SPECIAL REPORT

Continuum of HIV care

Monitoring implementation of the Dublin Declaration on Partnership to Fight HIV/AIDS in Europe and Central Asia: 2017 progress report

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ECDC SPECIAL REPORT

Thematic report: Continuum of HIV care

Monitoring implementation of the Dublin Declaration on partnership to fight HIV/AIDS in Europe and Central Asia: 2017 progress report

This report of the European Centre for Disease Prevention and Control (ECDC) was coordinated by Teymur Noori. Report review was provided by Andrew J. Amato-Gauci, Anastasia Pharris, Annabelle Gourlay, Amanda Mocroft, Jan C. Semenza, Denis Coulombier and Piotr Kramarz.

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[1] This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence.

Introduction

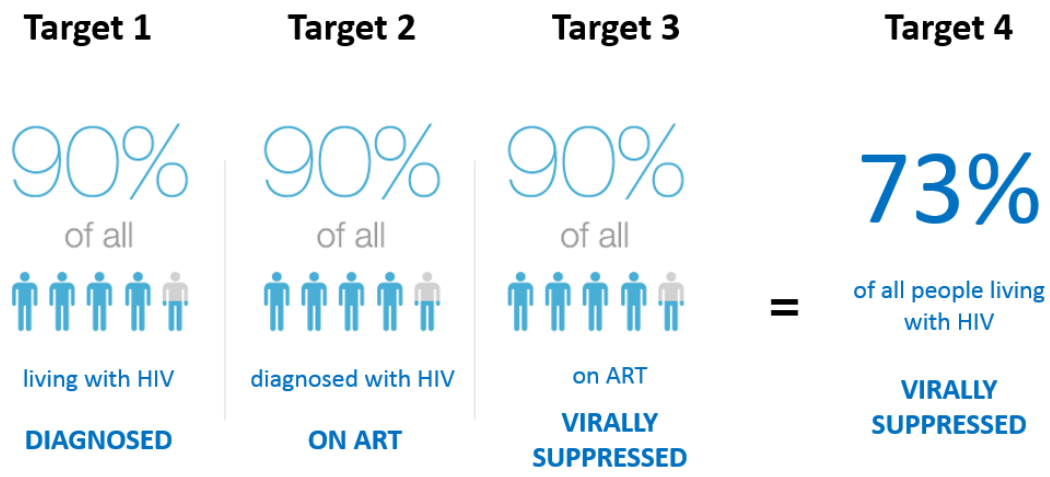
This report summarises data on the continuum of HIV care submitted by countries in Europe and Central Asia for the 2014 and 2016 rounds of reporting on implementation of the Dublin Declaration. The report is structured around a four-stage continuum of care, to provide an understanding of the effectiveness of national responses to HIV and to identify areas for improvement.

Why is the continuum of HIV care important?

The continuum of HIV care is a conceptual framework that enables countries to monitor the effectiveness of key areas of HIV response. The sequential nature of the stages in the continuum can clearly indicate where countries need to focus their efforts and which programmes and activities require improvement. More specifically, the continuum provides a snapshot of critical stages in achieving viral suppression among people living with HIV (PLHIV). Achieving a high rate of viral suppression among all PLHIV plays a key role in reducing the impact of HIV, by contributing to a better quality of life for PLHIV and reducing new HIV infections.

The continuum of HIV care is also a useful framework for assessing progress against the UNAIDS 90-90-90 targets[2] for 2020: 90% of all PLHIV know their status; 90% of those diagnosed are receiving ART; and 90% of those on ART are virally suppressed (Figure 1). When these three targets have been achieved, at least 73% of all PLHIV in a given population will be virally suppressed. UNAIDS' modelling suggests that achieving these targets by 2020 will enable the world to eliminate the AIDS epidemic by 2030[2]. However, there is evidence suggesting that viral suppression of all PLHIV needs to reach 90% in order to reduce HIV incidence significantly[3].

Figure 1. UNAIDS 90-90-90 targets



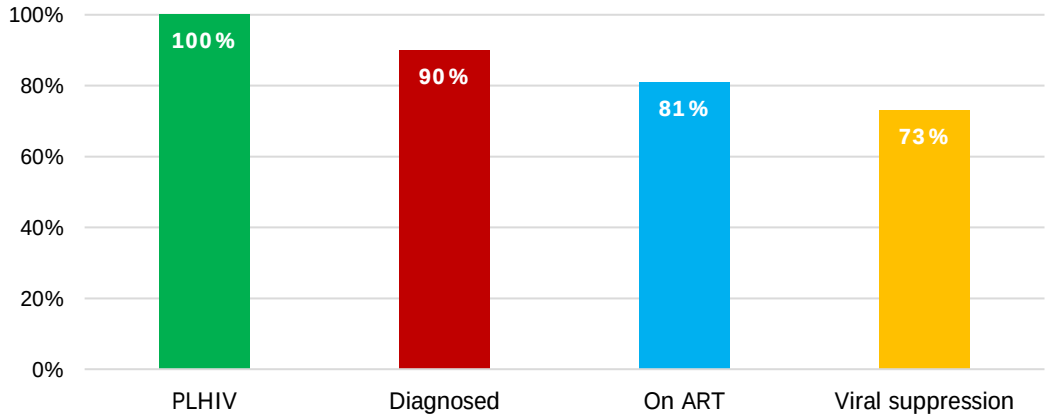
How are we monitoring the continuum of HIV care in Europe and Central Asia?

In September 2015, ECDC convened an expert meeting to discuss the role of the continuum of HIV care in the European region[4]. This coincided with the publication of an ECDC report on the continuum using country data reported in 2014 as part of the biennial monitoring of the Dublin Declaration on Partnership to Fight HIV/AIDS[5].

[2] UNAIDS. 90-90-90 An ambitious target to help end the AIDS epidemic. Geneva: UNAIDS; 2014.
[3] Phillips AN, Cambiano V, Miners A, Lampe FC, Rodger A, Nakagawa F, et al. Potential impact on HIV incidence of higher HIV testing rates and earlier antiretroviral therapy initiation in MSM. AIDS. 2015;29(14):1855-62. DOI: 10.1097/QAD.0000000000000767 PMID: 26372391.
[4] ECDC. Meeting Report: Optimising analysis of the HIV continuum of care in Europe. Stockholm: September 2015. https://www.researchgate.net/publication/284437767_Optimising_analysis_of_the_HIV_Continuum_of_care_in_Europe_-_Report_from_ECDC_meeting_8–9_September_2015
[5] European Centre for Disease Prevention and Control. Thematic report: HIV continuum of care. Monitoring implementation of the Dublin Declaration on Partnership to Fight HIV/AIDS in Europe and Central Asia: 2014 progress report. Stockholm: ECDC; 2015.

Based on the findings of the ECDC Dublin Declaration report on the continuum in 2015, the ECDC expert meeting recommended monitoring a four-stage continuum that is directly relevant in the European region: Stage 1 – the estimated number of all PLHIV; Stage 2 – the number of all PLHIV who have been diagnosed; Stage 3 – the number on PLHIV who have been diagnosed and who are on ART; and Stage 4 – the number of PLHIV on ART who are virally suppressed (Figure 2).

Figure 2. A four-stage continuum of HIV care monitoring framework with targets for Europe and Central Asia



The definitions for each of the four stages are provided in Table 1[6]. These definitions, which were agreed by an advisory group supporting ECDC in the monitoring of the Dublin Declaration, are aligned with the definitions used by an ECDC-EuroCoord project to monitor the continuum of HIV care using national surveillance and cohort data in 11 EU countries[7].

Table 1. Consensus definitions to monitor the continuum of HIV care in Dublin Declaration monitoring 2016

Stage 1: Total estimated number of people living with HIV in the country The total estimated number should be based on an empirical modelling approach, using the ECDC HIV Modelling Tool[8], Spectrum or any other empirical estimate. The estimate should include diagnosed and undiagnosed people.
Stage 2: Number/percentage of above (estimated number of people living with HIV in the country) ever having been diagnosed The number should include all new HIV or AIDS diagnoses. It should also include those people who are in care and those who have not been linked to care.
Stage 3: Number/percentage of above (estimated number of people living with HIV in the country, ever having been diagnosed) who are currently on antiretroviral treatment The number should include all people currently on ART, regardless of treatment regimen or treatment interruptions/discontinuation.
Stage 4: Number/percentage of above (estimated number of people living with HIV in the country, ever having been diagnosed or having initiated antiretroviral treatment) who had VL ≤200 copies/ml at last visit (virally suppressed)[9] The number should include all those who have ever initiated ART, regardless of regimen or treatment interruptions/discontinuation.

[6] Countries were asked to report data using these definitions; however, in practice some countries may use slightly different definitions, so caution is required when drawing comparisons between countries. There are also variations in data sources, timeframes, analysis and quality, as discussed on page 4, which limit the scope for directly comparing data between countries.
[7] Gourlay A, Noori T, Pharris A. et al. The HIV continuum of care in European Union countries in 2013: data and challenges. Clin Infect Dis 2017 cix212. doi: 10.1093/cid/cix212
[8] ECDC Modelling Tool. http://ecdc.europa.eu/en/healthtopics/aids/Pages/hiv-modelling-tool.aspx
[9] A viral load threshold for viral suppression of <200 copies/mL was used to allow for changes over time in the lower detection limits of viral load assays. A threshold of 200 copies/mL for population-level monitoring is consistent with recommendations in a recent systematic review of guidelines produced by IAPAC - www.iapac.org/uploads/JIAPAC-IAPAC-Guidelines-for-Optimizing-the-HIV-Care-Continuum-Supplement-Nov-Dec-2015.pdf and the US Centers for Disease Control and Prevention - www.cdc.gov/hiv/pdf/library/factsheets/cdc-hiv-care-continuum.pdf

Data availability and data sources

Data availability

In 2016, 44 countries reported data for at least one of the four stages of the continuum; in 2014, 40 countries reported data. The number of countries reporting no continuum data fell from 11 in 2014 to four in 2016 (Table 2).

Table 2. Number of countries reporting no data for the continuum of HIV care[10]

11 2014	**3** EU/EEA: Iceland, Malta, Norway **8** Non-EU/EEA: Andorra, Belarus, Macedonia, Israel, Kazakhstan, Montenegro, Tajikistan, Turkmenistan
4 2016	**2** EU/EEA: Finland, Iceland **2** Non-EU/EEA: Bosnia and Herzegovina, Turkey

Between 2014 and 2016, there was a substantial increase in the proportion of countries able to report on all four stages of the continuum, from 40% of all reporting countries to 66% (Figure 3 and Table 3). There was also an increase in the proportion of countries able to report data for each individual stage, particularly for Stage 1 (Figure 3). Thirty-seven countries were able to provide data on Stage 1 in 2016 and continuum of HIV care data for each of these 37 countries are provided in Annex 1.

