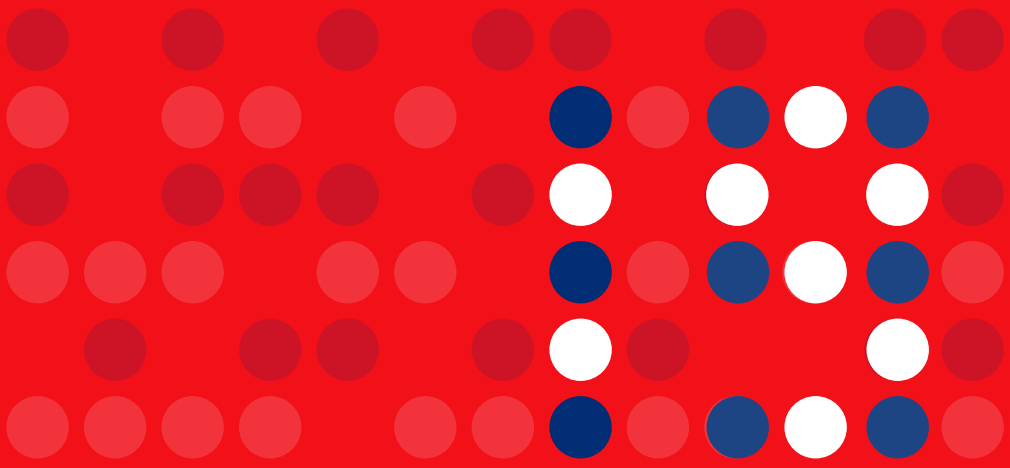
Human Immunodeficiency Virus (HIV)
Infection in the Netherlands

HIV Monitoring

HIV Monitoring Report 2019

Chapter 7: Quality of care



About Stichting HIV Monitoring

Stichting HIV Monitoring (SHM), the Dutch HIV monitoring foundation, was founded in 2001 and appointed by the Dutch minister of Health, Welfare and Sport as the executive organisation for the registration and monitoring of HIV-positive individuals in the Netherlands.

In collaboration with the HIV treatment centres in the Netherlands, SHM has developed a framework for systematically collecting HIV data for the long-term follow up of all registered individuals. The Netherlands is the only country in the world to have such a framework, which enables healthcare professionals to aspire to the highest standard of HIV care.

SHM contributes to the knowledge of HIV by studying the course of the infection and the effect of its treatment. To this end, SHM follows the treatment of every HIV-positive man, woman and child in care in the Netherlands and registered in the national observational HIV cohort, ATHENA. Continuous collection of data is carried out at 24 HIV treatment centres and subcentres and 4 paediatric HIV centres in the Netherlands. Patient data are collected and entered into the database in a pseudonymised form for storage and analysis. In this way SHM is able to comprehensively map the HIV epidemic and HIV treatment outcomes in the Netherlands.

Our mission

To further the knowledge and understanding of all relevant aspects of HIV infection, including comorbidities and co-infections (such as viral hepatitis), in HIV-positive persons in care in the Netherlands.

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HIV Monitoring

Monitoring Report 2019

Human Immunodeficiency Virus (HIV) Infection in the Netherlands

Interactive PDF user guide

This PDF allows you to find information and navigate around this document more easily.

Links in this PDF

Words and numbers that are underlined are links — clicking on them will take you to further information within the document or to a web page (in a new window) if they are a url (e.g., http://www.cdc.gov/hiv/guidelines/).

Reference numbers

Click on the reference numbers in the text to see the reference details on a web page (in a new window).

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To cite this report, please use: van Sighem A.I., Wit F.W.N.M., Boyd A., Smit C., Matser A., Reiss P. Monitoring Report 2019. Human Immunodeficiency Virus (HIV) Infection in the Netherlands. Amsterdam: Stichting HIV Monitoring, 2019. Available online at www.hiv-monitoring.nl

ISBN/EAN: 978-90-806415-0-1
First edition: 13 November 2019
Editing: Sally H. Ebeling, Boston, MA, USA

Art Direction & DTP: Studio Zest, Wormer, the Netherlands

7. Quality of care

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Introduction

One of SHM's missions is to contribute to the quality of HIV care in the Netherlands. With the collection of pseudonymised data from individuals living with HIV in outpatient care in the 26 officially acknowledged HIV treatment centres during 2018, SHM provides a nationwide overview of the outcome of care for individuals living with HIV. This unique overview allows SHM to facilitate the assessment of quality of HIV care in the Netherlands.

In general, HIV treatment guidelines are intended not only to support physicians in providing optimal health care, but also to reduce the variation in care between different treatment centres. The Dutch Association of HIV-Treating Physicians (*Nederlandse Vereniging van HIV Behandelaren*, NVHB) has issued national guidelines for the treatment and monitoring of HIV-positive people in the Netherlands[2]. Using these guidelines as a basis, we defined a set of indicators, which are used to explore the quality of care in Dutch HIV treatment centres and gain insight into potential variation in outpatient care between HIV treatment centres.

***Box 7.1:** Definitions used in this chapter.*

Diagnosis	The moment an individual is newly diagnosed with an HIV infection. The time of diagnosis can be weeks, months, or years after infection.
Entry into care	The moment an HIV-positive individual is first seen for care in an HIV treatment centre, which is usually within a few weeks of HIV diagnosis.
Volume indicator	The number of people newly entering care for the first time in 2017 and 2018 for each treatment centre.

Outcome indicators	
Retention in care	I. Short-term retention: The percentage of people who entered care for the first time after being diagnosed with HIV in one of the HIV treatment centres in 2015 and 2016 and who were still alive and in care at least 18 months after entering care. Patients who died or moved abroad were excluded from this indicator. II. Long- term retention in care in 2018: the percentage of all individuals who had entered care during the period 2013-2016, had not moved abroad and had not died and had had a documented clinical visit in 2018.
Initiation of cART	I. Start of combination antiretroviral therapy (defined as a combination of at least three antiretroviral agents) within 6 months of entry into care in 2016 and 2017. II. The percentage of people who had initiated cART and were still in care in 2018.
Viral suppression	I. The percentage of treatment-naive people with a plasma HIV RNA level <400 copies/ml at 6 months after starting cART in 2017 (this definition of viral suppression is a requirement of the national certification process for HIV treatment centres in the Netherlands[1]). II. The percentage of all HIV-positive people on cART for at least 6 months in 2017 and 2018 with a plasma HIV RNA level <100 copies/ml. III. The percentage of all HIV-positive people in care in 2017 and 2018 with a plasma HIV RNA level <100 copies/ml.
Process indicators	
Prior to cART initiation	The percentage of people newly entering HIV care in 2016 and 2017 for whom data were available on plasma HIV RNA and CD4 count.
Following cART initiation	The percentage of people initiating cART in 2016 and 2017 for whom plasma HIV RNA and CD4 count were measured at least once within 13 months after cART initiation.

Methods

The indicators selected for this analysis were derived from formal NVHB recommendations that, in general, follow the United States Department of Health and Human Services (DHHS) HIV/AIDS practice guidelines[2]. These indicators were classified as volume, outcome or process indicators (*Box 7.1*).

As reported in earlier studies, both the number of patients in care (i.e., the centre 'volume') and the patient characteristics of a given centre (i.e. the patient 'mix') may have an impact on the reported indicators[3,4,5,6]. Regarding centre volume, a smaller number of patients in some HIV treatment centres could result in less informative percentages, as a single deviating score on an indicator can further increase the variation for a given indicator. For this reason, we compare each centre's indicator to the national average and provide statistical guidance as to whether a given centre falls below the national average. This assessment depends on the number of patients included when calculating the indicator (an overview of this method is provided in *Box 7.2*). Regarding patient mix, individual-level factors, such as age and mode of transmission, are known to be associated with several indicators. If performance indicators are different across centres, it could be that the variation in patient characteristics between centres are driving these differences. We therefore adjusted all indicators by year of birth and geographical origin/mode of transmission (*Box 7.2*).

Box 7.2: *Funnel plots to compare centres to the national average.*

What types of problems occur when evaluating indicators?	
Centres with fewer patients	Centres of smaller size are expected to have wider variation for any given indicator. This variation makes it difficult to determine if the indicator is truly higher or lower than what we would expect.
Patient mix	Individual-level factors, such as age and mode of transmission, are known to be associated with several indicators. If performance indicators are different across centres, it could be that the variation in patient characteristics between centres are driving these differences.

How can we account for these problems?	
Evaluating a centre's performance based on its size	We can determine whether the indicator of a centre (as a percentage) is *statistically* different to the national average. This statistical difference is partly determined by the number of individuals used to calculate the indicator.
Adjust for patient mix	We can adjust indicators based on several important features of the centre's patient population, such as year of birth and geographical origin/mode of HIV acquisition (Dutch men who have sex with men (MSM), Non-Dutch MSM, Dutch non-MSM, and Non-Dutch non-MSM).
What is a funnel plot? A funnel plot is a graphical depiction that allows us to view a centre's indicator compared to the national average. It can help account for the problems listed above. The following are key components of this plot:	
Patient size	The *x*-axis depicts the number of patients considered in a given indicator. For example, this number could be the total number of patients entering care in 2016, the total number of patients in care in 2018, etc.
Adjusted %	The *y*-axis depicts the percentage of patients who have achieved a given indicator. This indicator is adjusted for patient mix.
Centre's indicator	Dots depict each centre's indicator (adjusted %), which are plotted with respect to the number of patients included in the calculation of the indicator.
Comparison to the national average	A solid line depicts the national average. We can create boundaries that indicate (i) the highest indicator level a centre should achieve based on what we statistically expect from the national average ("upper" boundary) or (ii) the lowest indicator level a centre should achieve based on what we statistically expect from the national average ("lower" boundary). These boundaries make the form of a "funnel." The calculation of these boundaries is based on a statistical difference (±2 standard deviations) from the national average.

How is a funnel plot interpreted?	
When is an indicator lower than the national average?	If the centre's indicator falls below the "lower" boundary, then the centre has a lower-than-expected indicator compared to the national average.
When is an indicator higher than the national average?	This question will not be answered in the SHM report. The indicators will be high (ranging from 80-99%), making the "upper" boundary difficult to interpret. We will only provide the "lower" boundary.
Is it possible to determine a difference with so few patients?	Much like any statistical test, inference can be difficult when patient sizes are too small. If a centre size is small, the difference needed to find a statistically lower indicator would be very large. This means that the "lower" boundary could reach below 50%, which is far from a clinically meaningful indicator. In this report, we do not state if a centre's indicator is below the national average when there are fewer than 40 patients included.

