

Provision of Test Results and Posttest Counseling at STD Clinics in 24 Health Departments: U.S., 2007

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ABSTRACT

Objective. We determined the demographic and HIV test characteristics of tests conducted in CDC-funded sexually transmitted disease (STD) clinics with provision of test results and posttest counseling.

Methods. We used CDC's HIV Counseling and Testing System data from 2007 for the 24 U.S. health departments that reported test-level data from STD clinics. We calculated and analyzed newly identified HIV positivity and the percentage of tests with provision of test results and posttest counseling (provision of posttest counseling), by demographic and HIV-related characteristics.

Results. Of 372,757 tests conducted among people without a previous HIV diagnosis by self-report, provision of posttest counseling was documented for 191,582 (51.4%) HIV tests overall and 1,922 (71.2%) newly identified HIV-positive test results. At these STD clinics, provision of posttest counseling varied by HIV serostatus, age, race/ethnicity, test type, and risk category; however, documentation of posttest counseling was missing for more than 20% of tests. The newly identified HIV positivity among all testers was 0.7%.

Conclusions. One of the main goals of HIV counseling and testing is to inform people of their HIV status, because knowledge of one's HIV-positive serostatus can result in a reduction in risk behaviors and allow the person to access HIV medical care and treatment. STD clinics offering HIV testing may need to further their emphasis on increasing the proportion of clients who are provided posttest counseling and on improving documentation of this information.

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More than one million people are living with human immunodeficiency virus (HIV) in the United States. The Centers for Disease Control and Prevention (CDC) estimated that in 2006, 56,300 people became newly infected with HIV, which was 40% higher than previous estimates of HIV incidence.¹ HIV counseling and testing (CT) has played a key role in the fight against HIV. Knowledge of HIV serostatus through early detection of HIV infection can allow the person better access to care, medication, counseling, and partner services. It is estimated that increasing the number of people who know their HIV status from 75% to 95% could reduce new HIV infections in the U.S. by almost one-third within one year.² A previous study found a surge in safer sex behaviors among people who recently tested for HIV, indicating the benefit of HIV CT regardless of serostatus.³ People who are aware of their HIV infection can access medical care and antiretroviral therapy, which can improve the quality and length of their lives. Additionally, antiretroviral therapy can reduce the risk for HIV transmission to the infected person's sexual and needle-sharing partners by reducing the viral load in blood and genital secretions.⁴⁻⁶ CDC recommends routine HIV screening for people aged 13-64 years in health-care settings, including sexually transmitted disease (STD) clinics, where the prevalence of previously undiagnosed HIV is $\geq 0.1\%$. These recommendations state that prevention counseling is strongly encouraged for people receiving HIV screening in STD clinics.⁷

STD clinics have historically reported high HIV prevalence rates, ranging from 1% to 18% among clinic clients, 40% of whom did not know their HIV serostatus.⁸⁻¹¹ In the U.S., 23% of all cases of HIV infection detected in public CT sites are detected in STD clinics.¹² Clients of STD clinics tend to be male,^{10,13-16} single,¹⁴ African American,^{10,14-18} young,^{10,14,17} and heterosexual.^{10,18} Among clients tested from 1993 to 1997 in STD clinics, 26% of men who have sex with men (MSM) and more than 2% of heterosexuals were HIV-positive.¹⁹

One of the major goals of HIV CT is to inform people of their HIV serostatus. This CT must include the provision of test results and posttest counseling. We used the HIV Counseling and Testing System (HIV CTS) database to analyze tests conducted in CDC-funded STD clinics to determine characteristics of tests among people not self-reporting a previous HIV-positive diagnosis with provision of test results and posttest counseling. We examined provision of test results and posttest counseling by using one variable, posttest counseling, which is consistent with interpretations of this variable in a previous report.¹² Posttest counseling protocols at this time included the provi-

sion of test results and posttest counseling. Hereafter, we will refer to the documentation of provision of test results and posttest counseling as "posttest counseling."

