

# Basic knowledge among GP trainees regarding HIV pre- and post-exposition-prophylaxis

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## ABSTRACT

**Introduction:** Preventing human immunodeficiency virus (HIV) infection is central to containing the HIV pandemic. For pre- and post-exposure prophylaxis (PrEP and PEP), drugs approved in Germany are available. Basic information on this should be obtained from physicians in further training to become specialists in General Practice (GP) since they may have to deal with this topic of high relevance for the health of patients at risk and also the physicians' health after a possible exposure in the professional context. **Methodology:** A multiple-choice questionnaire was handed out to doctors in further training in General Practice on seminar days of the Competence Centre for General Practice Saxony-Anhalt for an immediate answer. **Results:** Of the 109 doctors, 73 completed the questionnaire. A general high relevance of the topic HIV was stated by 95%. In contrast, 71% said it was relevant for family doctor activities. The knowledge questions on the prevalence were answered correctly for all questions with less than 40%; 21% stated that they knew the indication prerequisite for a PEP; 49% answered the question about the period of the highest efficacy of PEP correctly. PrEP as a drug option for prophylaxis is known to a part of the respondents, 79% would prescribe PrEP, 69% were in favour of a health insurance benefit. **Discussion:** The results show that the necessary basic knowledge about HIV is partly available. Basic knowledge on structured action in the fields of HIV testing, PEP and PrEP should be taught in a manner appropriate to the relevance of the topic in the context of the German general practice setting. Even a basic knowledge about PEP may help to ensure that the general practice teams receive proper measures after a possible exposition.

**Keywords:** General practice, HIV, HIV test, PEP, PrEP

## Introduction

According to the Robert Koch Institute, the estimated HIV prevalence in Germany is 86,200 people. This corresponds to about 0.1% of the German population. Of these, 74,800 people have been diagnosed with HIV; 68,000 HIV-positive people are treated with medication; 18,000 are not treated for various reasons and about 11,400 of them have an HIV infection without knowing it themselves.<sup>[1]</sup>

With about 44,000 general practitioners in Germany,<sup>[2]</sup> one can expect to see an HIV-infected person without knowing their

status. It seems understandable that this cannot be a regularly frequent event in the General Practice (GP) practice. The most frequent transmission route of the HIV is unprotected sexual intercourse, vaginal and anal. The transmission probability is particularly high for MSM (men having sex with men),<sup>[3]</sup> followed by intravenous drug use and mother-to-child transmission. In the first week after the infection, the likelihood of infection is particularly high. The viral load then drops again and remains at a low level for several years.<sup>[4]</sup> Only when the immune deficiency is advanced and clinical symptoms occur, which can lead to the use of health care services, does the viral load increase and with it the infectivity again. An HIV infection is often diagnosed too late. In Germany, HIV-infected persons often only see a doctor when the immune system is already very weak.<sup>[5]</sup> Worldwide, about every second HIV-infected person is only diagnosed when the CD4-cell count is below 350/μL or when acquired

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immune deficiency syndrome (AIDS)-defining diseases such as Pneumocystis-jirovecii-Pneumonia, Toxoplasmosis-Encephalitis, Candida-infections of the lungs or a Kaposi sarcoma are already present.<sup>[6]</sup> A wide German study by the Robert Koch Institute has shown that the proportion of “late presenters” is 49.5% at the time of the initial diagnosis.<sup>[7]</sup> Late presentation is associated with higher mortality, more hospitalisations, higher risk of neurocognitive deficits, and non-AIDS-defining diseases, lower chance of complete viral suppression, higher costs, higher probability of immune reconstitution inflammatory syndrome (IRIS), higher risk of transmission, lower quality of life, etc.<sup>[8]</sup>

If a risk contact, such as a needlestick injury or unprotected sexual intercourse has occurred, HIV post-exposure prophylaxis (PEP) should be considered in addition to immediate measures.<sup>[9-11]</sup>

Since autumn 2016, a drug for HIV pre-exposure prophylaxis (PrEP) has been available after its launch and EU approval.<sup>[12,13]</sup> This oral drug form achieves the reduction of the probability of HIV transmission by taking systemically effective antiviral agents in HIV-negative persons.<sup>[14,15]</sup> A reduction of 92% in the likelihood of infection has been proven when used correctly and in a controlled manner in persons with an increased risk.<sup>[16-18]</sup>

On March 14, 2019, the German Bundestag decided that drugs to prevent infection with the HI virus (PrEP) for people with an increased risk of infection will be covered by statutory health insurance.<sup>[19]</sup> It would be possible to use this method of prevention in practice.

Our work aimed to investigate the knowledge of the epidemiological facts about HIV in Germany and PEP and PrEP among prospective general practitioners.