Volume indicator

To meet the requirements of the national certification process for HIV treatment centres in the Netherlands (*Harmonisatie Kwaliteitsbeoordeling in de Zorgsector*, HKZ), HIV treatment centres are expected to enrol a minimum of approximately 20 new patients each year. Therefore, as a volume indicator, we quantified the number of patients newly entering care for the first time each year in 2017 and 2018 for each treatment centre.

Outcome indicators

The outcome indicators included *retention in care*, *initiation of cART* and achievement of *viral suppression*. For the purpose of the current analysis, we defined short-term and long-term retention in care as follows:

Short-term retention in care was defined as the percentage of those patients who had entered care for the first time after being diagnosed with HIV in one of the Dutch HIV treatment centres in 2015 and 2016, and who were still alive and in care at least 18 months after entering care. Patients who were known to have

died or moved abroad were excluded from this retention in care indicator. During the observation period, approximately 9% of patients switched treatment centres; these patients were considered to be retained in care, since they were documented as having remained in care elsewhere and were not lost to follow up. However, to avoid double counting, they were assigned to their most recent treatment centre.

Long-term retention in care was defined as the percentage of all patients who had entered care during the period 2013-2016, had not moved abroad and had not died *and* had had a documented clinical visit in 2018. Again, patients switching treatment centres were considered to be retained in care and were assigned to their most recent treatment centre.

Initiation of cART describes: 1) among the patients who had entered care in 2016 and 2017, the percentage who had started cART within 6 months of entry into care; and 2) among all patients still in care in 2018, the percentage of patients who had ever initiated cART.

Viral suppression was assessed by three indicators:
The *first* indicator was defined as the percentage of treatment-naive patients with a plasma HIV RNA level <400 copies/ml at 6 months after starting cART in 2017. The HIV RNA measurement closest to 6 months after the start of cART was chosen, with a minimum window of 3 months and a maximum of 9 months. The target percentage of viral suppression was set at ≥90%. This indicator, developed using the Delphi method, is part of the HKZ certification process and was defined jointly with the NVHB[1] during the development of *Zichtbare Zorg* (Visible Healthcare; ZiZo) indicators and HKZ.

The *second* indicator for viral suppression was the percentage of all HIV-positive patients on cART for at least 6 months with a plasma HIV RNA level <100 copies/ml. This indicator was calculated for the calendar years 2017 and 2018.

The *third* viral suppression indicator was the percentage of all HIV-positive patients in care who have a last available HIV RNA level <100 copies/ml. This indicator was also calculated for the calendar years 2017 and 2018.

Process indicators

Process indicators were calculated for two scenarios: prior to starting cART and following cART initiation.

To calculate the process indicators *prior to cART initiation*, we included all patients who had entered care in 2016 and 2017. Only patients who entered care for the first time and were in care for at least 12 months were included; patients who had switched treatment centres were not counted as newly entering care, as they had remained in care elsewhere. Of note, patients who had been in care and started cART outside the Netherlands were excluded. The indicators were defined as the percentage of patients newly entering care in 2016 and 2017 for whom the following measurements were available in the 6 months after entry into care: CD4 and plasma HIV RNA.

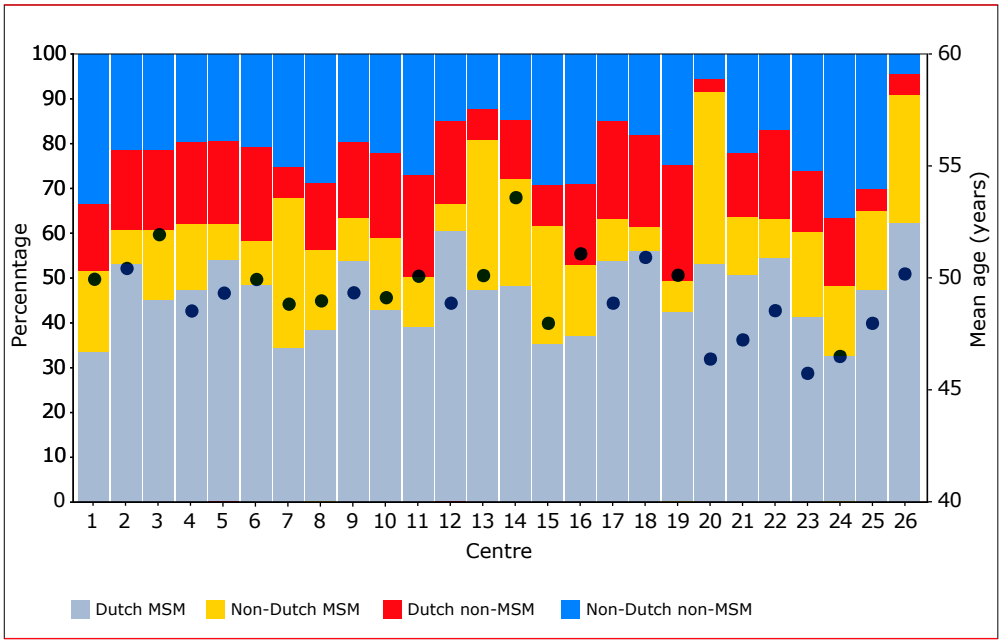
To calculate the process indicators *following cART initiation*, we included patients who had started cART in 2016 and 2017. The indicators were defined as the percentage of patients in whom the following measurements were carried out at least once within 13 months after cART initiation: CD4 cell count and plasma HIV RNA.

Results

Patient mix across centres

The characteristics of patients in care in 2018 are described per HIV treatment centre in *Figure 7.1* (patient 'mix'). To correct for patient 'mix', non-MSM (men who have sex with men) included both men and women. The largest geographical origin/mode of transmission group observed for almost all centres was Dutch MSM, ranging from 33 to 63% (median = 48%) of patients within centres. There was substantial variation across centres in the other geographical origin/mode of transmission groups (median, range across centres): Non-Dutch MSM (16%, 5% – 38%), Dutch non-MSM (17%, 3% – 25%), and Non-Dutch non-MSM (21%, 4% – 36%). The average age across centres ranged between 46 to 54 years (median = 49 years).

Figure 7.1: Description of the patient 'mix' for HIV-positive individuals in care in 2018 in the Netherlands.

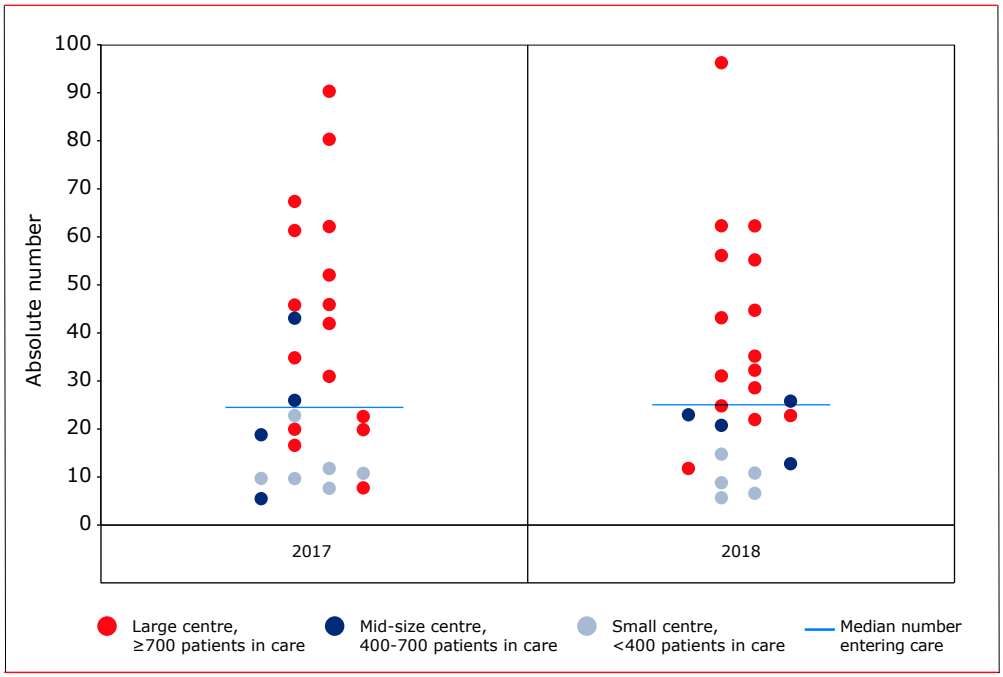


Note: *Percentage of individuals per centre is given in the bar chart according to geographical origin/mode of transmission group. Average age of patients per centre is given in black dots.*
Legend: *MSM=men who have sex with men.*

Volume indicator

The numbers of patients who newly entered care in 2017 and 2018 across the HIV treatment centres are shown in *Figure 7.2*. The median number of patients who entered care was 25 in 2017, and 31 in 2018, with a minimum number of 6 patients in both 2017 and 2018. In 2018, seven HIV treatment centres had fewer than 20 newly-entering patients.

Figure 7.2: Annual number of patients newly entering care per HIV treatment centre in the Netherlands in 2017–2018.