In 1997 and 1998, clients did not receive results from 33% of the HIV tests conducted at CDC-supported CT sites in the U.S.²⁰ Low return rates impede the main goal of HIV CT—to make individuals aware of their serostatus so that they can access treatment options and make informed choices about future behaviors.²¹ Low provision of posttest counseling has been identified as a problem for CDC-funded STD clinics that conduct HIV testing. Fewer than half of the people tested in STD clinics were provided posttest counseling in 1990.²² To our knowledge, no study has since assessed the provision of posttest counseling among tests conducted in CDC-funded STD clinics. We used the HIV CTS data from 2007, as they afforded the unique opportunity to examine HIV testing data from STD clinics specifically.

METHODS

Data source

CDC began funding state and local health departments to provide HIV CT services in 1985.²³ In 1989, CDC developed the HIV CTS to assist national and local monitoring and evaluation of HIV CT services.²⁴ Information about clients is elicited and documented by a service provider for each HIV test. Data are sent to the appropriate health department and then submitted to CDC.

Although CDC recommended that all health departments collect and report test-level data (i.e., files with data on individual tests), aggregate-level data (i.e., tables of summary counts of information) were accepted in 2007 from 29 of 59 CDC-funded health departments without the sufficient resources or infrastructure to report test-level data to the HIV CTS. Health departments providing aggregate-level data submit a minimal number of variables (e.g., overall number of tests and HIV positivity). All HIV CT data reported to CDC do not include personal identifiers, making it impossible to link any test to a client; therefore, the HIV test data represent tests rather than individuals. CT data are collected to facilitate program monitoring and evaluation at the local, state, and national levels.

Inclusion criteria

There were five inclusion criteria for this analysis. First, only HIV tests from the 30 health departments reporting test-level data in 2007 were included. Second, only HIV tests reported from the STD clinic site type were included (24 health departments). Third, each test must have had a valid value for the HIV test result

variable (i.e., negative, positive, inconclusive, or no result). Fourth, each test must have been conducted among adolescents and adults aged 13–98 years to mirror the lower age limit of the CDC recommendations and allow for inclusion of older adults seeking HIV testing at STD clinics. Fifth, each test must have been conducted for people who were not previously diagnosed with HIV by self-report.

Variables analyzed

Demographic characteristics included gender, age at time of HIV testing, race/ethnicity (i.e., non-Hispanic white, non-Hispanic black, Hispanic, Asian/Pacific Islander, American Indian/Alaska Native, and other), and the state or city in which the HIV test was conducted. These states and cities included California (excluding San Francisco and Los Angeles), Chicago (Illinois), Colorado, Delaware, District of Columbia, Florida, Georgia, Idaho, Kentucky, Louisiana, Massachusetts, Michigan, Missouri, New Jersey, New Mexico, Ohio, Oregon, Pennsylvania (excluding Philadelphia), Rhode Island, San Francisco, South Carolina, Texas (excluding Houston), Utah, and Virginia.

HIV risks were elicited at the time of HIV testing. Transmission mode was categorized hierarchically and based on the presumed likelihood of HIV transmission, as previously described (MSM/injection drug user [IDU], MSM only, IDU only, high-risk heterosexual contact, low-risk heterosexual contact, no acknowledged risk, and other).²⁴ “Previously tested for HIV” was defined as a record that had documentation of a self-reported previous HIV test and the result. Test type was either anonymous (i.e., no personal identifiers were collected) or confidential (i.e., personal identifiers were collected locally, though not sent to CDC). “Requested an HIV test” was defined as a record that had documentation of requesting an HIV test as the reason for the visit. “Current HIV test result” was dichotomized to positive test results and negative and other test results (i.e., inconclusive and no result). “Newly identified HIV-positive” was defined as a record for which there was a current HIV-positive test but no history of a previous self-reported HIV-positive test. “People not previously diagnosed with HIV” was defined as a record for which there was no self-reported previous HIV-positive test result. “Provision of posttest counseling” referred to whether the record had documentation that test results and posttest counseling were provided to the client specific to the current HIV test. This variable was categorized as yes, no, and missing.

Analysis

We used SAS[®] version 9.2 to calculate and analyze HIV positivity, newly identified HIV positivity, and percentage of tests with documentation of posttest counseling, by demographic and HIV-related characteristics.²⁵ Some of the 29 health departments excluded from the analysis were in the process of transitioning to a new set of testing variables, which were not equivalent to the HIV CTS variables. Subsequently, 2007 is the most recent year that allows for accurate information about HIV testing conducted in STD clinics. Documentation of the provision of posttest counseling was missing for more than 20% of tests; as such, no regression analyses were conducted.