Figure 3. Data availability for the continuum of HIV care by stage and year in reporting countries of Europe and Central Asia, 2014 (n= 40) and 2016 (n=44)

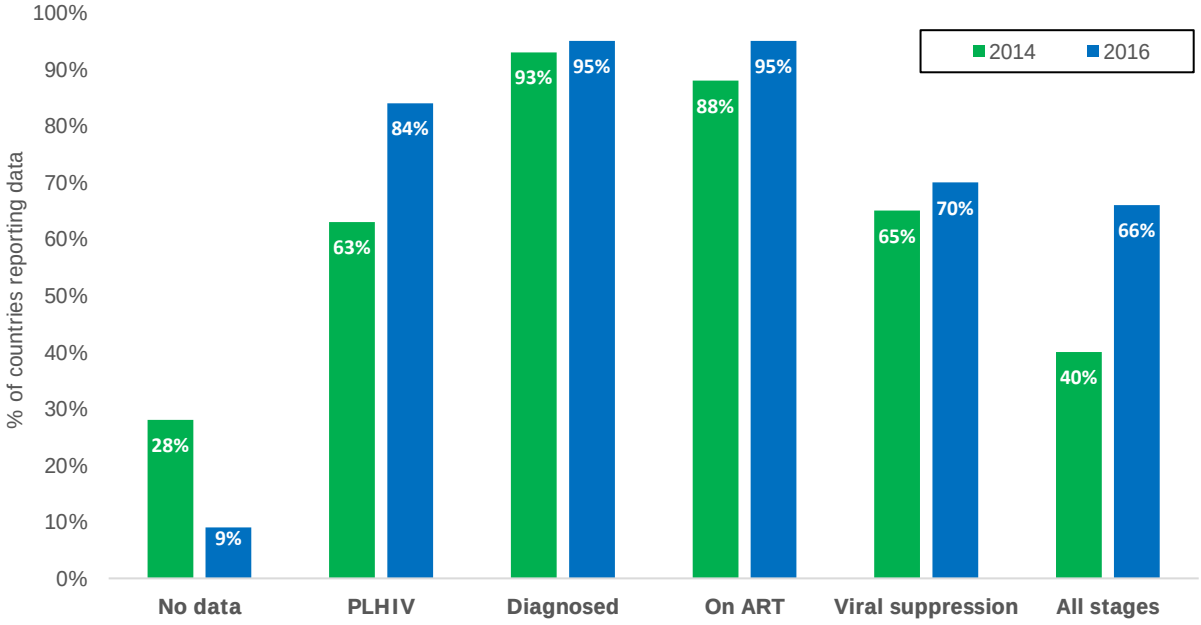


Table 3. Number of countries reporting data on all four stages of the continuum of care

16 2014	**11** EU/EEA: Austria, Bulgaria, Denmark, France, Germany, Luxembourg, Netherlands, Romania, Spain, Sweden, United Kingdom **5** Non-EU/EEA: Armenia, Azerbaijan, Georgia, Serbia, Switzerland
29 2016	**18** EU/EEA: Austria, Belgium, Bulgaria, Croatia, Denmark, France, Germany, Greece, Hungary, Italy, Luxembourg, Malta, Netherlands, Portugal, Romania, Spain, Sweden, United Kingdom **11** Non-EU/EEA: Albania, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Montenegro, Serbia, Switzerland, Tajikistan

[10] Seven countries (Belarus, the Former Yugoslav Republic of Macedonia, Liechtenstein, Monaco, Russia, San Marino and Turkmenistan) did not report for Dublin Declaration monitoring.

Despite this improvement, Stage 1 and Stage 4 remain the two stages where countries in Europe and Central Asia are least likely to have data available. To help address this issue, ECDC is supporting countries in the use of the ECDC HIV modelling tool to generate robust estimates of the number of PLHIV and facilitating collaboration between public health and clinical experts to improve estimates of viral suppression[11].

Data sources

Data on the continuum of HIV care reported by countries are diverse, in terms of source, timeframe and quality. Annex 2 provides an overview of the different data sources used for each stage of the continuum.[12] Although the diversity of data limits the ability to directly compare country estimates, there are elements of consistency across the data reported for each stage of the continuum. For example, among countries identifying the data source and year for different stages:

- 44% used Spectrum and 28% used the ECDC modelling tool for Stage 1
- 60% used surveillance data for Stage 2
- 30% used cohort data and 30% used surveillance data for Stage 3
- 44% used cohort data for Stage 4.

Overall, the data submitted by countries demonstrate that it is possible to use existing data sources to construct continuum of HIV care models at national level. Efforts are underway to develop standards for continuum data[13] but, given the diversity of national systems, there will continue to be differences in data collection, calculation and analysis in the short-to-medium term.

Results

This section discusses each stage of the continuum of HIV care in more detail, including data availability, data sources, what the data tells us about the current situation in Europe and Central Asia and how this compares with the UNAIDS' targets.

Stage 1. Estimated number of people living with HIV

Data availability

An accurate estimate of the number of people living with HIV is essential for planning, budgeting, implementing and monitoring a national response to HIV. In Europe and Central Asia, 37 countries reported data in 2016 on the estimated number of PLHIV, compared with 25 countries in 2014 (Table 4). Within the region, 23 of 30 (76%) EU/EEA countries and 14 of 18 (77%) non-EU/EEA countries were able to estimate the number of PLHIV in 2016.

Table 4. Number of countries reporting data on the estimated number of PLHIV

25 2014	**16** EU/EEA: Austria, Bulgaria, Croatia, Denmark, Estonia, France, Germany, Lithuania, Luxembourg, Netherlands, Poland, Romania, Slovakia, Spain, Sweden, United Kingdom **9** Non-EU/EEA: Armenia, Azerbaijan, Georgia, Kyrgyzstan, Moldova, Serbia, Switzerland, Ukraine, Uzbekistan
37 2016	**23** EU/EEA: Austria, Belgium, Bulgaria, Croatia, Denmark, Estonia, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Spain, Sweden, United Kingdom **14** Non-EU/EEA: Albania, Armenia, Azerbaijan, Georgia, Israel, Kazakhstan, Kyrgyzstan, Moldova, Montenegro, Serbia, Switzerland, Tajikistan, Ukraine, Uzbekistan

Data sources

The Dublin Declaration questionnaire used in the 2016 round of reporting gave multiple options for the source of data in Stage 1 of the continuum, including the ECDC HIV modelling tool, the Spectrum modelling tool, other modelling tools and other methods.

The Spectrum and ECDC HIV modelling tools were the most frequently reported methods, used by 46% and 22% of countries respectively (Table 5). The ECDC HIV modelling tool was only used in EU/EEA countries and the Spectrum modelling tool was more widely used in non-EU/EEA countries. The year of reported data for all data sources varied from 2012 to 2016.

[11] Gourlay A, Noori T, Pharris A, Axelsson M, Costagliola D, Cowan S, et al. The HIV continuum of care in European Union countries in 2013: data and challenges. Clin Infect Dis 2017 cix212. doi: 10.1093/cid/cix212
[12] It is important to note that not all countries reporting data identified the source of the data or the year that it represents.
[13] Gourlay A, Pharris A, Noori T, Supervie V, Rosinska M, Van Sighem A. Touloumi G, Porter K. Towards standardised definitions for monitoring the continuum of HIV care in Europe. [Submitted for publication April 2017.]

Table 5. Data sources for the estimated number of PLHIV in Europe and Central Asia, 2016

Data source	Number of countries (n=37)	Countries (EU/EEA & non-EU/EEA)	Year of reported data (Number of countries)
ECDC HIV modelling tool	8 (22%)	**8** EU/EEA: Austria, Belgium, Croatia, Greece, Luxembourg, Malta, Netherlands, Slovakia	2013 (2); 2014 (1); 2015 (4); 2016 (1)
Spectrum modelling tool	17 (46%)	**6** EU/EEA: Estonia, Lithuania, Poland, Portugal, Romania, Spain **11** Non-EU/EEA: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Serbia, Tajikistan, Albania, Ukraine, Uzbekistan	2013 (2); 2014 (3); 2015 (10); 2016 (2)
Other modelling tool	3 (8%)	**3** EU/EEA: Bulgaria, Germany, United Kingdom	2014 (1); 2015 (2)
Other estimate method	9 (24%)	**6** EU/EEA: Denmark, France, Hungary, Ireland, Italy, Sweden **3** Non-EU/EEA: Israel, Montenegro, Switzerland	2012 (1); 2013 (1); 2014 (1); 2015 (6)

The Dublin questionnaire also included a question about challenges in collecting data for the continuum and almost one-third of countries responding to this question cited challenges in generating accurate estimates of the number of people living with HIV.[14]

Estimated number of people living with HIV in Europe and Central Asia

Based on reported data from 37 countries, it is estimated that a total of 1 199 107 people are living with HIV in these countries (821 157 in 23 EU/EEA countries and 377 950 in 14 non-EU/EEA countries) (Table 6). It is important to note that 11 countries[15] were unable to provide data and seven countries[16] did not participate in 2016 Dublin Declaration reporting, meaning the estimated number of PLHIV in these countries are not included in the calculation.

Table 6. Estimated number of PLHIV: EU/EEA and non EU/EEA countries, reported in 2016[17]

EU/EEA countries	PLHIV		Non-EU/EEA countries	PLHIV
Austria	6 527		Albania	1 400
Belgium	17 744		Armenia	3 600
Bulgaria	3 543		Azerbaijan	8 798
Croatia	1 680		Georgia	9 600
Denmark	5 500		Israel	9 720
Estonia	11 000		Kazakhstan	23 000
France	153 100		Kyrgyzstan	8 500
Germany	84 700		Moldova	17 985
Greece	14 200		Montenegro	194
Hungary	3 067		Serbia	3 100
Ireland	6 180		Switzerland	16 500
Italy	127 324		Tajikistan	16 000
Lithuania	3 100		Ukraine	223 000
Luxembourg	1 065		Uzbekistan	36 553
Malta	394			
Netherlands	22 900			
Poland	35 000			
Portugal	59 365			
Romania	14 000			
Slovakia	850			
Spain	141 000			
Sweden	7 718			
United Kingdom	101 200			
TOTAL	**821 157**		**TOTAL**	**377 950**

No data from:
EU/EEA: Cyprus, Czech Republic, Finland, Iceland, Latvia, Norway, Slovenia.
Non-EU/EEA: Andorra, Bosnia and Herzegovina, Kosovo (UNSC 1244), Turkey, Belarus, Liechtenstein, the Former Yugoslav Republic of Macedonia, Monaco, Russia, San Marino, Turkmenistan.

[14] Eight of the 26 countries that responded cited challenges with estimates: Albania, Andorra, Croatia, Georgia, Portugal, Serbia, Spain and the United Kingdom.
[15] Andorra, Bosnia and Herzegovina, Cyprus, Czech Republic, Finland, Iceland, Kosovo (UNSC 1244), Latvia, Norway, Slovenia, Turkey.
[16] Belarus, Liechtenstein, the Former Yugoslav Republic of Macedonia, Monaco, Russia, San Marino, Turkmenistan.
[17] Latest data available reported by countries in March 2016. See Annex 3 showing which year reported data relates to.

Stage 2. Number of PLHIV who have been diagnosed

Data availability

In both 2014 and 2016, more countries were able to report data on the number of people diagnosed than for any other stage in the continuum. In 2016, 42 countries (27 EU/EEA and 15 non-EU/EEA countries) reported on the number of PLHIV diagnosed, compared with 37 countries (25 EU/EEA and 12 non-EU/EEA countries) in 2014. There was also a significant increase in the number of countries able to report data for both Stages 1 and 2 of the continuum between 2014 (23) and 2016 (37) (Table 7).