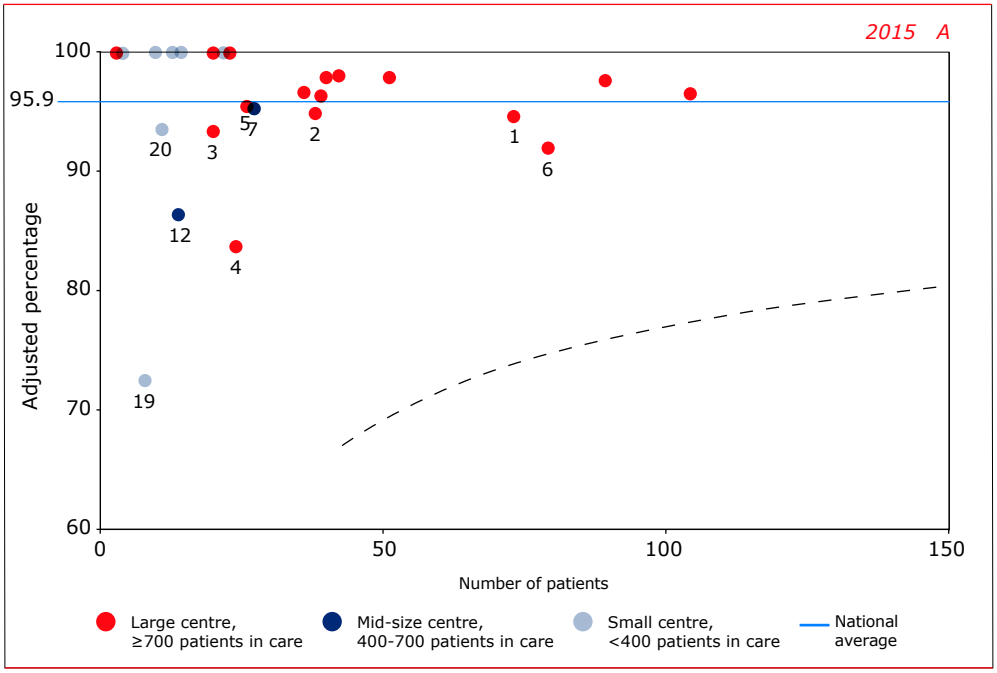
Outcome indicators

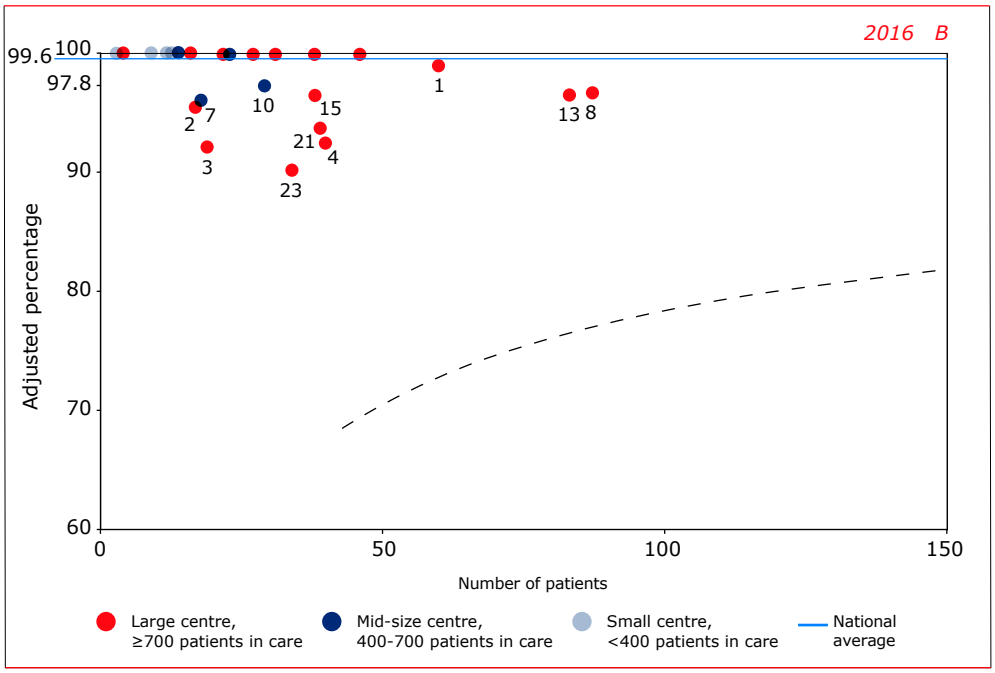
Retention in care

Across centres, the median unadjusted percentage of individuals with short-term retention was 97% (range = 75 – 100%) for patients entering care in 2015 and 100% (range = 89 – 100%) for those entering care in 2016. *Appendix Figure 7.1* shows the median unadjusted short-term retention rates for those who entered care between 2015-2016, stratified by MSM vs non-MSM and by patients' geographic region of origin. Median short-term retention rates in care were highest in Dutch MSM (100%, range = 88 – 100%), followed by Dutch non-MSM (100%, range = 75 – 100%), non-Dutch MSM (100%, range = 69 – 100%) and non-Dutch non-MSM (97%, range = 63 – 100%). *Figure 7.3A* shows the variation in adjusted percentage of short-term retention in care across treatment centres for patients who entered care in 2015 and 2016. This figure demonstrates that all centres with at least 40 patients entering care in 2015 and 2016 had adjusted percentages of short-term retention within the expected range when compared to the national level.

For all individuals in care as of 2018, the median unadjusted percentage of individuals with long term retention was 93% (range = 75 – 100%) across centres for patients entering care in 2013. This percentage increased as people entered care more recently, with a median percentage retained of 97% (range = 82 – 97%) for those entering care in 2016. *Figure 7.4* shows the adjusted percentage of individuals in long term retention-in-care per centre, according to the year in which patients entered care. Once again, all centres with at least 40 patients entering care in 2013, 2014, 2015 and 2016 had adjusted percentages of long term retention within the expected range when compared to the national level.

Figure 7.3: *Short-term retention in care, i.e., 18 months after entering care for those who entered care in A) 2015 and B) 2016. The percentage of individuals retained in care has been adjusted for patient mix and plotted as a function of the number of patients entered into care.*



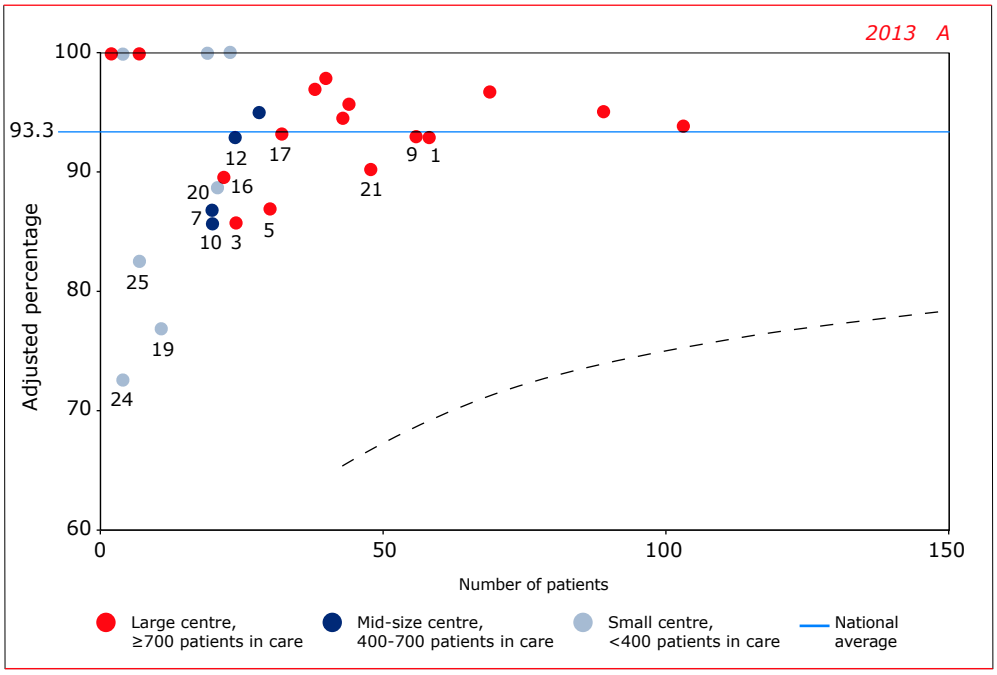


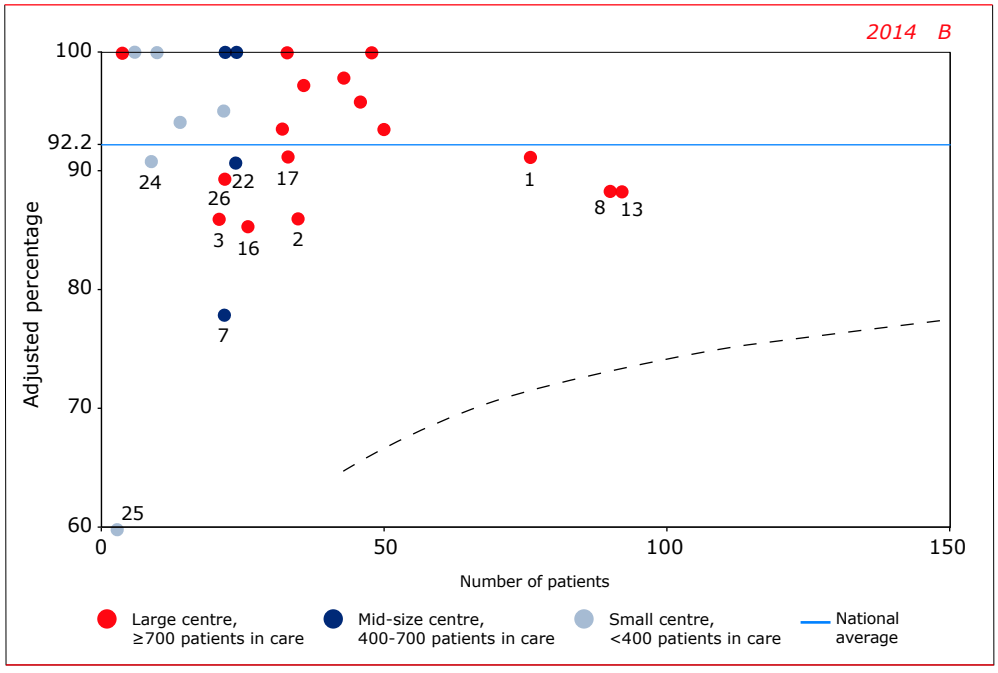
Legend: *Data points are labelled with centre numbers below the national average, which correspond to Figure 7.1. The "lower" boundary of expected percentage retained in care (as compared to the national average) is indicated with a dashed line (Box 7.2); no centre falls below this line.*

