnant women and infants, tetanus vaccination for adolescent boys and men receiving VMMC where appropriate	
	HBV and HCV testing and treatment	HBV and HCV testing particularly for key populations, according to epidemiology, and treatment
	Co-trimoxazole prophylaxis	
	Intensified TB case finding and linkage to TB treatment	

	HIV-positive	HIV-negative
Other clinical services (cont.)	Provision of isoniazid preventive therapy if person does not have TB	
	Malaria prevention (such as bed nets and prophylaxis), depending on epidemiology	
Other support services		Mental health services
	Psychosocial counselling, support and treatment adherence counselling	
	Support for disclosure and partner notification	
	Legal services	

Note: adapted from [11]

3.6.2 Perceived current practices

More respondents thought there was a procedure for assistance with referral to specialist treatment, care and support services for people receiving an HIV-positive test result (86.2%) than for people receiving an HIV-negative test result (34.9%). These procedures mostly were thought to consist of the provision of contact information of specialist services (86.8% for positive and 63.8% for negative test results), as well as assistance in making an appointment at another service (72.7% for positive and 28.9% for negative test results).

Most significant sub-regional differences in perceived practices regarding referral included:

- More respondents from Eastern Europe and Central Asia (98.5%) and from Central Europe (86.7%) thought that contact information was provided for specialist services after a positive test result than respondents from Western Europe (75.0%);
- More respondents from Western Europe (81.3%) and from Central Europe (77.3%) thought that assistance was provided with making an appointment at a specialist service after a positive test result than respondents from Eastern Europe and Central Asia (59.1%);
- For patients receiving a negative test result, more respondents from Central Europe (37.8%) thought that assistance was provided with making an appointment at a specialist service than respondents from Western Europe (21.1%) or from Eastern Europe and Central Asia (25.4%).

Respondents' perceptions regarding the different specialist referral services that are provided to people receiving positive and negative HIV test results are shown in Table 11. Some sub-regional differences were found. Most significant differences include that more respondents from Eastern Europe and Central Asia and Central Europe thought that referral to TB screening, needle and syringe programmes and opioid substitution services was provided after an HIV-positive test result than respondents from Western Europe. Similar differences were seen for referral to needle and syringe programmes and opioid substitution services after a negative HIV test result.

Table II: HIV professionals' perceptions of practices regarding referral services offered after receiving an HIV test result

	Total	Sub-regional comparison			Significance level	Sector comparison		
		Western Europe	Central Europe	Eastern Europe & Central Asia		Health	NGO	Significance level
Referral services for an HIV positive test result								
Antiretroviral therapy	93.1	92.1	92.0	95.5	-	94.5	90.2	-
Periodic clinical assessment	88.2	81.0	89.3	93.9	#	90.4	83.7	-
Management of opportunistic infections	81.9	79.4	77.3	89.4	-	87.7	81.5	-
Psychosocial support services	77.9	77.8	69.3	87.9	*	79.5	73.9	-
Prevention counselling	74.0	74.6	66.7	81.8	-	86.3	68.5	**
Sexually Transmitted Infections screening	73.0	74.6	69.3	75.8	-	82.2	66.3	*
Tuberculosis screening	64.7	47.6	57.3	89.4	***	69.9	63.0	-
Needle and syringe programmes	62.7	44.4	62.7	80.3	***	54.8	68.5	#
Opioid substitution services	61.3	41.3	68.0	72.7	***	57.5	63.0	-
Conception counselling for serodiscordant couples	55.4	58.7	44.0	65.2	*	68.5	50.0	*
Sexual and reproductive health services	53.9	41.3	52.0	68.2	**	60.3	56.5	*
Partner notification and contact tracing services	52.5	47.6	54.7	54.5	-	65.8	44.6	**
ART for prevention in serodiscordant couples	46.6	47.6	38.7	54.5	-	56.2	44.6	-
Co-trimoxazole prophylaxis	38.2	36.5	30.7	48.5	#	61.6	22.8	***