Table 7. Number of countries reporting data for both Stage 1 (estimated number of PLHIV) and Stage 2 (number diagnosed)

23 2014	**15** EU/EEA: Austria, Bulgaria, Denmark, Estonia, France, Germany, Lithuania, Luxembourg, Netherlands, Poland, Romania, Slovakia, Spain, Sweden, United Kingdom **8** Non-EU/EEA: Armenia, Azerbaijan, Georgia, Moldova, Serbia, Switzerland, Ukraine, Uzbekistan
37 2016	**23** EU/EEA: Austria, Belgium, Bulgaria, Croatia, Denmark, Estonia, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Spain, Sweden, United Kingdom **14** Non-EU/EEA: Albania, Armenia, Azerbaijan, Georgia, Israel, Kazakhstan, Kyrgyzstan, Moldova, Montenegro, Serbia, Switzerland, Tajikistan, Ukraine, Uzbekistan

Data sources

Surveillance data are the most frequently reported source of data for Stage 2 of the continuum, used by 59% of countries (Table 8). Among the remaining countries that provided information about the source of data, cohort data and other data sources were used by 22% and 19%, respectively. Only EU countries reported using cohort data as the source of data for Stage 2[18].

Table 8. Data sources for the number of PLHIV diagnosed in Europe and Central Asia, 2016

Data source	Number of countries (n=37)	Countries (EU/EEA & Non-EU/EEA)	Year of reported data (Number of countries)
Cohort data	8 (22%)	**8** EU/EEA: Austria, Belgium, Bulgaria, Denmark, Ireland, Luxembourg, Netherlands, Sweden	2013 (2); 2014 (1); 2015 (4); 2016 (1)
Surveillance data	22 (59%)	**12** EU/EEA: Croatia, Cyprus, Czech Republic, Estonia, Germany, Greece, Malta, Portugal, Slovakia, Slovenia, Spain, United Kingdom **10** Non-EU/EEA: Albania, Armenia, Georgia, Kosovo (UNSC 1244), Kyrgyzstan, Montenegro, Serbia, Tajikistan, Ukraine, Uzbekistan	2011 (1); 2013 (1); 2014 (4); 2015 (16)
Other data source	7 (19%)	**3** EU/EEA: France, Italy, Romania **4** Non-EU/EEA: Azerbaijan, Kazakhstan, Moldova, Switzerland	2010 (1); 2012 (2); 2014 (1); 2015 (2); No year (1)

Number of PLHIV who have been diagnosed, and number who have an undiagnosed HIV infection, in Europe and Central Asia

In the 37 countries reporting data within Europe and Central Asia for both Stage 1 and Stage 2, an estimated 1 199 000 people are living with HIV, 898 000 of whom (75%; range 147–128 300) have been diagnosed (Table 9 and Annex 3). In these countries, one in four (25%; range 2–62%) people living with HIV in Europe and Central Asia are therefore unaware of their HIV status.

Available data show that overall, the proportion of undiagnosed PLHIV is higher in non-EU/EEA countries than in EU/EEA countries. In the 23 EU/EEA countries with data for both stages, an estimated 821 000 people are living with HIV, 680 000 of whom have been diagnosed (83%; range 57–98%). This means that one in six PLHIV (17%; range 2–43%) in these countries have an undiagnosed HIV infection. This is consistent with the ECDC modelled estimate of the undiagnosed proportion of people living with HIV in the 31 countries of the EU/EEA which concluded that 15% of PLHIV, or 122 000 people, are undiagnosed[19].

[18] It is important to note that in some countries surveillance is based on cohorts and in some countries these are national cohorts, so there is no distinction between cohort and surveillance data.

[19] Pharris A, Quinten C, Noori T, Amato-Gauci AJ, van Sighem A, The ECDC HIV/AIDS Surveillance and Dublin Declaration Monitoring Networks. Estimating HIV incidence and number of undiagnosed individuals living with HIV in the European Union/European Economic Area, 2015. Euro Surveill. 2016;21(48):pii=30417. DOI: http://dx.doi.org/10.2807/1560-7917.ES.2016.21.48.30417

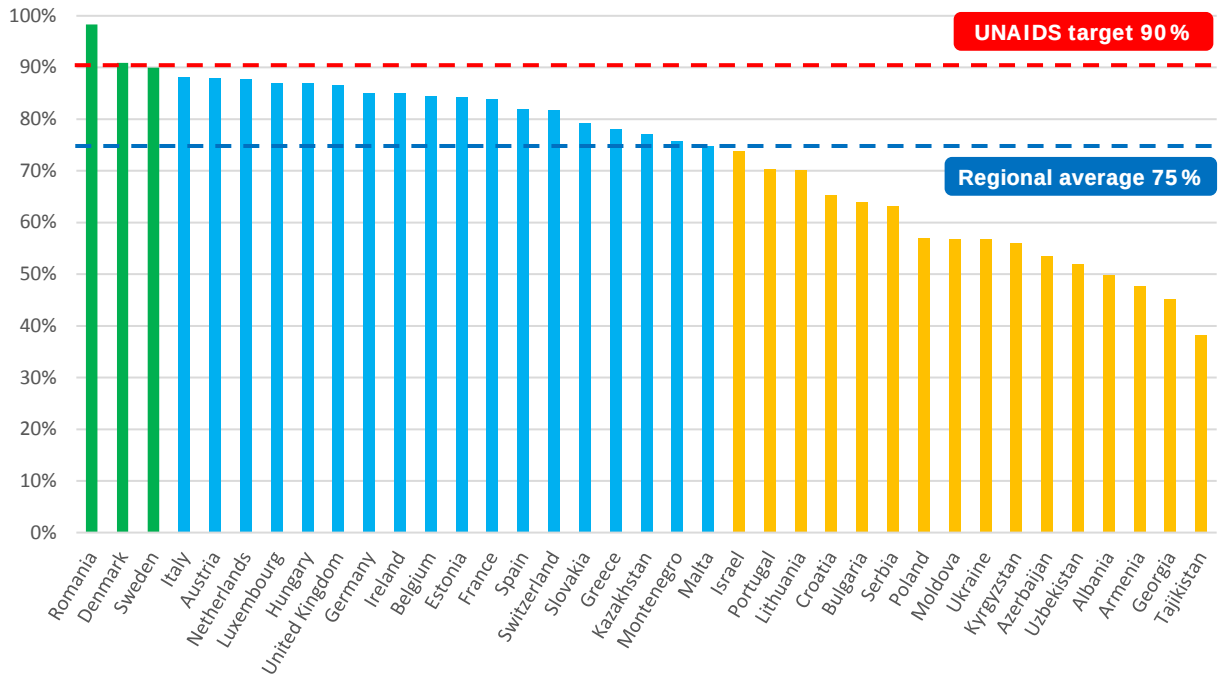
In the 14 non-EU/EEA countries with data for both stages, an estimated 378 000 people are living with HIV, of whom 218 000 have been diagnosed (58%; range 38–82%). This means that more than two in five PLHIV (42%; range 18–62%) in these countries have undiagnosed HIV infection.

Table 9. Number and percentage of PLHIV with diagnosed and undiagnosed HIV infection in 37 countries in Europe and Central Asia, 2016 (Annex 3)

Countries	Estimated number of PLHIV (range)	Number of PLHIV diagnosed (range)	% of PLHIV diagnosed (range)	% of PLHIV undiagnosed (range)
EU/EEA	821 000 (394–153 100)	680 000 (295–128 300)	83% (57–98%)	17% (2–43%)
Non-EU/EEA	378 000 (194–223 000)	218 000 (147–126 604)	58% (38–82%)	42% (18–62%)
All countries	1 199 000 (194–223 000)	898 000 (147–128 300)	75% (38–98%)	25% (2–62%)

Three of the 37 countries (Romania, Denmark, and Sweden) have achieved the first of the UNAIDS targets with 90% of all PLHIV knowing their status (Figure 4). Of the other 34 countries, 18 report that over 75% (range 75 – 88%) of PLHIV know their status (15 EU/EEA and three non-EU/EEA countries), and 16 countries report that fewer than 75% (range 38–74%) of PLHIV know their status (five EU/EEA and 11 non-EU/EEA countries).

Figure 4. Percentage of all PLHIV who know their status in 37 countries of Europe and Central Asia, 2016[20]



Stage 3. Number of people diagnosed who are on treatment

Data availability

In 2016, 42 countries (26 EU/EEA and 16 non-EU/EEA countries) reported on the number of PLHIV diagnosed who are currently on treatment[21], compared with 35 countries (23 EU/EEA and 12 non-EU/EEA countries) in 2014. There was also a significant increase in the number of countries able to report data for both Stages 2 and 3 of the continuum between 2014 (33) and 2016 (40) (Table 10).

[20] Latest data available reported by countries in March 2016. See Annex 3 showing which year reported data relates to.
[21] It is unclear which ART regimen is used in different countries.

Table 10. Number of countries reporting data for both Stage 2 (number diagnosed) and Stage 3 (number on treatment)

33 2014	**22** EU/EEA: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Lithuania, Luxembourg, Netherlands, Portugal, Romania, Slovakia, Spain, Sweden, United Kingdom **11** Non-EU/EEA: Albania, Armenia, Azerbaijan, Bosnia, Georgia, Kosovo (UNSC 1244), Moldova, Serbia, Switzerland, Ukraine, Uzbekistan
40 2016	**25** EU/EEA: Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovenia, Spain, Sweden, United Kingdom **15** Non-EU/EEA: Albania, Armenia, Azerbaijan, Georgia, Israel, Kazakhstan, Kosovo (UNSC 1244), Kyrgyzstan, Moldova, Montenegro, Serbia, Switzerland, Tajikistan, Ukraine, Uzbekistan

Data sources

Of the 42 countries with data on the number of PLHIV on treatment, 31 provided information about the data source (Table 11). Surveillance data and cohort data were the two most frequently reported sources of data for Stage 3 of the continuum, used by 29% and 26% of countries respectively. Among the remaining countries, a range of other data sources were reported including prescription histories, health insurance systems and clinical records. Sixty-one percent (n=19) of the data reported from all data sources was from 2015 or 2016.

Table 11. Data sources for the number of PLHIV on treatment in Europe and Central Asia, 2016

Data source	Number of countries (n=31)	Countries (EU/EEA & Non-EU/EEA)	Year of reported data (Number of countries)
Cohort data	8 (26%)	**8** EU/EEA: Austria, Belgium, Bulgaria, Croatia, Denmark, Luxembourg, Netherlands, Sweden	2013 (2); 2014 (2); 2015 (3); 2016 (1)
Surveillance data	9 (29%)	**3** EU/EEA: Czech Republic, Greece, United Kingdom **6** Non-EU/EEA: Georgia, Kyrgyzstan, Montenegro, Tajikistan, Ukraine, Uzbekistan	2013 (1); 2015 (8)
Other data source	14 (45%)	**9** EU/EEA: France, Germany, Ireland, Italy, Malta, Norway, Portugal, Romania, Spain **5** Non-EU/EEA: Azerbaijan, Kazakhstan, Moldova, Serbia, Switzerland	2010 (1); 2012 (2); 2014 (4); 2015 (7)

Number of PLHIV diagnosed who are on treatment

In the 40 countries that reported data for both Stage 2 and Stage 3 within Europe and Central Asia, an estimated 906 000 PLHIV have been diagnosed, 701 000 of whom (77%; range 27–96%) are reported to be on treatment (Table 12 and Annex 4). Almost one in four people (23%; range 4–73%) with diagnosed HIV infection in Europe and Central Asia are therefore not currently receiving ART.

In the 25 EU/EEA countries with data for both these stages, an estimated 687 000 PLHIV have been diagnosed, 586 000 of whom are on treatment (85%; range 27–96%). This means that one in seven PLHIV (15%; range 4–73%) who have been diagnosed in these EU/EEA countries are not benefitting from HIV treatment.