## Methodology

The survey instrument used was a questionnaire (see Appendix) with multiple-choice questions developed by the authors themselves, which was revised in advance by scientific specialists in general practice. A pre-test or pilot test was not necessary because of good comprehensibility.

The questionnaire was completed in July and September 2019. Doctors in further training to become specialists in GP were given the questionnaire during seminar days for immediate answering.

In addition to age, gender and year of training, the general attitude towards HIV as well as knowledge about prevalence, PEP and PrEP and questions about HIV testing in general practice were asked. Only raw results were presented—a descriptive and inferential statistical evaluation was not carried out.

## Results

Of the 109 participants present at the training, 73 completed the questionnaire. This corresponds to a response rate of 67%, 69%

of the responding participants were females. Most participants were in the age group of 30–39 ( $n = 39$ ; 56%), followed by the age group 20–29 ( $n = 16$ ; 23%), the remaining  $n = 14$  were 40 years or older ( $n_{\text{valid}} = 69$ ). The information in which training year the participant is located is distributed evenly over training years 1–5. The question of the general relevance of the topic of HIV was rated by 95% ( $n = 69$ ) as very relevant and relevant, while 71% ( $n = 50$ ) rated the relevance of the topic of general practice as very relevant and relevant, 29% ( $n = 20$ ) rated the topic as not very relevant ( $n_{\text{valid}} = 70$ ).

The information given in the knowledge questions on prevalence in Germany was correct: number of HIV-positive in Germany: 41% ( $n = 29$ ), HIV-positive in treatment: 21% ( $n = 15$ ) and HIV-positive without a diagnosis: 33% ( $n = 22$ ) ( $n_{\text{valid}} = 70$ ).

The subject area of HIV in their own everyday practice was answered as follows: 38% ( $n = 27$ ) reported having an HIV patient in their practice, 41% ( $n = 29$ ) do not have an HIV patient, for 21% ( $n = 15$ ) this was not applicable, e.g., because they were not working in their practice ( $n_{\text{valid}} = 71$ ); 40% ( $n = 28$ ) of the responding participants have not had an HIV test in the last 12 months; 57% ( $n = 40$ ) have arranged one to five HIV tests and 3% ( $n = 2$ ) have arranged six or more tests ( $n_{\text{valid}} = 70$ ). The reason for ordering HIV tests was answered with 53% ( $n = 30$ ) with “only at the request of the patient” or “predominantly at the request of the patient” and 47% ( $n = 27$ ) with “predominantly medical” or “exclusively medical” ( $n_{\text{valid}} = 57$ ).

About 79% ( $n = 56$ ) stated that they do not know under which conditions a PEP is indicated ( $n_{\text{valid}} = 71$ ); 48% ( $n = 33$ ) correctly answered the question about the time period in which the efficacy of the PEP after exposure is the highest ( $n_{\text{valid}} = 69$ ), 47% ( $n = 33$ ) correctly knew the fastest way to obtain the PEP ( $n_{\text{valid}} = 70$ ).

When asked whether there is an approved drug for PrEP in D, 56% ( $n = 40$ ) answered that they did not know; 17% ( $n = 17$ ) stated, “yes as a social health insurance (SHI) benefit”, 24% ( $n = 12$ ) answered “yes as a private benefit” ( $n_{\text{valid}} = 71$ ), 79% ( $n = 56$ ) would prescribe a PrEP ( $n_{\text{valid}} = 71$ ), 69% ( $n = 49$ ) were in favour of the PrEP being a SHI benefit ( $n_{\text{valid}} = 71$ ).

The question “HIV + PEP + PrEP—I want to know more about it” was answered by 96% ( $n = 68$ ) with yes ( $n_{\text{valid}} = 71$ ).

## Discussion

A majority of the prospective GPs correctly estimate the prevalence of HIV, a relevant proportion treats at least one patient with HIV in practice. Sufficient basic knowledge of PEP and PrEP is available in less than half of the responding participants.

With an HIV prevalence of 86,200 people in Germany<sup>[1]</sup> (about 0.1% of the population) and an average of about

1,000 patients/quarter/general practitioner,<sup>[20]</sup> a frequency of HIV-positive people of 1:1000 per general practitioner or a frequency of undetected HIV-positive people of 0.13:1000 per general practitioner can be assumed. It is, therefore, acceptable that the appearance of a patient with undetected HIV infection in the practice is not a regularly occurring event. On the other hand, this group of patients is of outstanding epidemiological importance in order to minimise the number of new infections and to achieve the WHO targets.<sup>[21,22]</sup> Through broader testing, many people infected with HIV could be treated earlier and the HIV epidemic could be contained by achieving the goals defined by the WHO.<sup>[23]</sup>

This results from the fact that otherwise affected patients often consult a doctor only at a late stage.<sup>[1]</sup> Conversely, doctors still too often fail to recommend an HIV test when symptoms or risk constellations are present. The German Aids Federation and the Association of Physicians in Private Practice in the Care of People with HIV have written a letter to the GPs in Germany, emphasising their importance in the detection of HIV infection, since they “play a key role”.<sup>[5]</sup> This importance requires a certain basic knowledge of GPs to fulfil the related tasks. Basic knowledge of HIV is completely sufficient for GPs<sup>[24]</sup> and seems appropriate in view of the low frequency of this problem in practice.