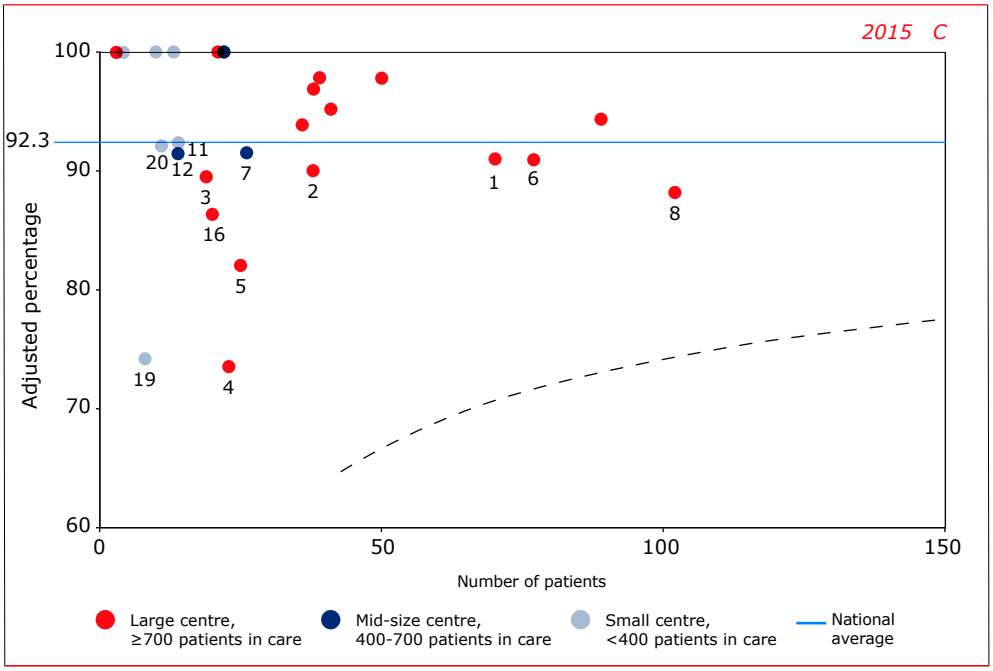
Initiation of cART

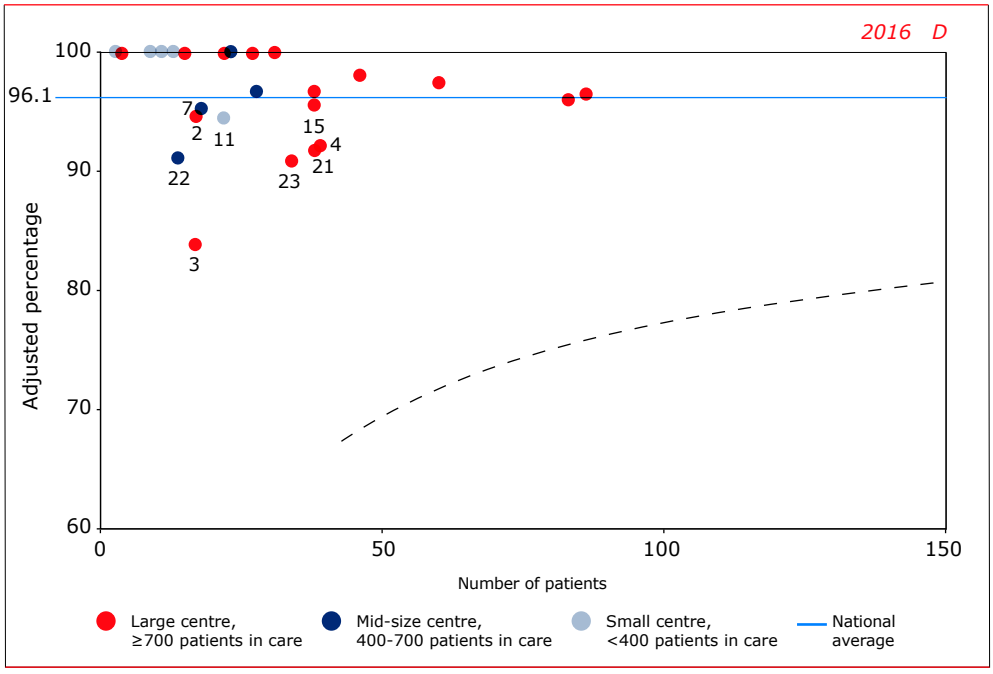
Across centres, the median unadjusted percentages of patients entering care in 2016 and 2017 who started cART within 6 months after entering care were both 100%. In terms of variation across HIV treatment centres, this percentage ranged between 71 – 100% in 2016 and 50 – 100% in 2017. *Figure 7.4* shows the adjusted percentages of patients starting cART within 6 months after entering care per centre, according to the year in which patients entered care. This figure demonstrates that all centres with at least 40 patients entering care in 2016 and in 2017 had adjusted percentages of patients starting cART within the expected range when compared to the national average.

Figure 7.4: Long-term retention in care, i.e., status in 2018 for those who entered care between (A-D) 2013-2016. The percentage of individuals retained in care has been adjusted for patient mix and plotted as a function of the number of patients entered into care.





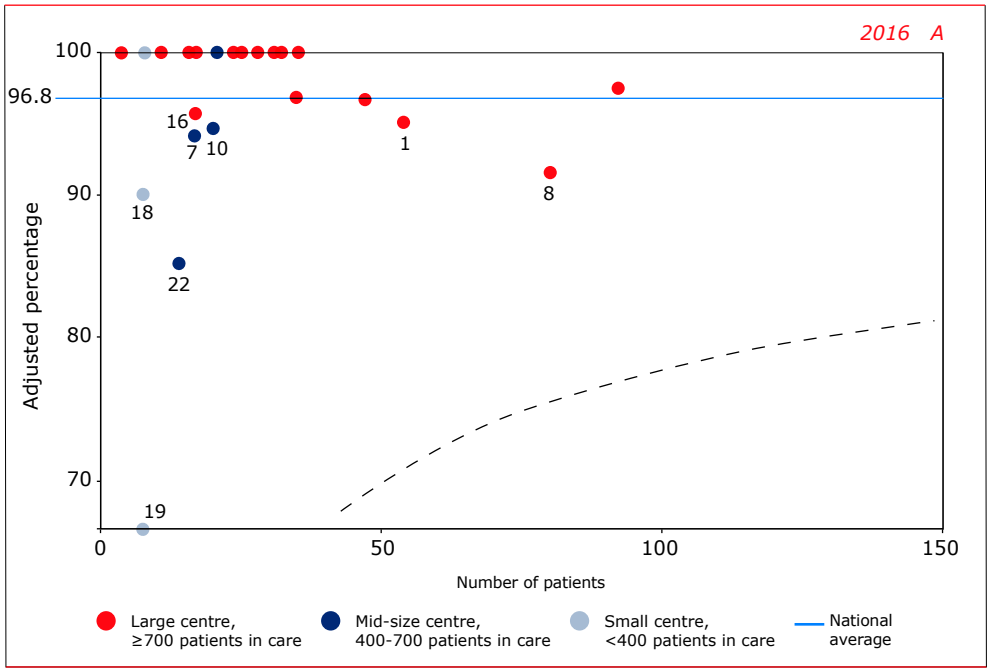


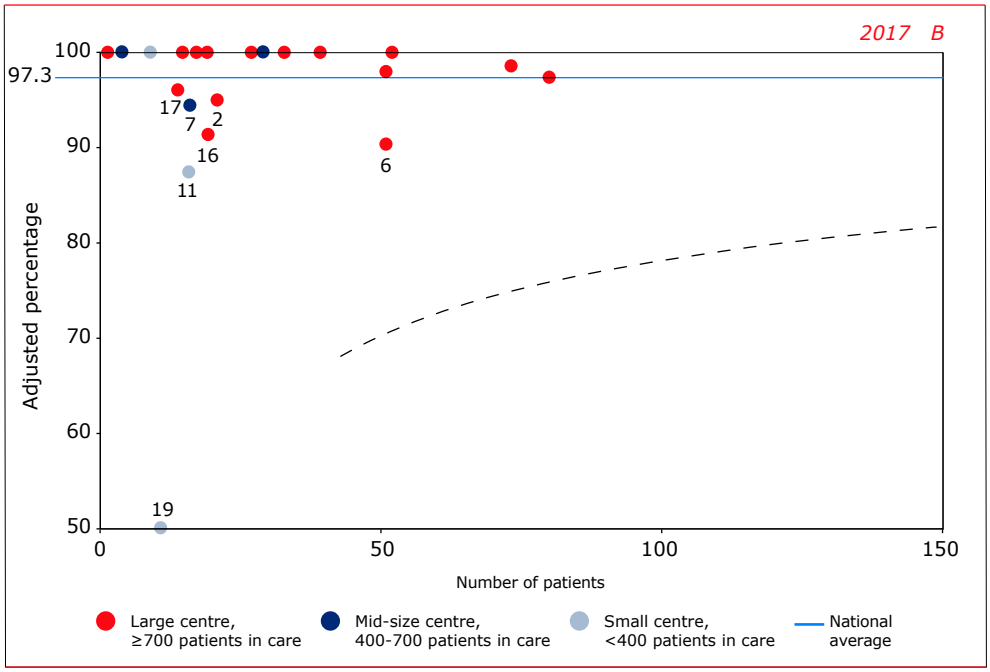


Legend: *Data points are labelled with centre numbers below the national average, which correspond to Figure 7.1. The "lower" boundary of expected percentage retained in care (as compared to the national average) is indicated with a dashed line (Box 7.2); no centre falls below this line.*

Among those who remained in care in 2018, the vast majority had initiated cART (across-centre median = 98%). This percentage was greater than 95% in all centres. *Figure 7.5* shows the adjusted percentages of patients in care in 2018 who had started cART per centre. All percentages were within the expected range when compared to the national average.

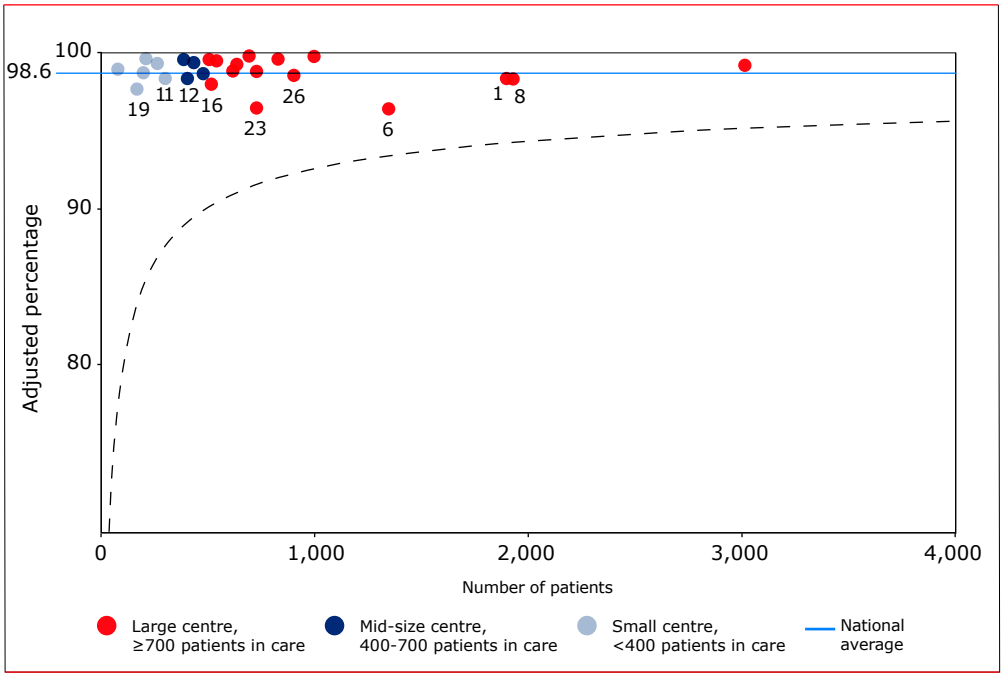
Figure 7.5: *The overall percentage of patients who entered care in A) 2016 and B) 2017 and started combination antiretroviral therapy (cART) within 6 months after entry. The percentage of individuals starting cART has been adjusted for patient mix and plotted as a function of the number of patients entered into care.*





Legend: *Data points are labelled with centre numbers below the national average, which correspond to Figure 7.1. The "lower" boundary of expected percentage retained in care (as compared to the national average) is indicated with a dashed line (Box 7.2); no centre falls below this line.*

Figure 7.6: The percentage of patients who entered care and who ever initiated cART and were still in care in 2018. The percentage of individuals starting cART has been adjusted for patient mix and plotted as a function of the number of patients still in care in 2018.