	Total	Sub-regional comparison			Significance level	Sector comparison		
		Western Europe	Central Europe	Eastern Europe & Central Asia		Health	NGO	Significance level
Referral services for an HIV negative test result								
Retesting in case of recent exposure	71.7	69.0	65.2	82.9	*	78.3	64.4	*
Prevention counselling	60.9	59.2	64.0	58.6	-	57.8	65.3	-
Sexually Transmitted Infections screening	58.3	60.6	60.7	52.9	-	63.9	49.5	#
Needle and syringe programmes	53.0	28.2	57.3	72.9	***	44.6	59.4	*
Post-exposure prophylaxis	47.0	45.1	38.2	60.0	*	60.2	39.6	**
Opioid substitution services	46.1	29.6	44.9	64.3	***	42.2	51.5	-
Sexual and reproductive health services	38.3	28.2	42.7	42.9	-	43.4	36.6	-
Psychosocial support services	36.1	29.6	33.7	45.7	-	45.8	35.6	-
Drug treatment	27.8	12.7	36.0	32.9	**	31.3	27.7	-
Pre-exposure prophylaxis	13.9	9.9	14.6	17.1	-	18.1	13.9	-

Statistical significance was set at $p < 0.1$ (#), $p < 0.05$ (*), $p < 0.01$ (**) and $p < 0.001$ (***).

4 Conclusions

To map current HIV testing policy and practice in Europe, a targeted internet-based search was undertaken that identified four international HIV-testing guidelines developed for or relevant to countries in the WHO European Region that were available in English and did not exclusively focus on particular population groups or settings. These guidance documents were published by WHO Europe [10], ECDC [8], IUSTI [9], and WHO/UNAIDS [12]. A comparative content analysis was undertaken to identify similarities and differences in these guidance documents regarding best practice recommendations and supporting evidence pertaining to the HIV pre-test [14] and post-test [15] process. Further, an online survey was conducted among health professionals, including national policy-makers, health service providers and NGO representatives, involved in HIV testing policy and practice across the WHO European Region to assess their perceptions regarding the HIV testing process in their country of employment. Detailed results from the survey are published in papers with a focus on perceived HIV pre-test [16] and post-test [17] practices.

There was consensus across guidance documents that informed consent must be gained prior to testing, that this must be done individually, in private, confidentially, and in the presence of a health care provider. There was also consensus across guidelines that informed consent can be obtained verbally and that writing informed consent is not required [14]. All reviewed guidelines recommend providing pre-test information/discussion which can be delivered verbally, in person as well as through other methods (e.g., information sheet), including combinations of methods. There is also apparent agreement across guidelines that sufficient information should be provided to enable a client can to provide informed consent [14]. Guidelines however differ with respect to recommendations regarding more detailed discussion, including of issues that encourage patients to consider potential implications of the test result, in particular when found HIV-positive.

A comparative analysis of recommendations regarding delivery of HIV-test results, post-test discussion and referral pathways in health care settings found broad consensus across guidance documents that test results should be confidential and delivered privately to a patient [15]. There was also consensus that positive test results should be delivered in person by a health care professional; negative test results could also be delivered in other ways, including by telephone, text message or post. Most guidelines nevertheless recognize that providing a HIV-negative result in person provides an opportunity for sexual health promotion and risk reduction. Two different approaches to post-test discussion are noted in guidelines [15]: a recommendation for post-test discussion to be delivered by a health professional when the test result is provided to a patient [10, 12], or a recommendation for detailed post-test discussion to be delivered by a specialist HIV team at the referral service [8]. Some guidelines include recommendations encompassing both options [9]. Guidelines also differed in recommendations regarding specific components of HIV-post-test discussions and in recommended referral pathways to specialist treatment. Across guidelines, recommendations are more comprehensive regarding post-test discussion and referral pathways for HIV-positive than HIV-negative test results.

Analysis of the evidence on which recommendations regarding the pre-test and post-test aspects of the HIV testing process are based found that this is generally low grade [14, 15]. There is limited reference to published evidence in support of recommendations which instead strongly rely on expert consultation and opinion, as well as other guidelines. Research evidence, when referenced, was often more than ten years old, and was predominantly derived from studies conducted in the US and UK. The apparent lack of availability or access to recent and broadly applicable evidence is concerning and may, at least in part, explain the notable

differences in recommendations between guidelines. It also raises questions about how decisions are made regarding the scope and nature of recommendations included in guidance documents and underscores the critical importance of strengthening contemporary research regarding the HIV testing process in a range of European settings to enhance expert consultation in guideline development.