RESULTS

As shown in the Table, a total of 372,757 tests from CDC-funded STD clinics in 24 state and local health departments in the U.S. in 2007 were included in the final dataset. In 2007, the highest percentages of tests among people not previously diagnosed with HIV were among males (51.8%), people aged 20–29 years (49.5%), black people (49.6%), those who reported low-risk heterosexual contact (38.9%), people previously tested who were not HIV-positive (57.4%), people testing confidentially (98.2%), and those who did not cite requesting an HIV test as a reason for the visit (62.6%). The newly identified HIV positivity among testers was 0.7%.

In 2007, the percentage of tests with provision of posttest counseling was 51.4% overall, 51.3% among those with HIV-negative test results, and 71.2% among those with newly identified HIV-positive test results. Notably, documentation of provision of posttest counseling was unknown (i.e., missing) for 21.9% of all tests, 22.0% of HIV-negative tests, and 13.3% of newly identified HIV-positive tests. Among newly identified HIV-positive tests, the highest percentage of tests with provision of posttest counseling was among clients who were aged 13–19 years (79.3%), Asian/Pacific Islanders (89.3%), those in the “other” transmission mode category (80.0%), and those who were tested anonymously (81.5%). It should be noted, however, that there were very few individuals in each of these categories, with the exception of people aged 13–19 years. Slight differences were observed by gender, previous test history, and those who requested an HIV test. Among HIV-negative tests, the highest percentage of tests with provision of posttest counseling was among clients who were ≥50 years of age (59.8%), of “other” race/ethnicity (65.3%), in the MSM category (63.1%),

Table. Provision of HIV test results and posttest counseling as documented on HIV test records at STD clinics among people not previously diagnosed with HIV, by test result, demographics, and HIV test characteristics: 24 health departments, U.S., 2007

Characteristic	Total tests N (percent)	Provision of test result and posttest counseling ^a					
		Yes		No		Missing	
		HIV-negative and other test results ^b N (percent)	Newly identified HIV-positive test results ^c N (percent)	HIV-negative and other test results ^b N (percent)	Newly identified HIV-positive test results ^c N (percent)	HIV-negative and other test results ^b N (percent)	Newly identified HIV-positive test results ^c N (percent)
Total ^{d,e}	372,757 (100.0)	189,660 (51.3)	1,922 (71.2)	99,129 (26.8)	419 (15.5)	81,269 (22.0)	358 (13.3)
Gender							
Male	193,118 (51.8)	102,084 (53.4)	1,500 (71.4)	51,139 (26.8)	321 (15.3)	37,795 (19.8)	279 (13.3)
Female	174,621 (46.8)	86,399 (49.6)	398 (69.7)	47,692 (27.4)	97 (17.0)	39,959 (23.0)	76 (13.3)
Age group (in years)							
13–19	60,017 (16.1)	28,168 (47.1)	138 (79.3)	16,102 (26.9)	24 (13.8)	15,573 (26.0)	12 (6.9)
20–29	184,531 (49.5)	91,332 (49.8)	772 (71.2)	51,131 (27.9)	168 (15.5)	40,984 (22.3)	144 (13.3)
30–39	67,680 (18.2)	35,821 (53.5)	482 (71.5)	17,686 (26.4)	105 (15.6)	13,499 (20.1)	87 (12.9)
40–49	39,699 (10.7)	22,035 (56.3)	372 (70.5)	9,630 (24.6)	83 (15.7)	7,506 (19.2)	73 (13.8)
≥50	20,830 (5.6)	12,304 (59.8)	158 (66.1)	4,580 (22.2)	39 (16.3)	3,707 (18.0)	42 (17.6)
Race/ethnicity							
Non-Hispanic white	129,427 (34.7)	68,594 (53.2)	433 (71.8)	29,908 (23.2)	84 (13.9)	30,322 (23.5)	86 (14.3)
Non-Hispanic black	185,052 (49.6)	90,161 (49.2)	1,166 (68.5)	54,900 (29.9)	292 (17.1)	38,288 (20.9)	245 (14.4)
Hispanic	43,879 (11.8)	23,321 (53.5)	266 (85.0)	10,928 (25.1)	30 (9.6)	9,317 (21.4)	17 (5.4)
Asian/Pacific Islander	5,003 (1.3)	3,175 (63.8)	25 (89.3)	1,153 (23.2)	— ^f (10.7)	647 (13.0)	— ^f (0.0)
American Indian/Alaska Native	777 (0.2)	374 (48.6)	— ^f (50.0)	237 (30.8)	— ^f (25.0)	158 (20.5)	— ^f (25.0)
Other	3,031 (0.8)	1,967 (65.3)	12 (70.6)	843 (28.0)	— ^f (23.5)	204 (6.8)	— ^f (5.9)
Transmission mode							
MSM/IDU	570 (0.2)	278 (52.3)	27 (71.1)	176 (33.1)	— ^f (7.9)	78 (14.7)	8 (21.1)
MSM	21,527 (5.8)	12,883 (63.1)	831 (74.0)	4,714 (23.1)	157 (14.0)	2,807 (13.8)	135 (12.0)
IDU	5,695 (1.5)	2,735 (48.3)	18 (62.1)	1,349 (23.8)	— ^f (10.3)	1,582 (27.9)	8 (27.6)
High-risk heterosexual contact ^g	108,561 (29.1)	61,212 (56.6)	270 (61.2)	32,793 (30.3)	106 (24.0)	14,115 (13.1)	65 (14.7)
Low-risk heterosexual contact ^h	145,149 (38.9)	70,484 (48.7)	401 (76.2)	42,064 (29.1)	75 (14.3)	32,075 (22.2)	50 (9.5)
No acknowledged risk	61,625 (16.5)	24,545 (40.1)	289 (65.4)	9,725 (15.9)	68 (15.4)	26,913 (44.0)	85 (19.2)
Other ⁱ	10,295 (2.8)	4,720 (46.0)	36 (80.0)	1,849 (18.0)	— ^f (4.4)	3,681 (35.9)	7 (15.6)