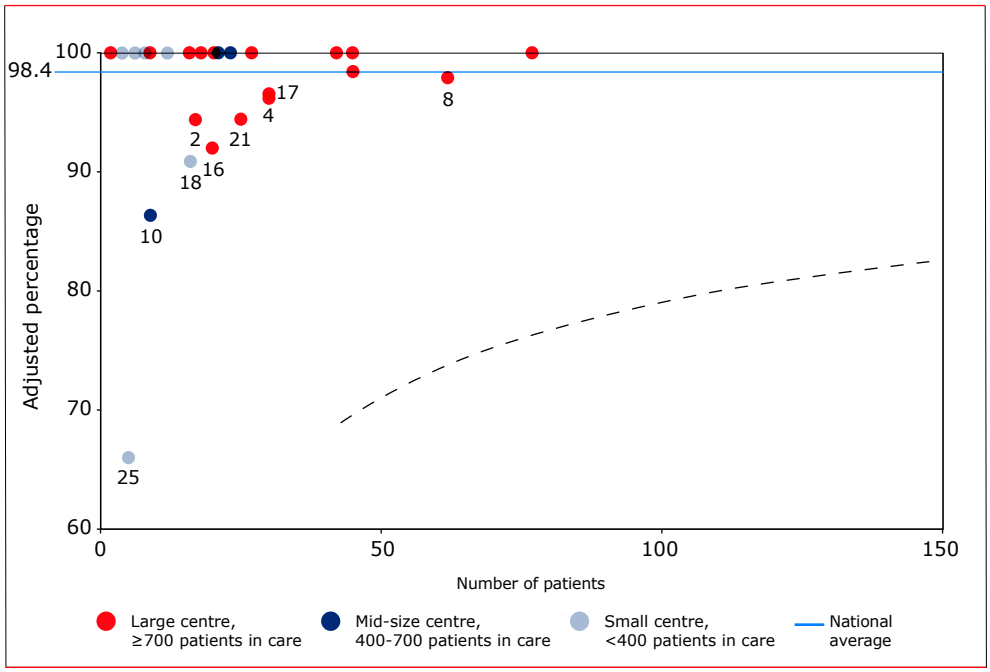


***Legend:** Data points are labelled with centre numbers below the national average, which correspond to Figure 7.1. The "lower" boundary of expected percentage retained in care (as compared to the national average) is indicated with a dashed line (Box 7.2); no centre falls below this line.*

Viral suppression

Viral suppression was assessed with *three* indicators. The *first* indicator is the percentage of treatment-naive patients with an HIV RNA level <400 copies/ml 6 months (minimum and maximum: 3-9 months) after the start of cART of patients newly initiating treatment in 2017, with follow up in 2018. The unadjusted percentage was 100% for 16 treatment centres and less than 90% (the minimum target of this indicator) for two centres. *Figure 7.7* shows the across-centre variation in adjusted percentage of patients who achieved viral suppression. This figure demonstrates that all centres with at least 40 patients newly initiating treatment in 2017 had adjusted percentages well within the expected range when compared to the national level.

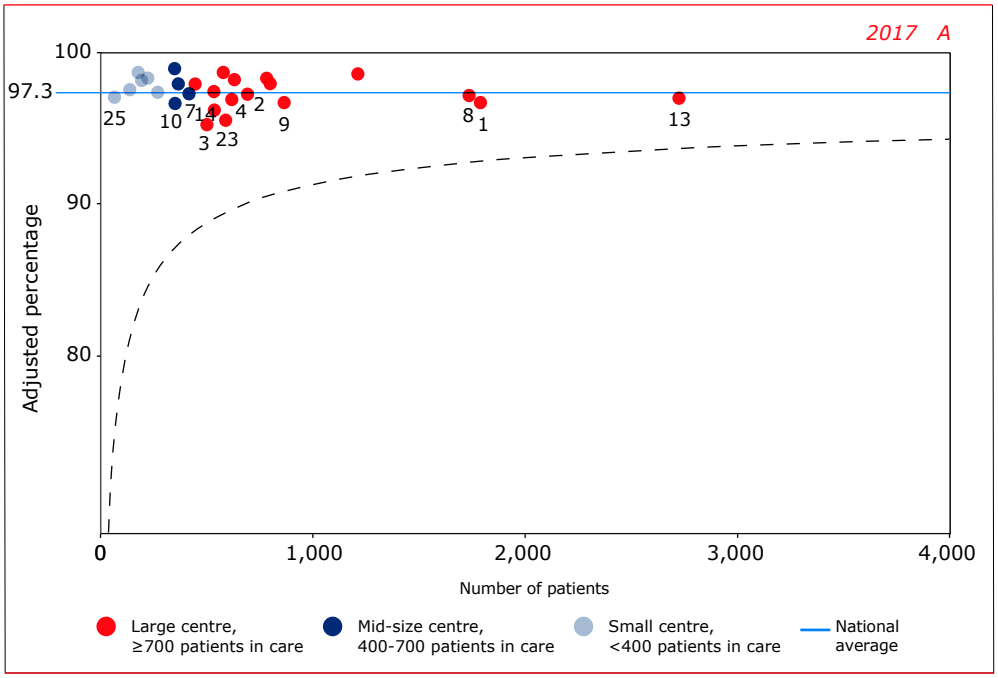
Figure 7.7: Percentage of treatment-naive patients with a plasma HIV RNA level <400 copies/ml at 6 months (minimum and maximum: 3-9 months) after having newly-initiated combination antiretroviral therapy (cART) in 2017 across all HIV treatment centres. The percentage of individuals with viral suppression has been adjusted for patient mix and plotted as a function of the number of patients newly initiating cART in 2017.

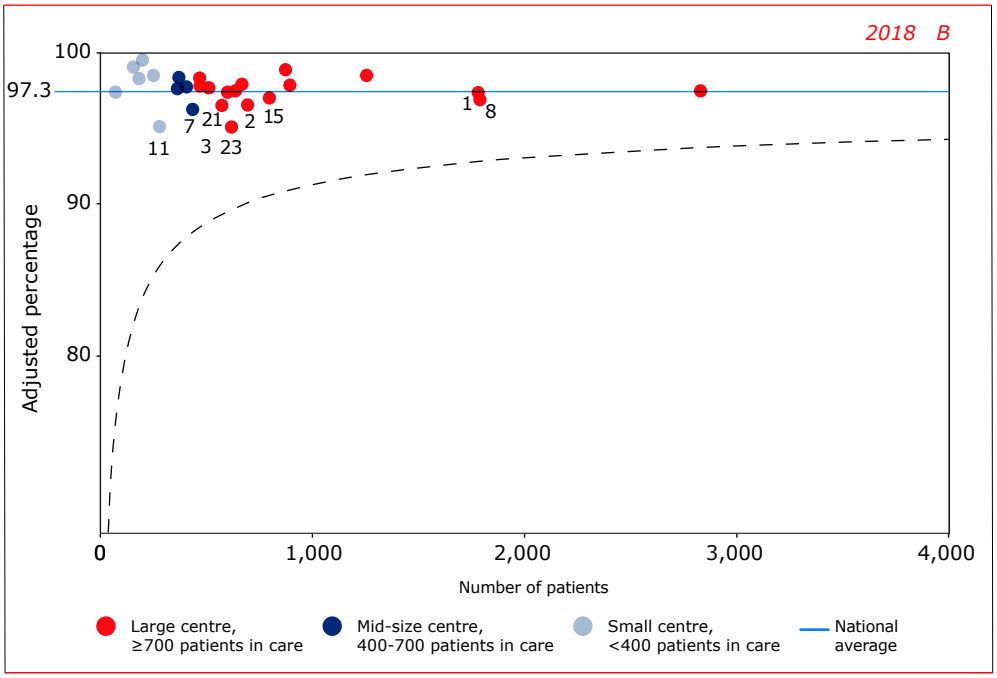


Legend: The "lower" boundary of expected percentage retained in care (as compared to the national average) is indicated with a dashed line (Box 7.2); no centre falls below this line. Data points are labelled with centre numbers below the national average, which correspond to Figure 7.1.

The *second* viral suppression indicator is the percentage of all HIV-positive patients in care who have been on cART for at least 6 months and have a last available HIV RNA level <100 copies/ml. This indicator was calculated for the calendar years 2017 and 2018. In both calendar years, the median unadjusted percentage was more than 90% (the minimum target of this indicator) across centres. *Figure 7.8A-B* shows the adjusted percentage of this viral suppression indicator per treatment centre, illustrating the limited variation across centres of different patient volume. All centres had adjusted percentages within the expected range when compared to the national level.

Figure 7.8: The percentage of all HIV-positive patients in care in A) 2017 and B) 2018, respectively, who had been on combination antiretroviral therapy (cART) for at least 6 months and who had an HIV RNA level <100 copies/ml. The percentage of individuals with viral suppression has been adjusted for patient mix and plotted as a function of the number of patients in care in 2017 and 2018 who had been on cART for at least 6 months.