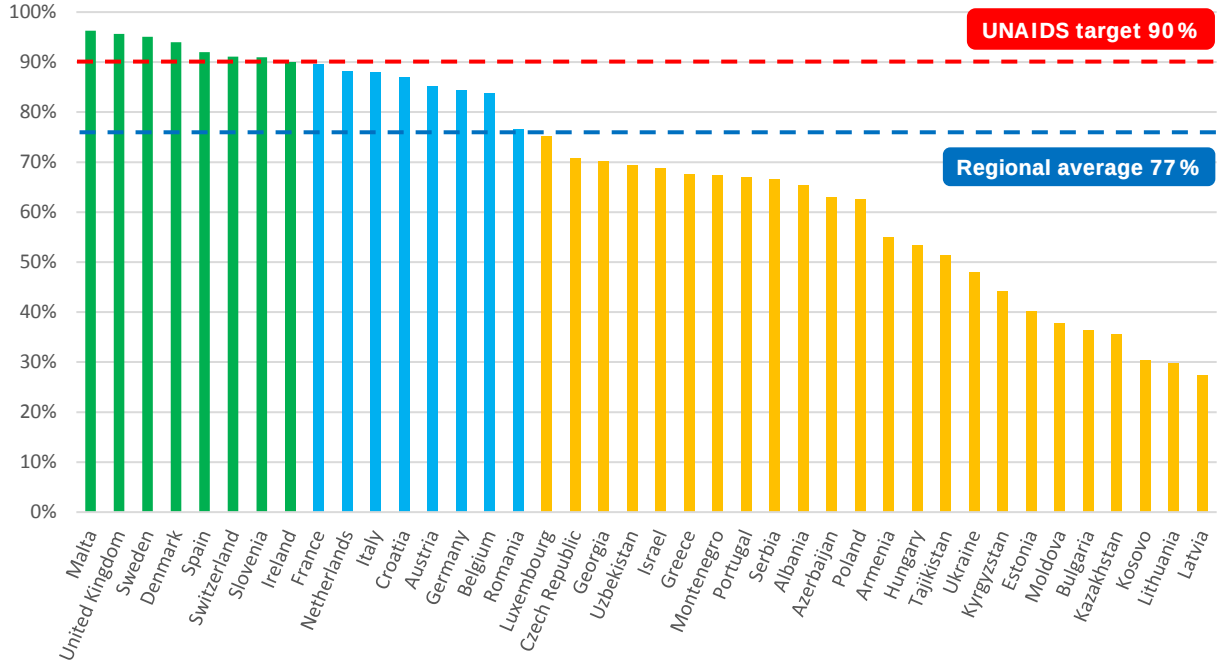
In the 15 non-EU/EEA countries with data for both stages, an estimated 219 000 PLHIV have been diagnosed, 115 000 of whom are reported to be on treatment (53%; range 30–91%). This means that just under half the PLHIV (47%; range 8–70%) who have been diagnosed in these non-EU/EEA countries are not benefitting from HIV treatment.

Table 12. Number and percentage of PLHIV diagnosed who are on treatment in 40 countries in Europe and Central Asia, 2016 (Annex 4)

Countries	Number of PLHIV diagnosed (range)	Number of PLHIV diagnosed on treatment (range)	% of PLHIV diagnosed on treatment (range)	% of PLHIV diagnosed currently not on treatment (range)
EU/EEA	687 000 (295–128 300)	586 000 (284–114 825)	85% (27–96%)	15% (4–73%)
Non-EU/EEA	219 000 (46–126 604)	115 000 (14–60 753)	53% (30–91%)	47% (8–70%)
All countries	906 000 (46–128 300)	701 000 (14–114 825)	77% (27–96%)	23% (4–73%)

Eight of the 40 countries (Denmark, Ireland, Malta, Slovenia, Spain, Sweden, Switzerland and the United Kingdom) have achieved the second of the UNAIDS targets: 90% of PLHIV know their status and are on treatment (Figure 5). Of the other 32 countries, eight report that more than 77% (range 77–88%) of PLHIV who know their status are on treatment (eight EU/EEA countries), and 24 report that fewer than 77% (range 27–75%) of PLHIV who know their status are on treatment (10 EU/EEA and 14 non-EU/EEA countries). In nine of these countries, fewer than 50% of PLHIV who know their status are on treatment.

Figure 5. Proportion of people diagnosed with HIV receiving ART in Europe and Central Asia, 2016[22]



Stage 4. Viral suppression in PLHIV on treatment

Data availability

In 2016, 31 countries (20 EU/EEA and 11 non-EU/EEA countries) reported on the number of PLHIV who are virally suppressed, compared with 26 countries in 2014 (Figure 3). There was also a significant increase between 2014 and 2016 in the number of countries able to report data for both Stages 3 and 4 of the continuum (Table 13).

Table 13. Number of countries reporting data for both Stage 3 (number on treatment) and Stage 4 (number virally suppressed)

24 2014	**18** EU/EEA: Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Luxembourg, Netherlands, Portugal, Romania, Spain, Sweden, United Kingdom **6** Non-EU/EEA: Armenia, Azerbaijan, Georgia, Kyrgyzstan, Serbia, Switzerland
31 2016	**20** EU/EEA: Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Luxembourg, Netherlands, Portugal, Romania, Slovenia, Spain, Sweden, United Kingdom **11** Non-EU/EEA: Albania[23], Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Montenegro, Serbia, Switzerland, Tajikistan

Data sources

Of the 31 countries with data on the number of PLHIV who are virally suppressed, 27 provided information concerning the data source (Table 14). Cohort data was the most frequently reported source of data for Stage 4, used by 44% of countries. Among the remaining countries, 26% identified surveillance data as the data source and 30% other data sources, including clinical records, health insurance systems and special surveys. For all data sources more than 50% of the data reported is from 2015 or 2016.

[22] Latest data available reported by countries in March 2016. See Annex 4 showing which year reported data relates to.
[23] In Albania, viral load has only been measured for approximately 50% of those on ART.

Table 14. Data sources for the number of PLHIV who are virally suppressed in Europe and Central Asia, 2016

Data source	Number of countries (n=27)	Countries (EU/EEA & Non-EU/EEA)	Year of reported data (Number of countries)
Cohort data	12 (44%)	**11** EU/EEA: Austria, Belgium, Bulgaria, Croatia, Denmark, Germany, Greece, Italy, Luxembourg, Netherlands, Sweden **1** Non-EU/EEA: Serbia	2012 (1); 2013 (4); 2014 (3); 2015 (3); 2016 (1)
Surveillance data	7 (26%)	**2** EU/EEA: Czech Republic, United Kingdom **5** Non-EU/EEA: Armenia, Georgia, Kyrgyzstan, Montenegro, Tajikistan	2014 (1); 2015 (6)
Other data source	8 (30%)	**6** EU/EEA: France, Hungary, Malta, Portugal, Romania, Spain **2** Non-EU/EEA: Azerbaijan, Kazakhstan,	2010 (1); 2014 (3); 2015 (4)

Number of PLHIV who are on treatment and are virally suppressed

In the 31 countries in Europe and Central Asia that reported data for both Stage 3 and Stage 4, an estimated 599 500 PLHIV are on treatment, 526 000 of whom (88%) are virally suppressed (Table 15 and Annex 5). One in eight people (12%; range 3–68%) currently on ART in Europe and Central Asia have therefore not achieved viral suppression.

In the 20 EU/EEA countries with data for both stages, an estimated 563 000 PLHIV are on treatment, 500 000 of whom are virally suppressed (89%; range 51–95%). This means that one in nine PLHIV who are on treatment (11%; range 5–49%) in these EU/EEA countries are not virally suppressed.

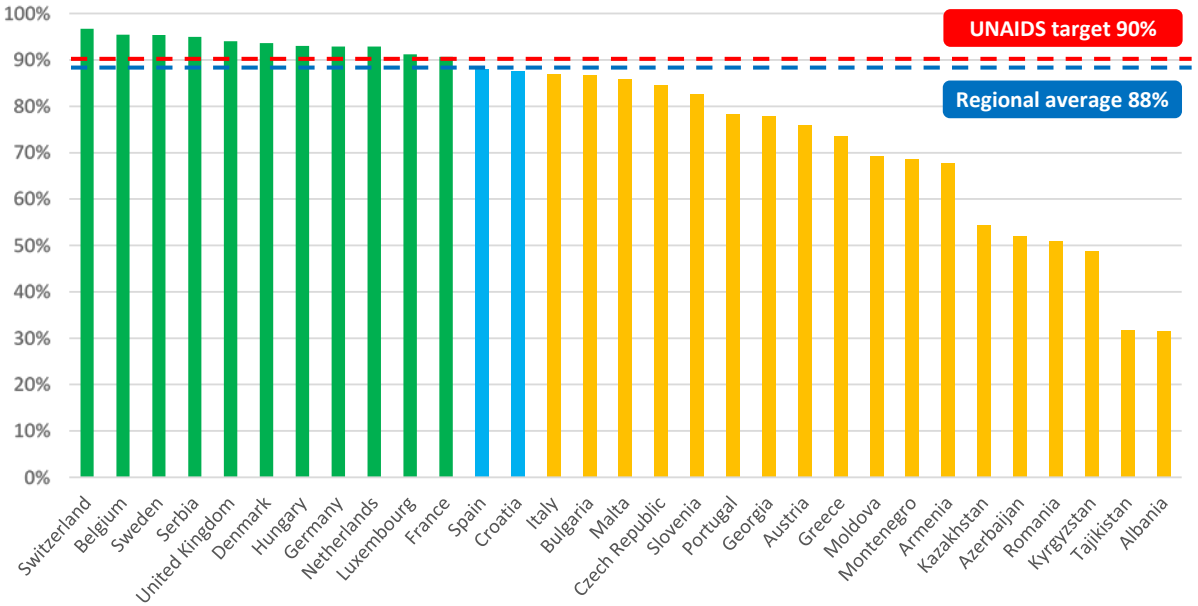
In the 11 non-EU/EEA countries with data for both stages, an estimated 36 500 PLHIV are on treatment, 26 000 of whom are virally suppressed (71%; range 32–97%). This means that almost one in three PLHIV who are on treatment (29%; range 3–68%) in these non-EU/EEA countries are not virally suppressed.

Table 15. Number and percentage of people on treatment who are virally suppressed in 31 countries across Europe and Central Asia, 2016 (Annex 5)

Countries	Estimated number of people on treatment (range)	Estimated number of people virally suppressed (range)	% of all PLHIV on treatment who are virally suppressed (range)	% of all PLHIV on treatment who are <u>not</u> virally suppressed (range)
EU/EEA	563 000 (284–114 825)	500,000 (244–104 108)	89% (51–95%)	11% (5–49%)
Non-EU/EEA	36 500 (99–12 300)	26,000 (68–11 900)	71% (32–97%)	29% (3–68%)
All countries	599,500 (99–114 825)	526 000 (68–104 108)	88% (32–97%)	12% (3–68%)

Eleven of the 31 countries (Belgium, Denmark, France, Germany, Hungary, Luxembourg, Netherlands, Serbia, Sweden, Switzerland and the United Kingdom) have achieved the third of the UNAIDS targets: 90% of PLHIV who are on treatment are virally suppressed (Figure 6). The other 20 countries (11 EU/EEA and nine non-EU/EEA countries) report that between 32% and 88% of PLHIV on treatment are virally suppressed. In nine of these countries, fewer than 70% of PLHIV who are on treatment are virally suppressed.