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and tested anonymously (69.7%). Slight differences were observed by gender, previous test history, and those who requested an HIV test (Table).

DISCUSSION

The first goal of the National HIV/Acquired Immune deficiency Syndrome (AIDS) Strategy (NHAS) is to

reduce the number of people who become infected with HIV.²⁶ As previously stated, knowledge of one’s HIV-positive serostatus can result in a reduction in risk behaviors,³ and people with HIV infection who are treated with antiretroviral medications may have lower viral loads,^{4–6} thereby decreasing their ability to transmit the infection and improving the quality and duration of their life. Therefore, HIV testing and receipt of

Table (continued). Provision of HIV test results and posttest counseling as documented on HIV test records at STD clinics among people not previously diagnosed with HIV, by test result, demographics, and HIV test characteristics: 24 health departments, U.S., 2007

Characteristic	Total tests N (percent)	Provision of test result and posttest counseling ^a					
		Yes		No		Missing	
		HIV-negative and other test results ^b N (percent)	Newly identified HIV-positive test results ^c N (percent)	HIV-negative and other test results ^b N (percent)	Newly identified HIV-positive test results ^c N (percent)	HIV-negative and other test results ^b N (percent)	Newly identified HIV-positive test results ^c N (percent)
Previously tested for HIV							
No	106,708 (28.6)	57,235 (53.9)	467 (81.8)	29,025 (27.3)	60 (10.5)	19,877 (18.7)	44 (7.7)
Yes, not HIV-positive	214,040 (57.4)	116,307 (54.7)	1,186 (79.5)	55,829 (26.3)	197 (13.2)	40,413 (19.0)	108 (7.2)
Type of test							
Anonymous	5,440 (1.5)	3,772 (69.7)	22 (81.5)	1,525 (28.2)	5 (18.5)	116 (2.1)	— ^f (0.0)
Confidential	366,125 (98.2)	185,384 (51.0)	1,892 (71.1)	97,009 (26.7)	413 (15.5)	81,070 (22.3)	357 (13.4)
Requested HIV test							
No	233,487 (62.6)	112,402 (48.5)	1,335 (71.2)	67,525 (29.2)	325 (17.3)	51,684 (22.3)	216 (11.5)
Yes	139,270 (37.4)	77,258 (55.8)	587 (71.3)	31,604 (22.8)	94 (11.4)	29,585 (21.4)	142 (17.3)
Newly identified HIV-positive ^e							
No	370,058 (99.3)	189,660 (51.3)	NA	99,129 (26.8)	NA	81,269 (22.0)	NA
Yes	2,699 (0.7)	NA	1,922 (71.2)	NA	419 (15.5)	NA	358 (13.3)