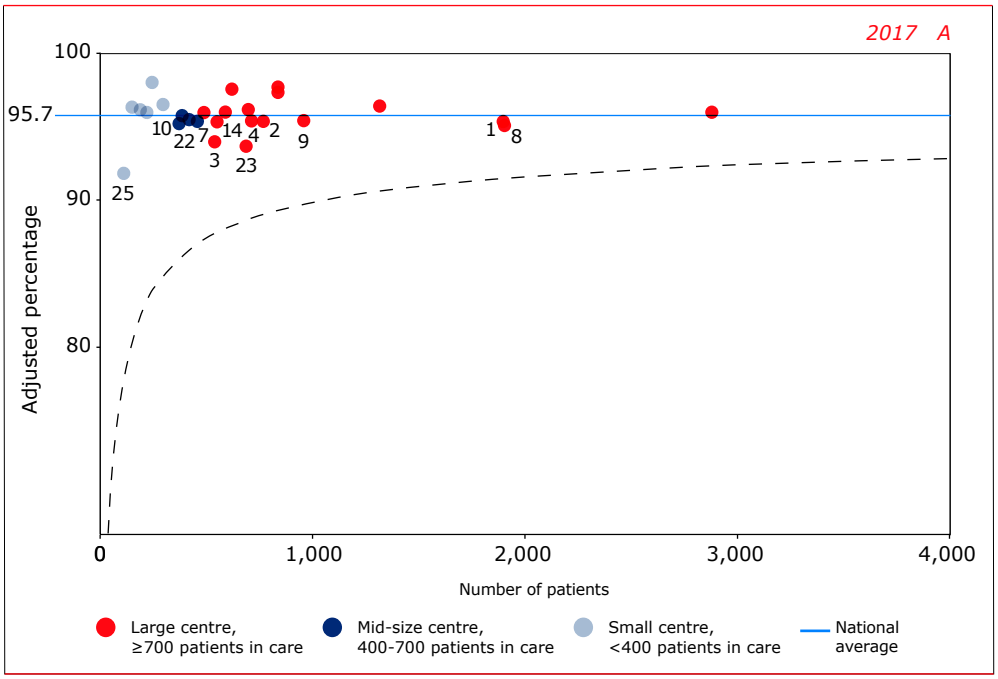


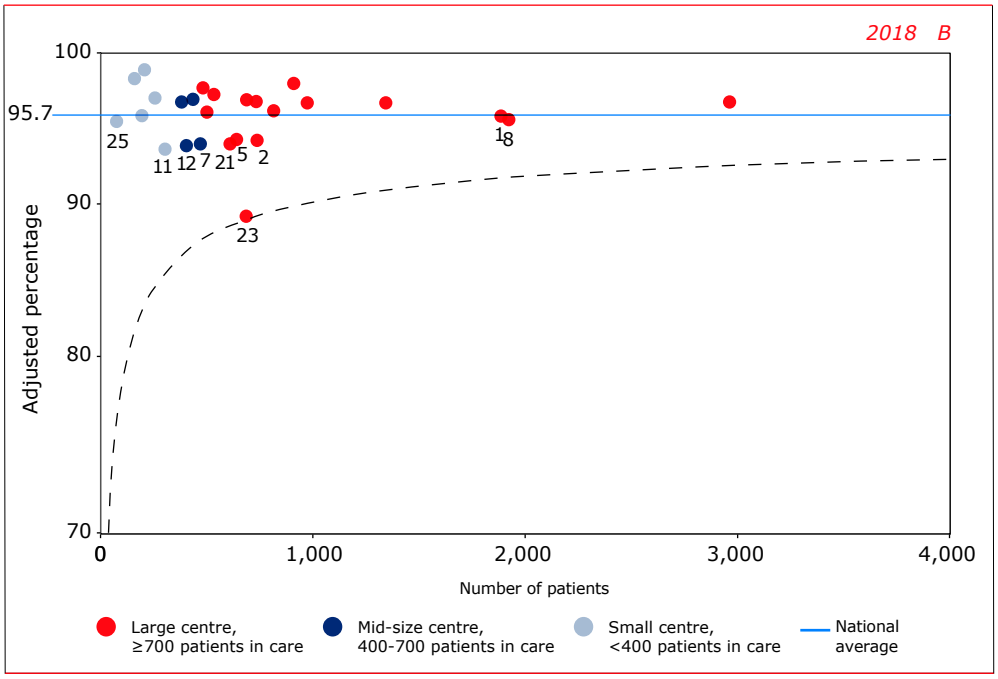


Legend: *Data points are labelled with centre numbers below the national average, which correspond to Figure 7.1. The "lower" boundary of expected percentage retained in care (as compared to the national average) is indicated with a dashed line (Box 7.2); no centre falls below this line.*

The *third* viral suppression indicator is the percentage of all HIV-positive patients in care who have a last available HIV RNA level <100 copies/ml. This indicator was calculated for the calendar years 2017 and 2018 and for all individuals who had an HIV RNA measurement (percentage without HIV RNA measurements: 1.6% in 2017 and 1.8% in 2018). Across centres, the median unadjusted percentage was 97% (range = 95 – 99%) in 2017 and 98% (range = 94 – 99%) in 2018. *Figure 7.9A-B* shows the adjusted percentage of this viral suppression indicator per treatment centre. All centres had adjusted percentages within the expected range when compared to the national level.

Figure 7.9: The percentage of all HIV-positive patients in care in A) 2017 and B) 2018, respectively, who had an HIV RNA level <100 copies/ml. The percentage of individuals with viral suppression has been adjusted for patient mix and plotted as a function of the number of patients in care in 2017 and 2018.





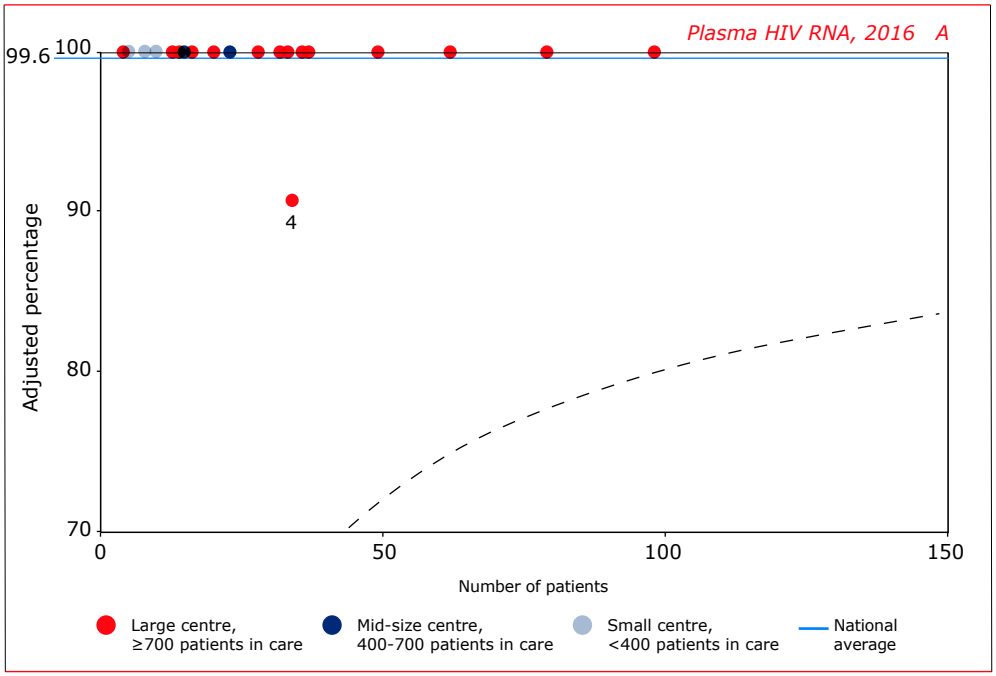
Legend: Data points are labelled with ccentre numbers below the national average, which correspond to Figure 7.1. The "lower" boundary of expected percentage retained in care (as compared to the national average) is indicated with a dashed line (Box 7.2); no centre falls below this line.