Figure 6. Percentage of people on treatment reaching viral suppression in 31 countries of Europe and Central Asia, 2016[24]



Viral suppression among all people living with HIV

As noted above, in 2016, 29 countries (18 EU/EEA and 11 non-EU/EEA countries) reported data on all four stages of the continuum of HIV care, compared with 16 countries in 2014 (Table 3 and Figure 3). Based on data reported by these 29 countries for Stage 1 and Stage 4, an estimated 874 000 people are living with HIV, 524 000 of whom (60%; range 6–82%) are virally suppressed (Table 16, Annex 6). Two in five PLHIV (40%; range 18–94%) in Europe and Central Asia have therefore still not achieved viral suppression.

In the 18 EU/EEA countries with data for both stages, an estimated 765 000 people are living with HIV, 498 000 of whom (65%; range 20–82%) are virally suppressed. This means that more than one in three (35%; range 18–80%) people living with HIV in these EU/EEA countries are not virally suppressed.

In the 11 non-EU/EEA countries with data for both stages, an estimated 109 000 people are living with HIV, 26 000 of whom (24%; range 6–72%) are virally suppressed. This means that three in four people living with HIV (76%; range 28–94%) in these non-EU/EEA countries are not virally suppressed.

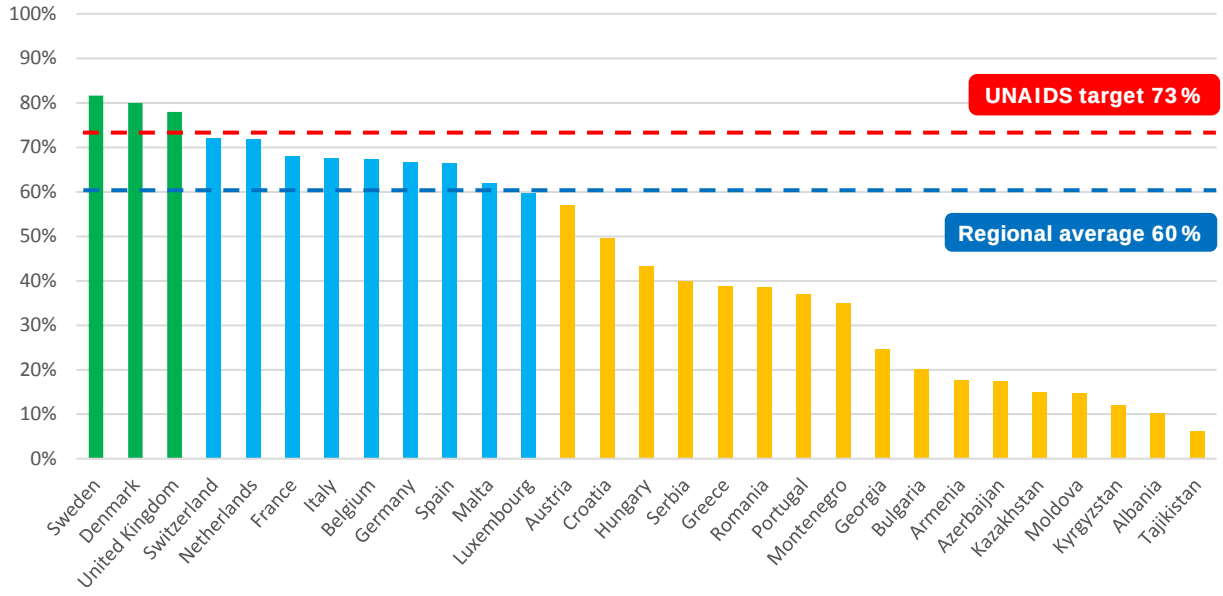
Table 16. Number and percentage of PLHIV who are virally suppressed in 29 countries of Europe and Central Asia, 2016 (Annex 6)

Countries	Estimated number of PLHIV (range)	Estimated number of people virally suppressed (range)	% of all PLHIV who are virally suppressed (range)	% of all PLHIV who are not virally suppressed (range)
EU/EEA	765 000 (394–153 100)	498 000 (144–104 108)	65% (20–82%)	35% (18–80%)
Non-EU/EEA	109 000 (194–23 000)	26 000 (68–11 900)	24% (6–72%)	76% (28–94%)
All countries	874 000 (194–153 100)	524 000 (68–104 108)	60% (6–82%)	40% (18–94%)

Three of these 29 countries (Denmark, Sweden and the United Kingdom) have achieved the UNAIDS' target of 73% viral suppression among all people estimated to be living with HIV (Figure 7). Among the remaining 26 countries, nine report that over 60% (Figure 7) of all estimated PLHIV are virally suppressed and 17 that fewer than 60% (range 6–57%) of all estimated PLHIV are virally suppressed. In 14 of these countries, viral suppression rates among all PLHIV are 40% or below.

[24] Latest data available reported by countries in March 2016. See Annex 5 showing which year reported data relates to.

Figure 7. Percentage of all PLHIV who know their status, are on treatment and are virally suppressed in 29 countries across Europe and Central Asia 2016[25]



Discussion

Increased availability of data

Of the 48 countries reporting on the Dublin Declaration implementation in 2016, 44 were able to report data on at least one stage of the continuum. The number of countries with data on each of the individual stages of the continuum (Table 17) increased between 2014 and 2016. The number of countries with data on all four stages of the continuum also increased, from 16 in 2014 to 29 in 2016. The increasing availability of continuum data is important, as it means that more countries can assess the effectiveness of their HIV response, monitor progress towards achieving viral suppression and identify areas that require greater attention.

Table 17. Number of countries in Europe and Central Asia reporting data for each of the four stages of the continuum of HIV care, 2014 (n=40) and 2016 (n=44)

Stage	Number of countries reporting data 2014 (n=40)	Number of countries reporting data 2016 (n=44)
No stages	11	4
PLHIV	25	37
Diagnosed	37	42
On ART	35	42
Virally suppressed	26	31
All stages	16	29

Data gaps and data collection challenges

Despite progress, challenges remain, in particular gaps in continuum data and challenges with data collection, which compromise countries' ability to assess the effectiveness of their HIV responses and identify areas for improvement.

As the previous section of this report shows, a significant proportion of countries were unable to provide data on each of the individual stages of the continuum; and two in five countries did not have complete continuum data.

Lack of continuum data is most pronounced for Stage 1 (PLHIV) and Stage 4 (viral suppression). Given the importance of accurate estimates of the size of the PLHIV population, both to provide the baseline for the continuum and to inform planning and budgeting for national HIV programmes, there is an urgent need to ensure that all countries in the region can generate these estimates. Moreover, given the importance of monitoring viral suppression to assess the effectiveness of HIV testing, treatment and care, there is also an urgent need to ensure that all countries can collect data on viral suppression. In addition, data for both Stage 1 and Stage 4 are essential if countries are to be able to monitor viral suppression among all those estimated to be living with HIV, not just among those who have been diagnosed and are on treatment.

[25] Latest data available reported by countries in March 2016. See Annex 6 showing which year reported data relates to.

The Dublin Declaration questionnaire used to collect data for the 2016 round of reporting also asked countries about the main challenges they face in collecting and reporting on data for the continuum of HIV care. Although responses were diverse (Box 1), common challenges reported included: generating accurate estimates of the number of PLHIV and the number who are undiagnosed; lack of national data; lack of a nationally representative cohort; linking cohort and surveillance data and limited resources[26].

Box 1. Challenges in collecting data for the continuum of HIV care, 2016

- Albania: inadequate monitoring of ART and especially viral load.
- Austria: HIV notification is not mandatory, so HIV surveillance data is collected from different sources.
- Czech Republic: collecting data on patients who are lost to follow-up (between diagnosis and treatment).
- Croatia: different definitions are used for stages by different agencies - e.g. the number of patients on treatment at the end of a calendar year versus the number of patients seen in a calendar year who have ever received ART.
- Estonia: no representative cohort of PLHIV for collecting data on ART coverage and treatment outcomes.
- Finland: no national treatment registry.
- Georgia: estimating the number of people living with undiagnosed HIV.
- Germany: decentralised healthcare system with free choice of care provider makes systematic and comprehensive data collection on continuity of care challenging.
- Ireland: financial and human resources to collect, manage and analyse the relevant data.
- Italy: organisation of a national survey to collect data from all 170 infectious disease clinics providing care to PLHIV.
- Norway: data not available at national level to describe the continuum of care.
- Serbia: no e-link between surveillance and clinic data to make it easier to monitor the ART status of all diagnosed PLHIV and the viral load status of all PLHIV on ART.
- Slovenia: limited resources.
- Spain: improving estimates of the number of people living with HIV and the number diagnosed with HIV, and improving data disaggregation.
- Sweden: linking cohort data with surveillance data.
- Ukraine: data for each stage can be from different databases, and individual data may not be linked, or linked between stages, or linked across all stages.
- United Kingdom: accurate estimates of the number of people living with HIV by risk group.

Need to accelerate the process towards targets

Continuum of HIV care data reported in 2016 highlights the need for greater efforts if all countries in the region are to achieve the 90-90-90 targets and viral suppression rates above 73%. To assess progress toward achieving these targets, Stage 1 and Stage 2 data are required for the first target, Stage 2 and Stage 3 data for the second target, and Stage 3 and Stage 4 data for the third target. To assess viral suppression among all PLHIV, Stage 1 and Stage 4 data are required.

With respect to the first target: 90% of PLHIV know their status, only three of the 37 countries that have data for both Stage 1 and Stage 2 have achieved this (Figure 4). In 18 of the other 34 countries, more than 75% of PLHIV know their status and achieving the target by 2020 should be feasible. However, the other 16 countries, where fewer than 75% of PLHIV know their status, are likely to face considerable challenges in reaching the first 90% target by 2020, and significant improvements in HIV testing programmes will be required to accelerate progress.

With respect to the second target: 90% of PLHIV who know their status are on treatment, only eight of the 40 countries that have data for both Stage 2 and Stage 3 have achieved this (Figure 5). In 24 of the other 32 countries, fewer than 75% of PLHIV who know their status are on treatment; in nine of these countries, the percentage is below 50%. These countries will also face considerable challenges in meeting the second 90% target by 2020 without significant efforts to increase access to and uptake of treatment.

With respect to the third target: 90% of PLHIV on treatment are virally suppressed, 11 of the 31 countries that have data for both Stage 3 and Stage 4 have achieved this (Figure 6). In the other 20 countries, fewer than 90% of PLHIV on treatment are virally suppressed; in nine of these countries, fewer than 70% of PLHIV who are on treatment are virally suppressed. Again, these countries will face considerable challenges in meeting the third 90% target by 2020.

