

## Impact of coronavirus pandemic and containment measures on HIV diagnosis

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Abstract:	During the last months and following the implementation of containment measures in the context of COVID-19 pandemic, the number of new HIV diagnoses radically decreased in Liege AIDS Reference Center, Belgium. The number of HIV screening tests has also dramatically dropped down to an unprecedented level. This decline of HIV diagnosis is caused by missed diagnoses of individuals infected before the establishment of such measures and to the reduction of high-risk sexual behaviors during the COVID-19 pandemic.

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34 **13**

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36 **14 Abstract**  
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39 **15 During the last months and following the implementation of containment measures in the**  
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41 **16 context of COVID-19 pandemic, the number of new HIV diagnoses radically decreased in Liege**  
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43 **17 AIDS Reference Center, Belgium. The number of HIV screening tests has also dramatically**  
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45 **18 dropped down to an unprecedented level. This decline of HIV diagnosis is caused by missed**  
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53 **21 Keywords**  
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56 **22 COVID-19 pandemic, HIV screening, HIV diagnosis**  
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## 24 **Impact of COVID-19 pandemic and containment measures on HIV diagnosis**

25 The COVID-19 pandemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-  
26 CoV-2) has already affected more than 20 million people in more than 200 countries and  
27 territories and resulted in more than 700,000 deaths (1). Most countries around the world  
28 have implemented a range of community containment strategies to prevent transmission of  
29 SARS-CoV-2. Health care systems have been dramatically changed by the crisis with the  
30 worthy objectives of facing ingoing flows of infected patients, reducing nosocomial  
31 transmission and protecting health care providers. Coronavirus disease (COVID-2019) has also  
32 become the top differential diagnosis in any person with flu-like symptoms, leading to a rapid  
33 isolation of at-risk patients with testing of SARS-CoV-2. Altogether, those practices eventually  
34 mitigate the outbreak in several countries in Europe, including Belgium (2).

35 The first SARS-CoV-2 transmissions in Belgium were described at the beginning of March 2020.  
36 The pandemic then rapidly increased, making Belgium one of the world's worst affected  
37 countries in terms of the number of deaths per capita. Belgian authorities gradually  
38 implemented containment measures from 13 March (e.g. closure of schools, discos,  
39 restaurants, and the cancellation of all public gatherings). Additional measures were imposed  
40 from 18 March with penalties for individuals who did not respect the restrictions. Citizens  
41 were required to stay at home to avoid contact outside of their family, except for essential  
42 travel (e.g. to the doctor, food shops, pharmacy).

43 The coronavirus pandemic and containment measures dramatically affected the Belgian  
44 health care system, including HIV screening. In our center of Liege University Hospital,  
45 Belgium, a mean of 8.4 new diagnoses have been made monthly during the last 15 months  
46 (Table 1). About 1000 HIV screening tests are performed every month (Table 1). However,  
47 since the beginning of the SARS-CoV-2 pandemic and the implementation of strict

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3 48 containments measures, the number of HIV screening tests and diagnoses dramatically  
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6 49 decreased (Table 1).  
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8 50 This is likely a multifactorial phenomenon. The rapid decline of HIV diagnoses, which directly  
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11 51 followed the beginning of the SARS-CoV-2 pandemic, is most likely caused by missed  
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13 52 diagnoses of individuals infected before the establishment of such measures. In addition to  
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15 53 well-known barriers to HIV screening (e.g. fear, stigma), the SARS-CoV-2 pandemic was indeed  
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18 54 the cause of additional hurdles to HIV testing at different levels.

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20 55 From an individual perspective, fear of getting COVID-19 at the hospital or in facilities where  
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23 56 HIV screening test can be done is one of them. Testing for HIV would also add more stress to  
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25 57 an already stressful situation. Moreover, the symptoms related to HIV infection could have  
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28 58 been misinterpreted as caused by SARS-CoV-2. High rates of missed opportunities for HIV  
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30 59 diagnosis have previously been reported, highlighting the ongoing need for physician  
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33 60 education on HIV testing and clinical signs suggestive of HIV infection (3, 4). This is likely to be  
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35 61 exacerbated in the context of COVID-19 pandemic.

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37 62 From an organizational perspective, the reduction of public transport and the work overload  
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40 63 in infectious diseases units as well as virology laboratories could have created other barriers  
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42 64 to HIV testing.

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45 65 At the community and societal level, SARS-CoV-2 infection has been in the spotlight, while  
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47 66 communication about other diseases including HIV has been poorly perceptible.

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50 67 Finally, a reduction of high-risk sexual behaviors associated with containment measures such  
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52 68 as closing of gathering places has possibly contributed to the decrease of new HIV diagnoses.

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54 69 In conclusion, the SARS-CoV-2 pandemic and associated containment measures will result in  
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57 70 a transient decrease of HIV incidence. However, it could also favor late diagnosis, an issue that  
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59 71 was already described before the dramatic events we are currently dealing with (3, 4).  
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72 Given the importance of rapid HIV diagnosis, public health communications should highlight  
 73 that effective HIV care is readily and safely available despite SARS-CoV-2 pandemic, that early  
 74 diagnosis of HIV improves health outcomes, and that HIV infection can mimic other infectious  
 75 diseases including SARS-CoV-2 infection.

77 **Table 1 Number of HIV screening tests and HIV new diagnoses, per month, in Liege**

78 **University Hospital**

Month	Number of HIV screening tests	Number of HIV diagnoses
January-19	1161	13
February-19	1026	8
March-19	1011	7
April-19	943	11
May-19	996	7
June-19	979	5
July-19	972	7
August-19	874	13
Sept-19	978	13
Oct-19	1108	8
Nov-19	1025	9
Dec-19	970	9
January-20	1046	6
February-20	925	8
March-20	634	10
<b>Median (IQR)</b>	<b>979 (943 ; 1026)</b>	<b>8 (7 ; 11)</b>
April-20	306	2
May-20	497	2
<b>Median (IQR)</b>	<b>401* (306 ; 497)</b>	<b>2** (2 ; 2)</b>

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 80 Poisson regression

81 \*  $p < 0.0001$

82 \*\*  $p = 0.0032$

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84 **List of abbreviations**

85 HIV: Human Immunodeficiency Virus

86 COVID-19: Coronavirus disease 2019

87 SARS-CoV-2: Severe acute respiratory syndrome coronavirus 2

88 AIDS: acquired immune deficiency syndrome

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3 90 **Declarations**

4 91  
5 92 **Ethics approval and consent to participate**

6 93 NA

7 94 **Consent for publication**

8 95 NA

9 96 **Availability of data and materials**

10 97 All data generated or analysed during this study are included in this published article

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12 99 The authors declare that they have no competing interests

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16 103 All authors contributed to the writing of the manuscript

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21 108 **References**

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