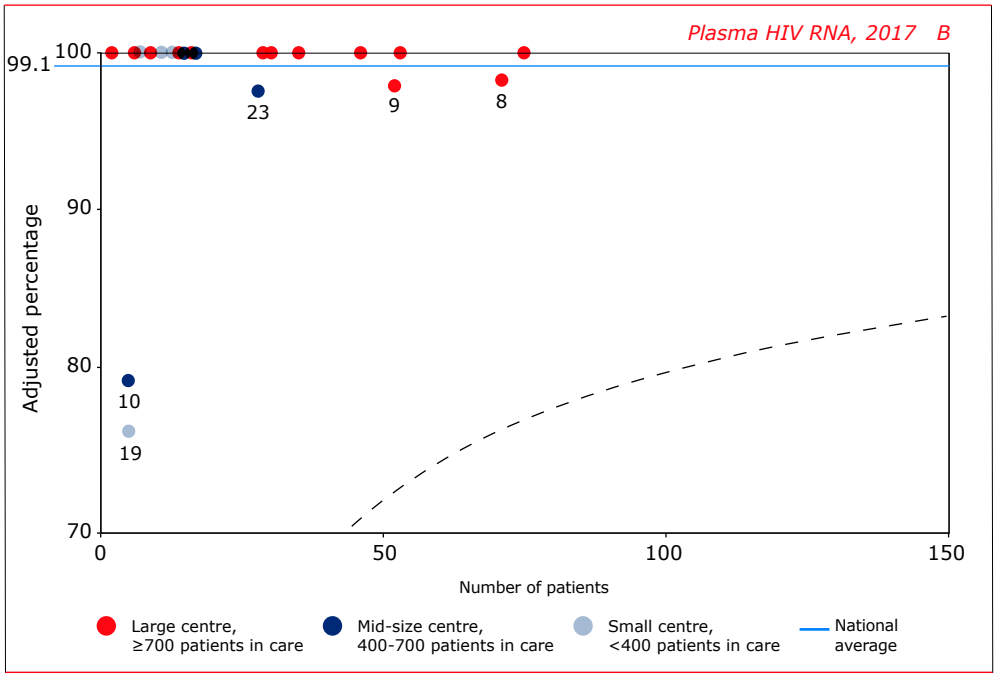
Process indicators

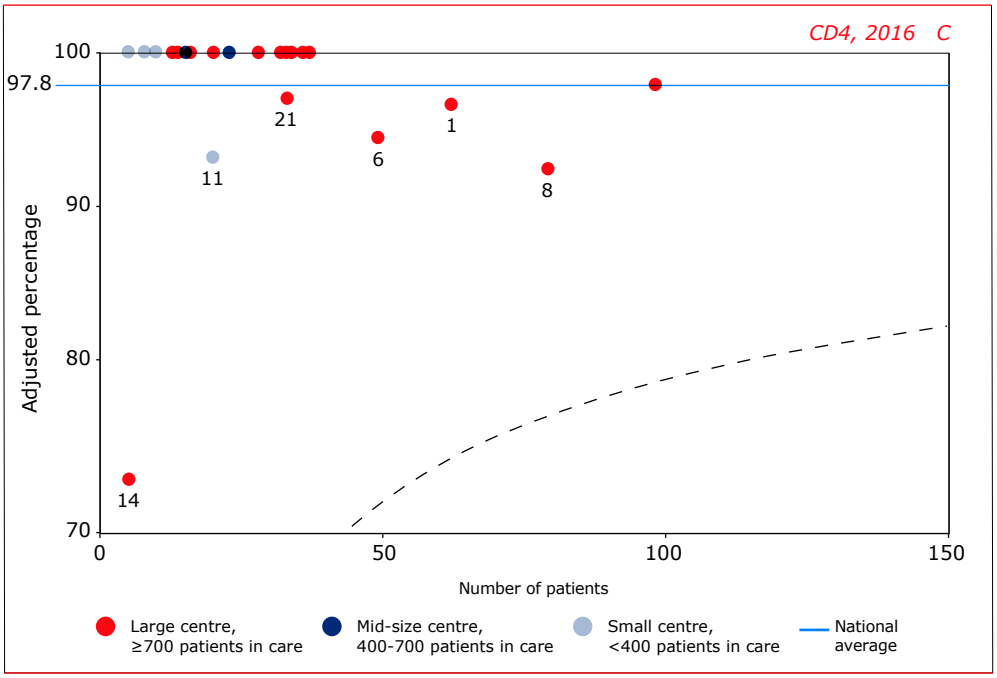
Prior to starting cART

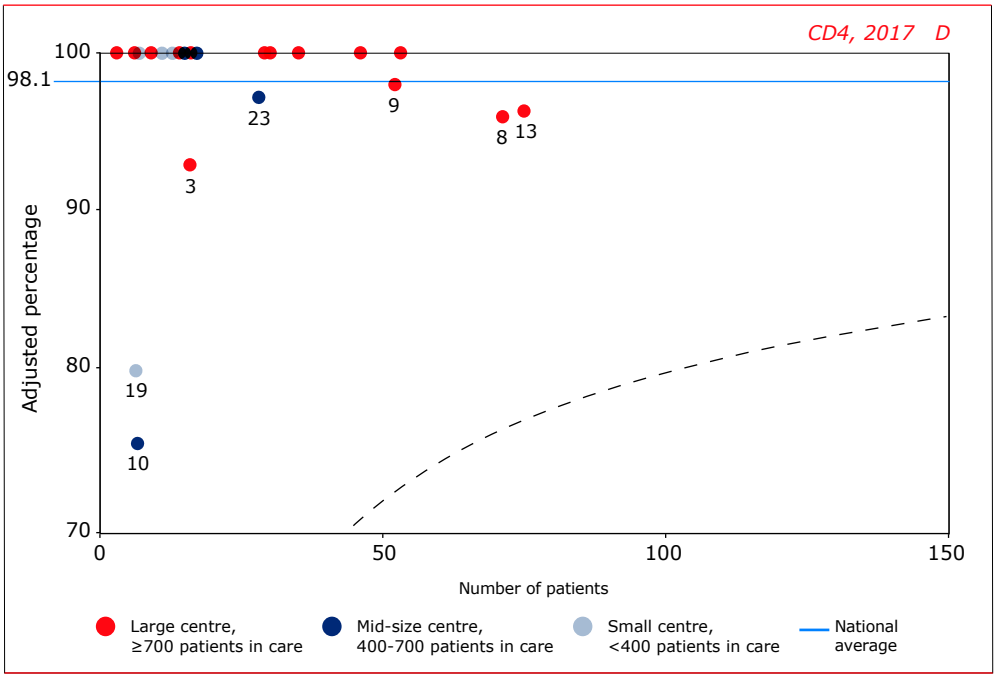
Process indicators were evaluated in patients who newly entered care in 2016 and 2017. Across centres, the median unadjusted percentage of these individuals having been tested for plasma HIV RNA and CD4 cell count within 6 months after entering care were respectively 100% (range = 91 – 100%) and 100% (range = 75 – 100%) in 2016 and 100% (range = 80 – 100%) and 100% (range = 80 – 100%) in 2017. *Figure 7.10A-D* shows the across-centre variation in adjusted percentage of individuals who had plasma HIV RNA and CD4 cell count measurements. This figure demonstrates that all centres with at least 40 patients entering care in 2016 and 2017 had adjusted percentages within the expected range when compared to the national level.

Figure 7.10: The percentage of patients who newly entered care in Dutch HIV treatment centres in 2016 and 2017, respectively, with assessment within 6 months of (A, B) plasma HIV RNA and (C, D) CD4 cell count. The percentage of individuals with plasma HIV RNA and CD4 cell count measurements has been adjusted for patient mix and plotted as a function of the number of patients entered into care.




Plasma HIV RNA, 2017 B
99.1
100
90
80
70
Adjusted percentage
23
9
8
10
19
0
50
100
150
Number of patients
Large centre, ≥700 patients in care
Mid-size centre, 400-700 patients in care
Small centre, <400 patients in care
National average


CD4, 2016 C
97.8
100
90
80
70
Adjusted percentage
21
1
6
11
8
14
0
50
100
150
Number of patients
Large centre, ≥700 patients in care
Mid-size centre, 400-700 patients in care
Small centre, <400 patients in care
National average

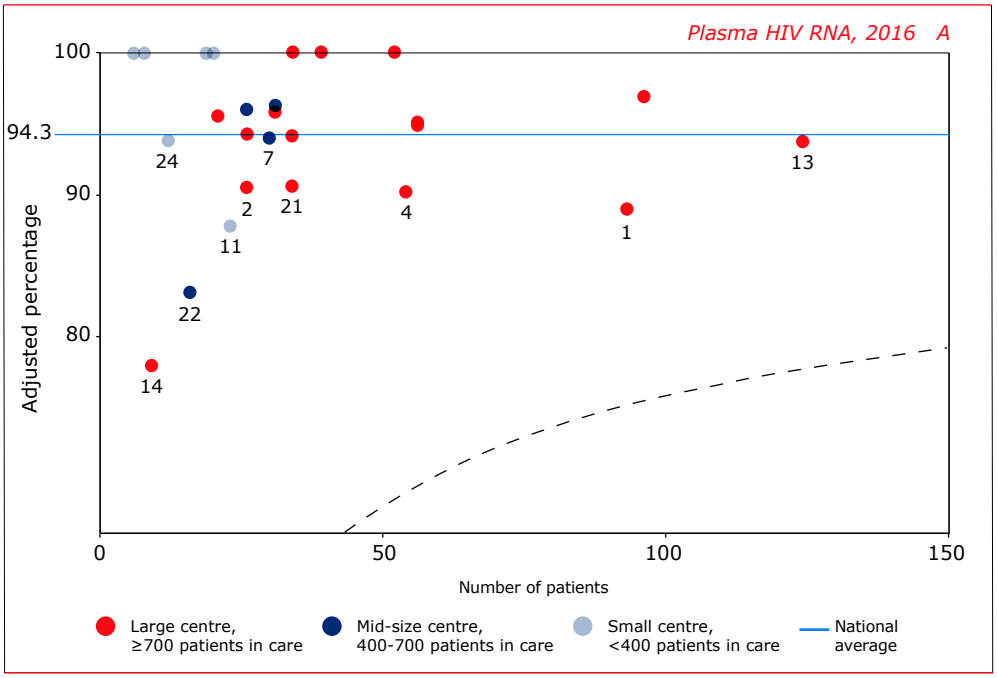


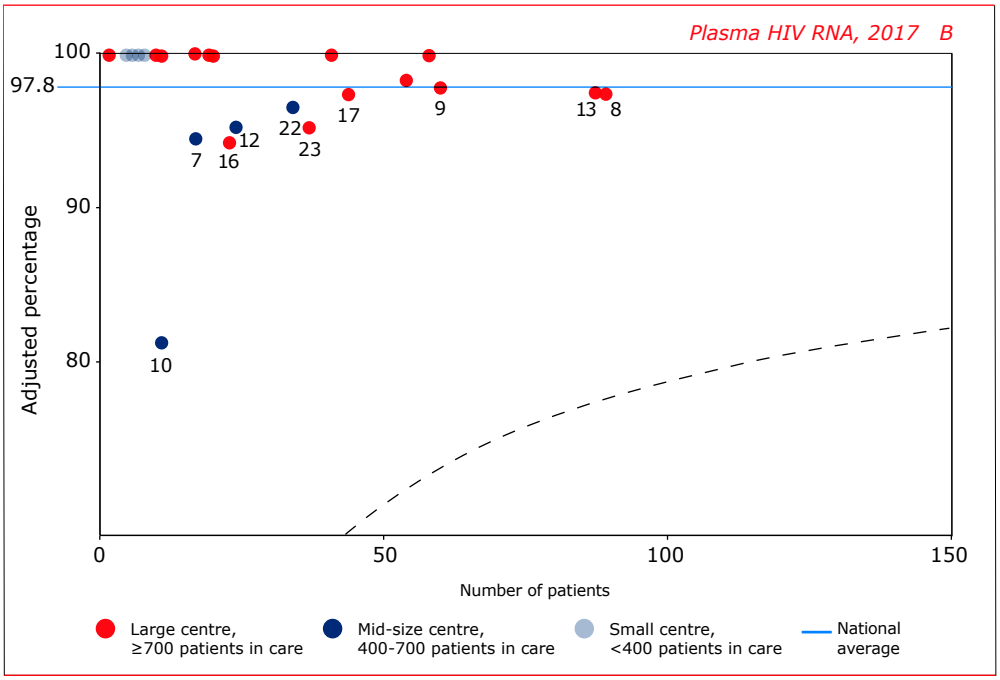
Legend: *Data points are labelled with centre numbers below the national average, which correspond to Figure 7.1. The "lower" boundary of expected percentage retained in care (as compared to the national average) is indicated with a dashed line (Box 7.2); no centre falls below this line.*