Of the nearly 1000 health professionals identified through the National Focal Points, the European Commission HIV/AIDS Civil Society Forum, the HIV in Europe Initiative, nam aidsmap, the Global Fund Grants Portfolio and the UNAIDS 'know your response' website, 338 eligible responses were received [16, 17]. Participants represented all but two (San Marino and Iceland) countries of the WHO European Region. Responses indicated that for 35 countries national HIV testing guidelines were thought to be available and that for a further 5 countries national strategies were available, albeit that these did not provide detailed procedural guidance. In 6 countries national guidelines were not thought to be available and international guidelines were used. Participants from 6 countries thought that no national guidelines were available and referenced no other guidelines or strategies. Participants' responses suggested a lack of guidance regarding HIV testing in various settings, in particular community settings, closed settings and regarding self-testing, and for specific population groups, notably migrants from high prevalence countries and children and adolescents under the age of 18.

While 8 in 10 (83%) respondents thought that HIV testing guidelines used in their country of work included recommendations about obtaining informed consent, only 6 in 10 respondents (61.5%) thought they included recommendations regarding pre-test information. Importantly, while there is general agreement across guidelines that informed consent can be obtained verbally, one third (34%) of respondents thought that written informed consent was required in their country of employment. Respondents from Eastern Europe and Central Asia were more likely than those from other sub-regions to think that written informed consent was required. Fewer respondents from Western Europe than other regions thought pre-test information addressed the following aspects: the right to decline a test; services available after a positive test; laws/regulations impacting someone being tested and receiving a positive test result; potential risks for a client taking an HIV test; and the possible need for partner notification after a positive test result. These findings underscore that it is uncommon for pre-test information to address legal and social risks and harms that people testing HIV-positive may incur, which differs from the most recent global WHO guidelines emphasizing the importance of such information [11]. It also raises important questions regarding the implications and appropriateness of the currently dominant focus of recommendations on streamlining the HIV testing process [16].

Experts' perceptions of practices regarding the delivery of HIV-positive test results and related post-test discussion in their country employment suggest that these are generally aligned with recommendations of HIV testing guidelines [17]. Experts' reports however highlight a substantial disjunction between recommendations of guidelines and the perceived practice of delivering HIV-negative test results [17]. In particular, fewer respondents thought that appropriate time is taken to deliver a negative HIV-test result (54.1%) than a positive result (73.1%). Also, substantially fewer respondents thought there was a procedure for referral to specialist treatment, care and support services for people receiving a HIV-negative test result (34.9%) than for people receiving an HIV-positive result (86.2%). Experts also reported low perceived use of communication technologies (i.e. telephone, email, text messaging, a secure website) for delivering HIV test results [17]. These findings suggest the possibility that a dominant focus on the efficiency and expedience of the HIV-post test process of people receiving an HIV-negative test, in particular in Western Europe, result may come at the risk of missed opportunities regarding the provision of or linkage to appropriate additional care and support services.

In combination, findings from the review of recommendations contained in international HIV testing guidelines developed for or relevant to the WHO European Region and the survey of HIV testing practices in almost all countries in the WHO European region highlight several key issues for consideration in the future revision or development of such guidelines. Firstly, as the large majority of countries were noted to have national HIV-testing guidelines, there may be a need to articulate the purpose and role of international guidelines, such as ensuring guidance in settings where there are no national guidelines, filling voids in guidance for

specific population groups or settings, promoting international best practice, or contributing to an overarching international framework. Secondly, in view of the substantial political, legal, health systems, fiscal, and socio-cultural differences between European sub-regions and countries, in addition to differences in epidemics, it would be important for international guidelines to advance recommendations that allow for critical differences as well as advance shared standards. Relatedly, it is important to consider to what extent international HIV-testing guidelines should provide detailed procedural guidance or should outline general principles. Thirdly, in view of the multidisciplinary expertise and evidence that informs HIV-testing policy and practice, it is critical to ensure the appropriate representation and involvement of experts from various disciplines and sectors, as well as from different sub-regions and countries, in the process of developing guidelines and recommendations for HIV testing in an expanding range of settings. Fourthly, the lack of reference to recent research evidence from European countries to support recommendations in HIV-testing guidelines relevant to the WHO European region points to the importance of strengthening multidisciplinary research regarding the various aspects of the HIV-testing process and ensuring that guideline committees have access to research evidence from a variety of disciplines and country settings, including in languages other than English.

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