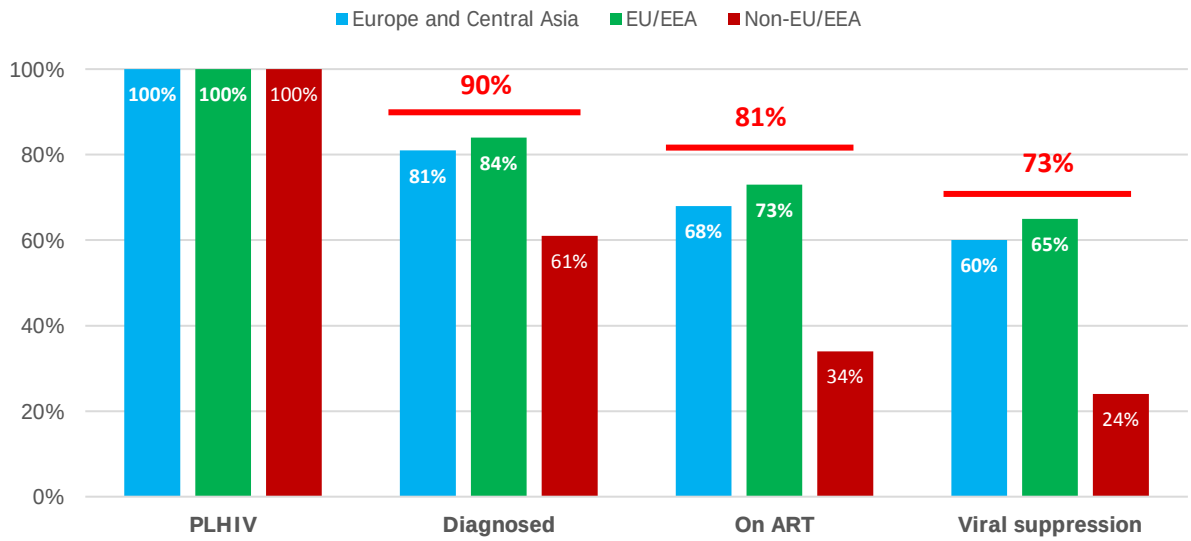
As noted in the introduction, the ultimate goal of the UNAIDS 90-90-90 targets is to reach 73% viral suppression among all PLHIV, since UNAIDS modelling suggests that achieving this by 2020 will enable the world to end the AIDS epidemic by 2030[27]. However, among the 29 countries with complete continuum data in 2016, only three have achieved viral suppression rates among all PLHIV that surpass the 73% target (Figure 7). Among the remaining 26 countries, nine report that more than 60% of all estimated PLHIV are virally suppressed and 17 that fewer than 60% of all estimated PLHIV are virally suppressed. In 14 of these countries, viral suppression rates

[26] 26 countries submitted responses to the question; Box 1 includes summarised examples of a sample of responses.
[27] UNAIDS. 90-90-90 An ambitious target to help end the AIDS epidemic. Geneva: UNAIDS; 2014.

among all PLHIV are 40% or below. Significant improvement is required at each stage of the continuum of HIV to accelerate progress in these 14 countries if they are to progress towards the 73% target.

Looking at regional differences with respect to the 73% viral suppression target, significant differences emerge when comparing EU/EEA countries with non-EU/EEA countries. As a region, based on data from 29 countries with available data, 81% of all PLHIV have been diagnosed, 68% of all PLHIV are currently on ART, and 60% of all PLHIV are virally suppressed (Figure 8). For EU/EEA countries, 84% of all PLHIV have been diagnosed, 73% of all PLHIV are currently on ART and 65% of all PLHIV have reached viral load suppression. For non-EU/EEA countries these figures drop to 61% of all PLHIV having been diagnosed, 34% of all PLHIV currently on ART and 24% of all PLHIV having reached viral load suppression. While EU/EEA countries appear to be on track to reach the 73% viral suppression target by 2020, non-EU/EEA countries are lagging behind and face major challenges in meeting the 73% viral suppression target.

Figure 8. Viral suppression among all PLHIV in the 29 countries with data on all four stages of the continuum of care, EU/EEA and non-EU/EEA countries, 2016[28]



No data from:

EU/EEA countries: Cyprus, Czech Republic, Estonia, Finland, Iceland, Ireland, Latvia, Liechtenstein, Lithuania, Norway, Poland, Slovakia, Slovenia.
Non-EU/EEA countries: Andorra, Belarus, Bosnia and Herzegovina, the Former Yugoslav Republic of Macedonia, Israel, Kosovo*, Monaco, Russia, San Marino, Turkey, Turkmenistan, Ukraine, Uzbekistan.

Need to reduce losses at each stage of the continuum

Continuum of HIV care data reported in 2016 also highlight losses at each stage of the continuum, and the need for countries to use national continuum data to identify where these losses are occurring and take steps to minimise them.

Tables 15 and 16 present the percentage decline in the proportion of PLHIV who are engaged with each stage of the continuum of care for the 18 EU/EEA and 11 non-EU/EEA countries that were able to report data on all four stages of the continuum in 2016. Although in general there are steeper declines across all stages in non-EU/EEA countries, there is no consistent pattern across the region. Losses occur at different stages of the continuum in different countries and, hence, efforts to address these, including understanding the underlying reasons, will need to be country-specific.

[28] Latest data available reported by countries in March 2016. See Annex 6 showing which year reported data relates to.

Table 18. Percentage decline in the number of PLHIV who engaged with the continuum of care between the different stages, EU/EEA countries, 2016

EU/EEA Countries	% decline between continuum Stages 1 and 2	% decline between continuum Stages 2 and 3	% decline between continuum Stages 3 and 4	% of PLHIV who are virally suppressed
Sweden	-10%	-5%	-5%	82%
Denmark	-9%	-6%	-6%	80%
UK	-13%	-4%	-6%	78%
Netherlands	-12%	-12%	-7%	72%
France	-16%	-11%	-9%	68%
Italy	-12%	-12%	-13%	67%
Belgium	-16%	-16%	-5%	67%
Germany	-15%	-16%	-7%	67%
Spain	-18%	-8%	-12%	66%
Malta	-25%	-4%	-14%	62%
Luxembourg	-13%	-25%	-9%	60%
Austria	-12%	-15%	-24%	57%
Croatia	-35%	-13%	-12%	50%
Hungary	-13%	-47%	-7%	43%
Greece	-22%	-33%	-27%	39%
Romania	-2%	-23%	-49%	38%
Portugal	-30%	-33%	-22%	37%
Bulgaria	-36%	-64%	-13%	20%
Average	**-16%**	**-13%**	**-11%**	**65%**

Table 19. Percentage decline in the number of PLHIV who engaged with the continuum of care between the different stages, non-EU/EEA countries, 2016

Non-EU/EEA Countries	% decline between Stages 1 and 2	% decline between Stages 2 and 3	% decline between Stages 3 and 4	% of PLHIV who are virally suppressed
Switzerland	-18%	-9%	-3%	72%
Serbia	-37%	-34%	-5%	40%
Montenegro	-24%	-33%	-31%	35%
Georgia	-55%	-30%	-22%	25%
Armenia	-52%	-45%	-32%	18%
Azerbaijan	-47%	-37%	-48%	18%
Kazakhstan	-23%	-65%	-43%	15%
Moldova	-43%	-62%	-31%	15%
Kyrgyzstan	-35%	-52%	-59%	12%
Albania	-50%	-35%	-68%	10%
Tajikistan	-51%	-44%	-79%	6%
Average	**-37%**	**-44%**	**-32%**	**24%**

Conclusions

Europe and Central Asian countries need to improve the availability of continuum data, use the continuum of HIV care framework to monitor progress and identify areas for improvement, and take country-specific measures to strengthen HIV testing, treatment and care in order to accelerate progress towards the UNAIDS 90-90-90 targets.

The high proportion of people with HIV who do not know their status or who are diagnosed late reflects insufficient rates of testing, gaps in testing services or services not reaching those most at risk. There is limited implementation of alternative approaches that have been known to work, including community-based testing, home-sampling and self-testing, that could help increase uptake and encourage earlier testing by those most at risk.

The high proportion of people who have been diagnosed but who are not on treatment, especially in non-EU/EEA countries, reflects outdated treatment threshold policies and, in some places, legal and policy barriers, health system resource challenges and social and cultural factors.

Although the majority of people on treatment in the region are achieving viral suppression, the proportion varies significantly between countries. This suggests that more attention is needed to improve the quality of HIV treatment and care through better clinical follow-up, patient retention and adherence policies.

There are significant differences between EU/EEA countries and non-EU/EEA countries with regard to viral suppression rates among all people estimated to be living with HIV. While two out of three people living with HIV have achieved viral suppression in EU/EEA countries, only one in four people living with HIV in non-EU/EEA countries have achieved viral suppression. These inequalities in health between sub-regions in Europe and Central Asia must be addressed.

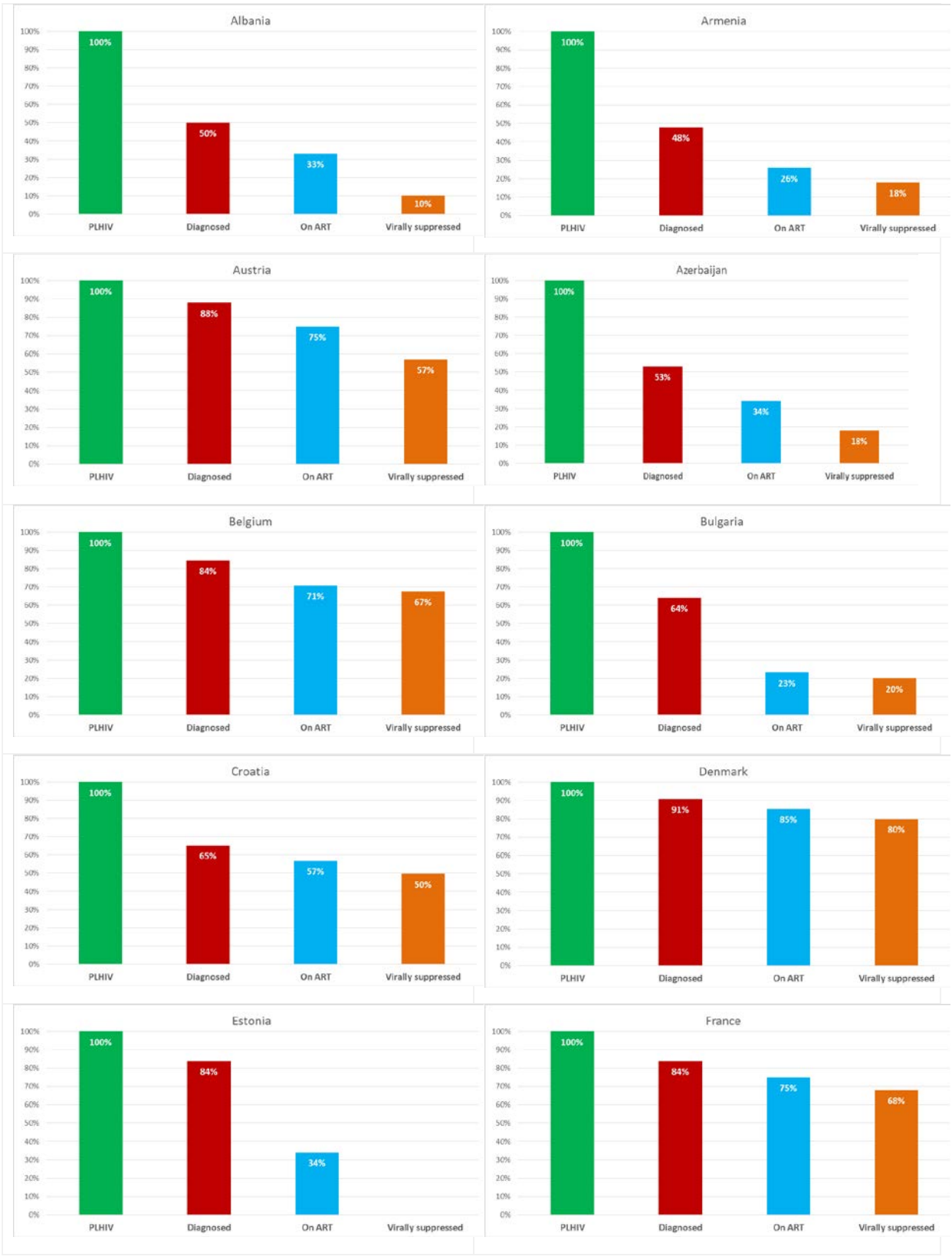
Priority options for action

- Strengthen HIV testing and case ascertainment programmes and reduce barriers to testing, in order to reduce the number of PLHIV with undiagnosed HIV infection and reduce the length of time from infection to linkage to care.
- Ensure national HIV testing policies incorporate innovative approaches to HIV testing, including community-based testing, self-testing and home sampling; involve the affected community in implementation of these policies, and allocate adequate resources to support the implementation and availability of these approaches.
- Reduce missed opportunities for HIV diagnosis in health services, particularly in primary care and other clinical settings; improve awareness among clinicians and other healthcare staff, introduce more routine or opt-out testing where appropriate and implement indicator condition guided testing.
- Eliminate treatment protocols based on CD4 counts and adopt ‘test and treat’ policies in all countries in line with the European AIDS Clinical Society and WHO guidelines[29] [30] since early initiation of treatment improves the health outcomes of PLHIV and reduces their viral load, which in turn reduces the risk of transmitting HIV to others.
- Reduce barriers to accessing treatment, including inadequate treatment programme coverage, weak referral mechanisms or links to other health and support services, and tackle stigma and discrimination, including among health professionals.
- Increase attention to the quality of HIV treatment and care, including ensuring adequate diagnostic support and similar issues that influence patient achievement of viral suppression, including retention and adherence, close monitoring for HIV drug resistance and the availability of second-line combination antiretroviral drugs.