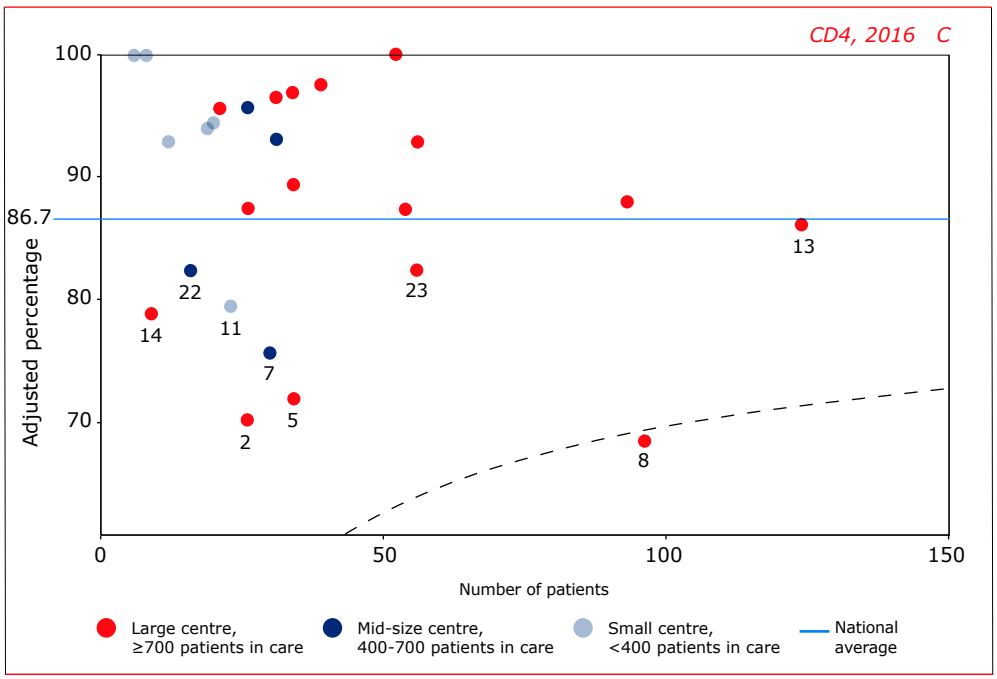
Following the start of cART

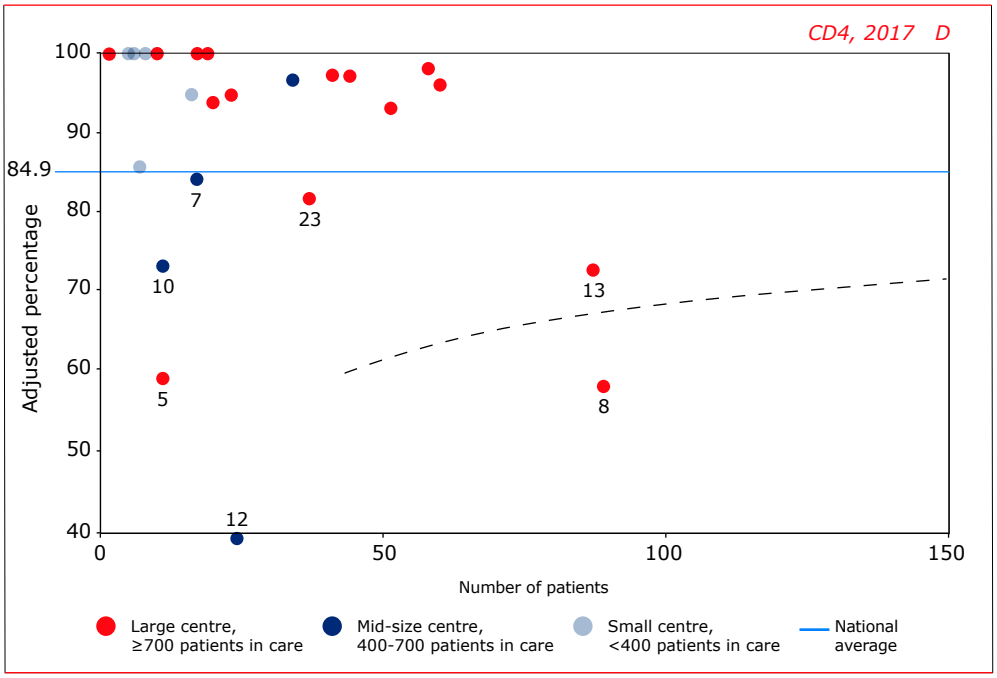
Process indicators were evaluated in patients who initiated cART in 2016 and 2017. Across centres, the median unadjusted percentage of these individuals having been tested for plasma HIV RNA and CD4 cell count within 13 months after initiating cART were respectively 95% (range = 78 – 100%) and 90% (69 – 100%) in 2016 and 100% (range = 82 – 100%) and 96% (58 – 100%) in 2017. *Figure 7.11A-D* shows the across-centre variation in adjusted percentage who had plasma HIV RNA and CD4 cell count measurements. This figure demonstrates that almost all centres with at least 40 patients entering care in 2016 and 2017 had adjusted percentages within the expected range when compared to the national level. One large-volume centre had a lower-than-expected percentage of individuals measured for CD4 cell count within 13 months after initiating cART in 2016 and 2017.

Figure 7.11: The percentage of patients in HIV treatment centres in the Netherlands who initiated combination antiretroviral therapy (cART) in 2016 and 2017, respectively, with assessment of (A, B) plasma HIV RNA and (C, D) CD4 cell count. The percentage of individuals with plasma HIV RNA and CD4 cell count measurements has been adjusted for patient mix and plotted as a function of the number of patients who initiated cART in 2016 and 2017.




Plasma HIV RNA, 2017 B
100
97.8
90
80
Adjusted percentage
10
7
16
12
22
23
17
9
13
8
0
50
100
150
Number of patients
Large centre, ≥700 patients in care
Mid-size centre, 400-700 patients in care
Small centre, <400 patients in care
National average


CD4, 2016 C
100
90
86.7
80
70
Adjusted percentage
14
22
11
7
2
5
23
13
8
0
50
100
150
Number of patients
Large centre, ≥700 patients in care
Mid-size centre, 400-700 patients in care
Small centre, <400 patients in care
National average



Legend: *Data points are labelled with centre numbers below the national average, which correspond to Figure 7.1. The "lower" boundary of expected percentage retained in care (as compared to the national average) is indicated with a dashed line (Box 7.2); only one large-volume centre falls below this line.*

Comparison between treatment centres and benchmarking

SHM has provided HIV treatment centres with the outcomes of centre-specific, ZiZo and HKZ-approved indicators since 2011. However, in 2017 and 2019, SHM also provided each centre with a number of the indicators described in this chapter in a manner that allowed the centres to compare their indicators with the blinded scores of other centres. Subsequently, several centres approached SHM for more specific data regarding their scores.

In the context of quality of HIV care in the Netherlands, the data presented in this chapter may serve as a useful benchmark, which centres can use to identify potential aspects for improvement. It is likely too early to observe an effect of this benchmarking, as most of the recent indicator scores are only reported through 2017. Although performance in terms of the HKZ indicator 'short-term viral suppression' is generally high, two small centres failed to achieve a score greater than 90% in 2017.

This year each treatment centre will again be provided with their unadjusted or adjusted centre-specific indicators benchmarked against the blinded scores of all other centres.

Key findings and conclusions

The most important findings of this comparison of quality indicators between HIV treatment centres in the Netherland are as follows:

- In 2018, 7 HIV treatment centres did not meet the criterion of seeing a minimum of 20 new patients per year, as required by the current HKZ standards for HIV treatment centres in the Netherlands. Five of these 7 centres had already failed to meet this particular criterion in 2017. Further discussion about the appropriateness of this standard seems warranted.
- After exclusion of patients who had died or moved abroad, both short-term and long-term retention-in-care rates are generally high. This is also the case when adjusting for patient mix.
- The percentage of patients initiating cART within 6 months after entering care has remained high for those entering care in 2016 and 2017, maintaining a median of 100%. The overall coverage of cART in 2018, regardless of time since entering care, is high across all centres despite variation in centre volume and patient mix.
- Viral suppression rates in the first 6 months on cART, as well as during longer term use of cART, were high across all HIV treatment centres in the Netherlands, regardless of centre volume and patient mix.
- Across centres, the median percentage of all patients in care with an HIV RNA level <100 copies/ml was 97% in 2017 and 98% in 2018. There was little variation in this percentage across centres after adjusting for patient mix.
- For every indicator, all centres were within the statistically expected range from the national average, while accounting for centre volume and patient mix, with only one exception.
- The wide range of indicators used in these analyses offers broad coverage of various aspects of HIV care and provides insight into care provision among the different treatment centres. Nonetheless, data reliability remains an important issue, and it should be recognised that, incidentally, some of the reported variation may be due to missing data.
- The funnel plots provide a statistical interpretation of whether a centre performs within the expected range of the national average. Unfortunately, this interpretation becomes less reliable when a centre has only a limited number patients to be included in the indicator (i.e., less than 40 for the purpose of this report). Considering that many centres had fewer than 40 patients newly

entering care in 2016-2018, they could not be feasibly compared to the national average. We therefore urge caution when comparing indicators of these small centres to the national average or even to fixed levels (e.g., 90%).

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5. Solomon L, Flynn C, Lavetsky G. Managed care for AIDS patients: is bigger better? *J Acquir Immune Defic Syndr*. 2005;38(3):342-347.
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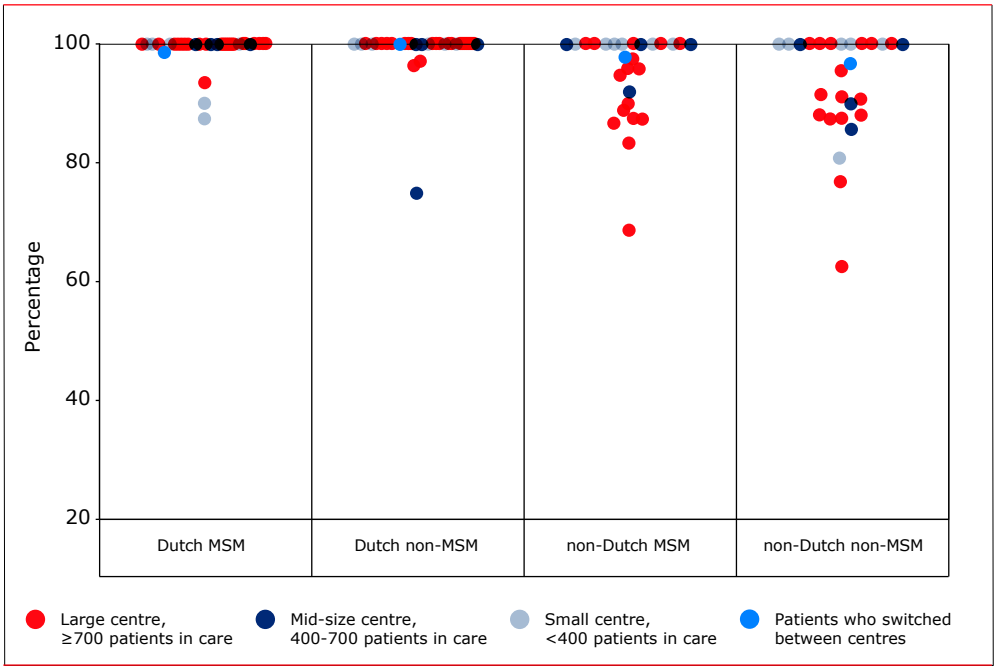
Appendix: supplementary figures

Appendix Figure 7.1: Short-term retention-in-care by HIV transmission group and patients' region of origin for those who entered care between 2015-2016.



Legend: MSM=men who have sex with