In addition to the publications describing HIV patients in practice<sup>[25,26]</sup> and questions of antibody testing,<sup>[27]</sup> the need for further training for GPs with regard to HIV was discussed in a 2008 paper.<sup>[28]</sup> In the discussion of this work, the following is described: “in everyday practice in general practice, not only the topic of an HIV infection but also the different types of prophylaxis have not yet been sufficiently considered.”<sup>[27,29,30]</sup> This is concordant with the knowledge we have established with regard to PEP and PrEP and the wish expressed by the responding participants for correspondingly appropriate content in further education or training. Thus, the topic of HIV is generally regarded as relevant, but no longer in this form for one’s work as a general practitioner; this seems understandable against the background of the frequency of the disease. Due to the high proportion of undetected patients in Germany and the associated late presentation, a higher priority in family practice would be desirable.<sup>[28]</sup> According to the respondents, HIV tests are rarely carried out in general medical practice. In about half of the cases, they are carried out at the significant request of the patient. Clear criteria when a test is recommended<sup>[31,32]</sup> are, therefore, probably not applicable.

The possibility of further infection of third parties by HIV-positive persons without a diagnosis can be reduced if a diagnosis is made, and, if necessary, therapy is provided. Here, the GP is helped by knowledge about the symptoms of HIV stage A (fresh HIV infection), HIV stage B (AIDS related complex [ARC]) and HIV stage C (AIDS—opportunistic infections/AIDS-defining diseases).<sup>[33,34]</sup> In stage A, the symptoms of the primary infection appear 3–6 weeks after the

transmission of HIV in 50–70% of the cases. The acute phase often goes unnoticed because the symptoms are confused with influenza or no symptoms occur.<sup>[35]</sup> Doctor-patient consultations to identify potential risks can play an important role. The German AIDS-Hilfe (DAH) offers a scientifically evaluated advanced training programme to improve doctor-patient communication in cooperation with various specialist agencies and institutions: “Let’s talk about sex”.

This would most likely lead to earlier status clarification, assignment to an HIV specialist and an improvement in the care situation of newly detected HIV patients. Stigmatisation should not have any room.<sup>[36]</sup>

The PEP is not only a suitable option for patients with unsafe sex, but also for medical staff, e.g., in case of needlestick injuries.<sup>[37]</sup> There are clear recommendations for action by the professional associations.<sup>[38]</sup> Quick and correct action is important to ensure that the “after-risk prevention” is successful. The prerequisites for a PEP, the period after exposure and the procurement route for the drug should be known in order to prevent new HIV infections. This is a rare but especially important aspect for the general practice teams and other health care providers.

Only a small part of the interviewees is aware of PrEP as a drug-based prophylactic option, and only a minority of the interviewees know the correct reimbursement scheme. However, this aspect appears secondary from a practical point of view, especially since the positive attitude towards PrEP—with regard to their prescription and the attitude to offer it as a health insurance service—is present. Here, GPs can successfully prevent HIV, as studies from the USA, England and Australia have shown.<sup>[39–42]</sup>

The wish of 96% of the respondents for more information shows the willingness to deal in this area. Appropriate further training with the transfer of basic knowledge and the resulting targeted action could be an additional instrument for reducing new HIV infections.

## Strengths and Weaknesses

The number of participants in this survey, with  $n = 73$  out of  $N = 109$ , can be classified as rather low; the response rate (67%) can be classified as satisfactory. The present results, therefore, only allow for a basic evaluation and cannot be generalised easily. Nor do the results necessarily reflect the level of knowledge and attitudes of GPs in private practice, as doctors in continuing education were interviewed in the present study. The authors are not aware of any similar studies that deal in particular with the current PrEP topic.

## Conclusion

The majority of prospective GPs correctly estimate the prevalence of HIV—a relevant proportion treats at least one

patient with HIV in practice. The treatment of HIV patients in general medical practice is more or less regularly frequent. Sufficient basic knowledge of PEP and PrEP is available in less than half of the responding physicians in continuing education. An improved basic knowledge and clear, basic strategies, especially in the areas of HIV testing, PEP and PrEP, could be suitable for preventing HIV infections both in general practice patients and caregivers. Suitable further training or structured materials could be useful for this purpose.

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## Conflicts of interest

There are no conflicts of interest.

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