[29] European AIDS Clinical Society Guidelines. Version 8.2, January 2017. http://www.eacsociety.org/files/guidelines_8.2-english.pdf

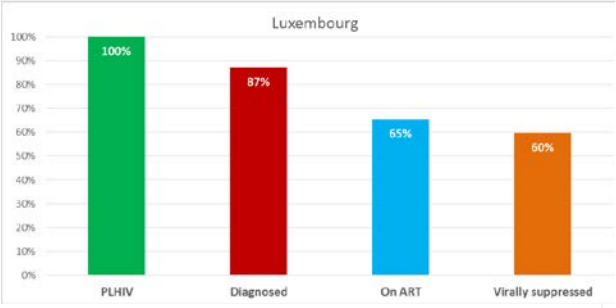
[30] WHO. Guidelines on When to Start Antiretroviral Therapy and Pre-Exposure Prophylaxis for HIV Geneva: World Health Organization, 2015.

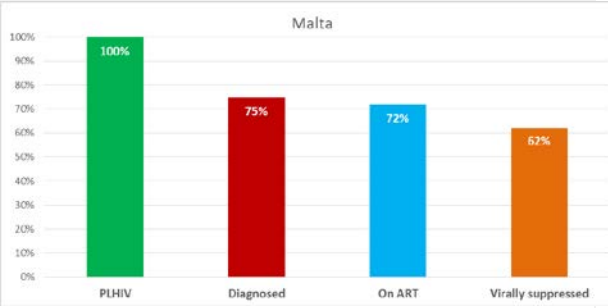
Annex 1. Reported national continuum of HIV care, 2016[31]

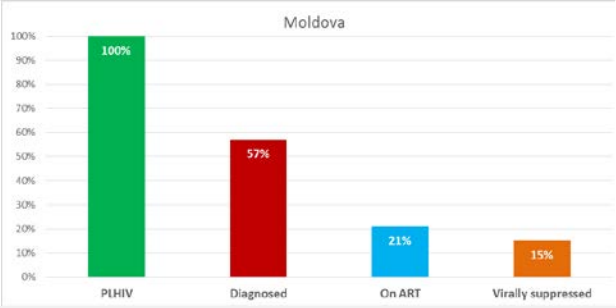


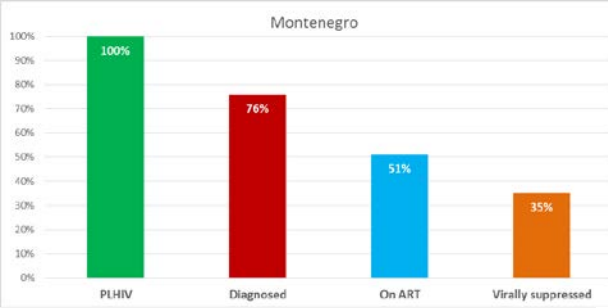
[31] Latest data available as reported by countries in March 2016; note that the latest available data may be from 2012, 2013, 2014, 2015 or 2016. See Annexes 3, 4 and 5 showing which year reported data relates to.

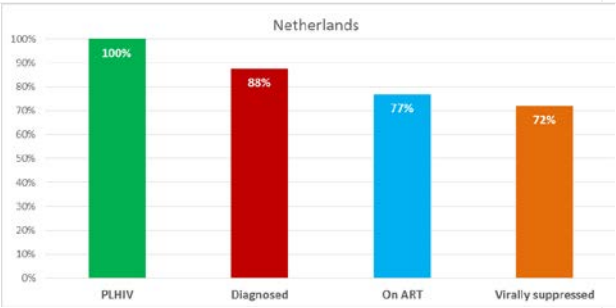

Georgia
100%
45%
32%
25%
PLHIV
Diagnosed
On ART
Virally suppressed
Germany
100%
85%
72%
67%
PLHIV
Diagnosed
On ART
Virally suppressed
Greece
100%
78%
53%
39%
PLHIV
Diagnosed
On ART
Virally suppressed
Hungary
100%
87%
46%
43%
PLHIV
Diagnosed
On ART
Virally suppressed
Ireland
100%
85%
77%
PLHIV
Diagnosed
On ART
Virally suppressed
Israel
100%
74%
51%
PLHIV
Diagnosed
On ART
Virally suppressed
Italy
100%
88%
78%
67%
PLHIV
Diagnosed
On ART
Virally suppressed
Kazakhstan
100%
77%
27%
15%
PLHIV
Diagnosed
On ART
Virally suppressed
Kyrgyzstan
100%
56%
25%
12%
PLHIV
Diagnosed
On ART
Virally suppressed
Lithuania
100%
70%
21%
PLHIV
Diagnosed
On ART
Virally suppressed

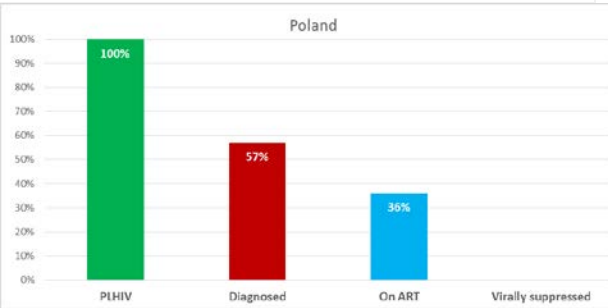

Luxembourg
100%
87%
65%
60%
PLHIV
Diagnosed
On ART
Virally suppressed

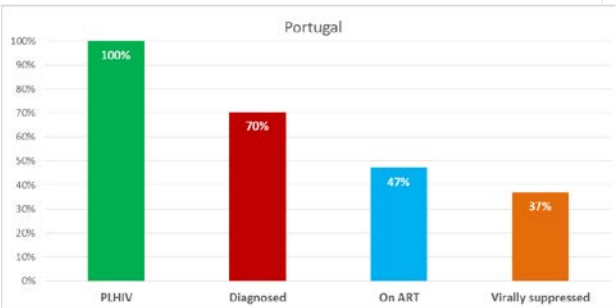

Malta
100%
75%
72%
62%
PLHIV
Diagnosed
On ART
Virally suppressed

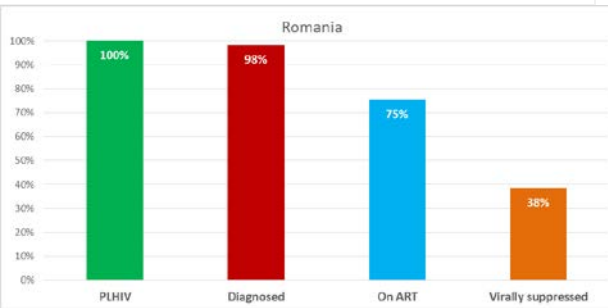

Moldova
100%
57%
21%
15%
PLHIV
Diagnosed
On ART
Virally suppressed

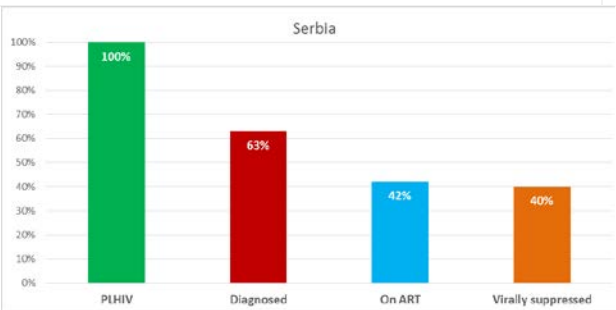

Montenegro
100%
76%
51%
35%
PLHIV
Diagnosed
On ART
Virally suppressed

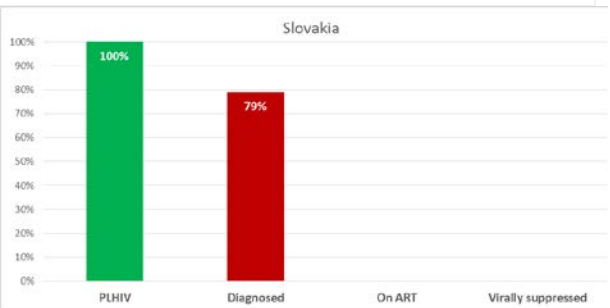

Netherlands
100%
88%
77%
72%
PLHIV
Diagnosed
On ART
Virally suppressed


Poland
100%
57%
36%
PLHIV
Diagnosed
On ART
Virally suppressed


Portugal
100%
70%
47%
37%
PLHIV
Diagnosed
On ART
Virally suppressed


Romania
100%
98%
75%
38%
PLHIV
Diagnosed
On ART
Virally suppressed


Serbia
100%
63%
42%
40%
PLHIV
Diagnosed
On ART
Virally suppressed


Slovakia
100%
79%
PLHIV
Diagnosed
On ART
Virally suppressed


Spain
100%
82%
75%
66%
PLHIV
Diagnosed
On ART
Virally suppressed
Sweden
100%
90%
86%
82%
PLHIV
Diagnosed
On ART
Virally suppressed
Switzerland
100%
82%
75%
72%
PLHIV
Diagnosed
On ART
Virally suppressed
Tajikistan
100%
38%
20%
6%
PLHIV
Diagnosed
On ART
Virally suppressed
Ukraine
100%
57%
27%
PLHIV
Diagnosed
On ART
Virally suppressed
United Kingdom
100%
87%
83%
78%
PLHIV
Diagnosed
On ART
Virally suppressed
Uzbekistan
100%
52%
36%
PLHIV
Diagnosed
On ART
Virally suppressed

Annex 2. Data sources on the continuum of HIV care in Europe and Central Asia, 2016

Stage/Data source	Number of countries (%)	Countries (EU/EEA & Non-EU/EEA)	Year of reported data (Number of countries)
Stage 1	**37**		
ECDC HIV modelling tool	8 (22%)	**8** EU/EEA: Austria, Belgium, Croatia, Greece, Luxembourg, Malta, Netherlands, Slovakia	2013 (2); 2014 (1); 2015 (4); 2016 (1)
Spectrum modelling tool	17 (46%)	**6** EU/EEA: Estonia, Lithuania, Poland, Portugal, Romania, Spain **11** Non-EU/EEA: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Serbia, Tajikistan, Albania, Ukraine, Uzbekistan	2013 (2); 2014 (3); 2015 (10); 2016 (2)
Other modelling tool	3 (8%)	**3** EU/EEA: Bulgaria, Germany, United Kingdom	2014 (1); 2015 (2)
Other estimate method	9 (24%)	**6** EU/EEA: Denmark, France, Hungary, Ireland, Italy, Sweden **3** Non-EU/EEA: Israel, Montenegro, Switzerland	2012 (1); 2013 (1); 2014 (1); 2015 (6)
Stage 2	**37**		
Cohort data	8 (22%)	**8** EU/EEA: Austria, Belgium, Bulgaria, Denmark, Ireland, Luxembourg, Netherlands, Sweden	2013 (2); 2014 (1); 2015 (4); 2016 (1)
Surveillance data	22 (59%)	**12** EU/EEA: Croatia, Cyprus, Czech Republic, Estonia, Germany, Greece, Malta, Portugal, Slovakia, Slovenia, Spain, United Kingdom **10** Non-EU/EEA: Albania, Armenia, Georgia, Kosovo (UNSC 1244), Kyrgyzstan, Montenegro, Serbia, Tajikistan, Ukraine, Uzbekistan	2011 (1); 2013 (1); 2014 (4); 2015 (16)
Other data source	7 (19%)	**3** EU/EEA: France, Italy, Romania **4** Non-EU/EEA: Azerbaijan, Kazakhstan, Moldova, Switzerland	2010 (1); 2012 (2); 2014 (1); 2015 (2); No year (1)
Stage 3	**31**		
Cohort data	8 (26%)	**8** EU/EEA: Austria, Belgium, Bulgaria, Croatia, Denmark, Luxembourg, Netherlands, Sweden	2013 (2); 2014 (2); 2015 (3); 2016 (1)
Surveillance data	9 (29%)	**3** EU/EEA: Czech Republic, Greece, United Kingdom **6** Non-EU/EEA: Georgia, Kyrgyzstan, Montenegro, Tajikistan, Ukraine, Uzbekistan	2013 (1); 2015 (8)
Other data source	14 (45%)	**9** EU/EEA: France, Germany, Ireland, Italy, Malta, Norway, Portugal, Romania, Spain **5** Non-EU/EEA: Azerbaijan, Kazakhstan, Moldova, Serbia, Switzerland	2010 (1); 2012 (2); 2014 (4); 2015 (7)
Stage 4	**27**		
Cohort data	12 (44%)	**11** EU/EEA: Austria, Belgium, Bulgaria, Croatia, Denmark, Germany, Greece, Italy, Luxembourg, Netherlands, Sweden **1** Non-EU/EEA: Serbia	2012 (1); 2013 (4); 2014 (3); 2015 (3); 2016 (1)
Surveillance data	7 (26%)	**2** EU/EEA: Czech Republic, United Kingdom **5** Non-EU/EEA: Armenia, Georgia, Kyrgyzstan, Montenegro, Tajikistan	2014 (1); 2015 (6)
Other data source	8 (30%)	**6** EU/EEA: France, Hungary, Malta, Portugal, Romania, Spain **2** Non-EU/EEA: Azerbaijan, Kazakhstan,	2010 (1); 2014 (3); 2015 (4)

Annex 3. Proportion of people living with HIV who have been diagnosed in 37 countries of Europe and Central Asia

Country	PLHIV	Diagnosed	Percentage diagnosed	Percentage undiagnosed	Year
Romania	14 000	13 766	98%	2%	2015
Denmark	5 500	5 000	91%	9%	2014
Sweden	7 718	6 946	90%	10%	2015
Italy	127 324	112 222	88%	12%	2012
Austria	6 527	5 745	88%	12%	2013
Netherlands	22 900	20 083	88%	12%	2015
Luxembourg	1 065	927	87%	13%	2015
Hungary	3 067	2 667	87%	13%	2015
United Kingdom	101 200	87 700	87%	13%	2015
Germany	84 700	72 000	85%	15%	2015
Ireland	6 180	5 253	85%	15%	2015
Belgium	17 744	14 977	84%	16%	2014
Estonia	11 000	9 263	84%	16%	2015-2016
France	153 100	128 300	84%	16%	2013
Spain	141 000	115 620	82%	18%	2013-2014
Switzerland	16 500	13 500	82%	18%	2012
Slovakia	850	674	79%	21%	2015
Greece	14 200	11 096	78%	22%	2013
Kazakhstan	23 000	17 726	77%	23%	2015
Montenegro	194	147	76%	24%	2015
Malta	394	295	75%	25%	2015
Israel	9 720	7 171	74%	26%	2015
Portugal	59 365	41 793	70%	30%	2014
Lithuania	3 100	2 173	70%	30%	2015
Croatia	1 680	1 097	65%	35%	2015
Bulgaria	3 543	2 267	64%	36%	2015
Serbia	3 100	1 956	63%	37%	2014
Poland	35 000	19 915	57%	43%	2015-2016
Moldova	17 985	10 213	57%	43%	2015
Ukraine	223 000	126 604	57%	43%	2015
Kyrgyzstan	8 500	4 767	56%	44%	2015
Azerbaijan	8 798	4 704	53%	47%	2015
Uzbekistan	36 553	19 026	52%	48%	2015
Albania	1 400	698	50%	50%	2015
Armenia	3 600	1 714	48%	52%	2015
Georgia	9 600	4 339	45%	55%	2015
Tajikistan	16 000	6 117	38%	62%	2015

Annex 4. ART coverage among people that have been diagnosed with HIV in 40 countries of Europe and Central Asia[32]

Country	Number of people diagnosed	Number of people on ART	% on ART out of those diagnosed	% not on ART out of those diagnosed	Year
Malta	295	284	96%	4%	2016
United Kingdom	87 700	83 900	96%	4%	2015
Sweden	6 946	6 605	95%	5%	2015
Denmark	5 000	4 700	94%	6%	2014
Spain	115620	106 370	92%	8%	2011-2014
Switzerland	13 500	12 300	91%	9%	2012
Slovenia	541	492	91%	9%	2015-2016
Ireland	5 253	4 728	90%	10%	2015
France	128 300	114 825	89%	11%	2013
Italy	112 222	98 755	88%	12%	2012
Netherlands	20 083	17 721	88%	12%	2015
Croatia	1 097	953	87%	13%	2015
Austria	5 745	4 891	85%	15%	2013
Germany	72 000	60 700	84%	16%	2015
Belgium	14 977	12 540	84%	16%	2014
Romania	13 766	10 551	77%	23%	2015
Luxembourg	927	696	75%	25%	2015
Czech Republic	2 281	1 616	71%	29%	2015
Georgia	4 339	3 044	70%	30%	2015
Uzbekistan	19 026	13 186	69%	31%	2015
Israel	7 171	4 928	69%	31%	2015
Greece	11 096	7 488	67%	33%	2013
Montenegro	147	99	67%	33%	2015
Portugal	41 793	28 020	67%	33%	2014
Serbia	1 956	1 300	66%	34%	2014
Albania	698	456	65%	35%	2015
Azerbaijan	4 704	2 960	63%	37%	2015
Poland	19 915	12 465	63%	37%	2015-2016
Armenia	1 714	941	55%	45%	2015
Hungary	2 667	1 423	53%	47%	2015
Tajikistan	6 117	3 135	51%	49%	2015
Ukraine	126 604	60 753	48%	52%	2015
Kyrgyzstan	4 767	2 109	44%	56%	2015
Estonia	9 263	3 715	40%	60%	2015
Moldova	10 213	3 850	38%	62%	2015
Bulgaria	2 267	824	36%	64%	2015-2016
Kazakhstan	17 726	6 285	35%	65%	2015
Kosovo	46	14	30%	70%	2015
Lithuania	2 173	646	30%	70%	2015
Latvia	5 091	1 388	27%	73%	2015

[32] Latest data available as reported by countries in March 2016; note that the latest available data may be from 2012, 2013, 2014, 2015 or 2016.

Annex 5. Viral suppression among those on HIV treatment in 31 countries of Europe and Central Asia[33]

Country	On ART	Virally suppressed	% virally suppressed	% not virally suppressed	Year
Switzerland	12 300	11 900	97%	3%	2012
Belgium	12 540	11 965	95%	5%	2014
Sweden	6 605	6 299	95%	5%	2015
Serbia	1 300	1 235	95%	5%	2014
United Kingdom	83 900	78 900	94%	6%	2015
Denmark	4 700	4 400	94%	6%	2014
Hungary	1 423	1 324	93%	7%	2015
Germany	60 700	56 400	93%	7%	2015
Netherlands	17 721	16 456	93%	7%	2015
Luxembourg	696	635	91%	9%	2015
France	114 825	104 108	91%	9%	2013
Spain	106 370	93 606	88%	12%	2013-2014
Croatia	953	834	88%	12%	2015
Italy	98 755	85 917	87%	13%	2012
Bulgaria	824	715	87%	13%	2015
Malta	284	244	86%	14%	2016
Czech Republic	1 616	1 367	85%	15%	2015
Slovenia	492	406	83%	17%	2015-2016
Portugal	28 020	21 965	78%	22%	2014
Georgia	3 044	2 369	78%	22%	2015
Austria	4 891	3 718	76%	24%	2013
Greece	7 488	5 499	73%	27%	2013
Moldova	3 850	2 667	69%	31%	2015
Montenegro	99	68	69%	31%	2015
Armenia	941	638	68%	32%	2015
Kazakhstan	6 285	3 416	54%	46%	2015
Azerbaijan	2 960	1 542	52%	48%	2015
Romania	10 551	5 386	51%	49%	2015
Kyrgyzstan	2 109	1 030	49%	51%	2015
Tajikistan	3 135	995	32%	68%	2015
Albania	456	144	32%	68%	2015

[33] Latest data available as reported by countries in March 2016; note that the latest available data may be from 2012, 2013, 2014, 2015 or 2016.

Annex 6. Viral suppression among all PLHIV in 29 countries of Europe and Central Asia[34]

Country	PLHIV	Virally suppressed	% VS among PLHIV	% not virally suppressed	Year
Sweden	7 718	6 299	82%	18%	2015
Denmark	5 500	4 400	80%	20%	2014
United Kingdom	101 200	78 900	78%	22%	2015
Switzerland	16 500	11 900	72%	28%	2012
Netherlands	22 900	16 456	72%	28%	2015
France	153 100	104 108	68%	32%	2013
Italy	127 324	85 917	67%	33%	2012
Belgium	17 744	11 965	67%	33%	2014
Germany	84 700	56 400	67%	33%	2015
Spain	141 000	93 606	66%	34%	2013-2014
Malta	394	244	62%	38%	2016
Luxembourg	1 065	635	60%	40%	2015
Austria	6 527	3 718	57%	43%	2013
Croatia	1 680	834	50%	50%	2015
Hungary	3 067	1 324	43%	57%	2015
Serbia	3 100	1 235	40%	60%	2014
Greece	14 200	5 499	39%	61%	2013
Romania	14 000	5 386	38%	62%	2015
Portugal	59 365	21 965	37%	63%	2014
Montenegro	194	68	35%	65%	2015
Georgia	9 600	2 369	25%	75%	2015
Bulgaria	3 543	715	20%	80%	2015
Armenia	3 600	638	18%	82%	2015
Azerbaijan	8 798	1 542	18%	82%	2015
Kazakhstan	23 000	3 416	15%	85%	2015
Moldova	17 985	2 667	15%	85%	2015
Kyrgyzstan	8 500	1 030	12%	88%	2015
Albania	1 400	144	10%	90%	2015
Tajikistan	16 000	995	6%	94%	2015

[34] Latest data available as reported by countries in March 2016; note that the latest available data may be from 2012, 2013, 2014, 2015 or 2016.

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