^aThe denominators for each row percentage can be determined by summing the numbers in the "yes," "no," and "missing" columns for the number of HIV-negative and other test results and the number of newly identified HIV-positive test results, respectively.

^bHIV-negative test is defined as a record for which the current HIV test result is negative, inconclusive, or "no result."

^cNewly identified HIV-positive test is defined as a record for which there is a current HIV-positive test result and no history of a previous HIV-positive test.

^dThe number of records for each variable may not sum to the total number of records because of missing information. The numbers and percentages of missing data for the selected variables were as follows: gender: 5,018, 1.3%; race/ethnicity: 5,588, 1.5%; transmission mode: 19,335, 5.2%; previously tested for HIV: 52,009, 14.0%; and type of test: 1,192, 0.3%.

^eDuring 2007, the following 24 health departments reported test-level data from STD clinics: California, Chicago, Colorado, Delaware, District of Columbia, Florida, Georgia, Idaho, Kentucky, Louisiana, Massachusetts, Michigan, Missouri, New Jersey, New Mexico, Ohio, Oregon, Pennsylvania, Rhode Island, San Francisco, South Carolina, Texas, Utah, and Virginia.

^fIndicates the cell size was >0 and <5

^gPerson reporting heterosexual contact who also reported any of the following: sex with partner at risk, diagnosis of an STD, exchange of sex for drugs or money, non-injection drug use during sex, and victim of a sexual assault

^hPerson reporting heterosexual contact and no other risk factor

ⁱPerson reporting other risk factors (i.e., perinatal exposure, hemophilia, receipt of blood transfusion, or health-care exposure)

HIV = human immunodeficiency virus

STD = sexually transmitted disease

MSM = men who have sex with men

IDU = injection drug user

NA = not applicable

test results and subsequent linkage to care are critical components to the strategy's first goal.

The NHAS established a goal for 2015 of increasing from 79% to 90% the percentage of people living with HIV who are aware of their infection. Our analysis assessed the percentage of tests with provision of

posttest counseling for tests conducted in CDC-funded STD clinics, which accounted for the largest number of HIV tests conducted and the second largest number of newly identified HIV-positive test results in 2007.²⁷ Approximately one-half of HIV tests at CDC-funded STD clinics among people not previously diagnosed

with HIV were provided posttest counseling, although this percentage was higher (71%) when the test result was newly identified HIV-positive. This overall percentage is consistent with previous findings of provision of test results;²⁰ however, it is much lower than the estimate provided by Holtgrave and Pinkerton that suggests new infections could be reduced by one-third if 95% of people tested in all settings received their HIV test results.²⁸

Provision of posttest counseling was higher among newly identified HIV-positive young people compared with newly identified HIV-positive people of all other ages, and among people who were tested anonymously (regardless of test results) compared with people who were tested confidentially. This finding may suggest that STD clinics recognize the difficulty in accessing these populations and have worked harder to retain these clients during the confirmatory test waiting period. A 2002 study by Tsu and colleagues found that returning results via telephone resulted in higher return rates among homeless adolescents, a population that may be especially difficult to reach.²⁹ In a study assessing anonymous and confidential testing, counselors commonly urge clients to test confidentially because it gives staff members the means to contact clients regarding test results and linkage to care.³⁰ Furthermore, Grusky and colleagues found that some counselors tried to convert anonymous, HIV-positive clients to confidential testing if they had a preliminary HIV-positive rapid test. When clients refused to be converted, several respondents explained that they used various unofficial means to keep in touch with the clients.³¹ The higher percentage of tests with provision of posttest counseling among Asian/Pacific Islanders (regardless of test results) was surprising, given that some reports show a reluctance among this group to seek medical care³² and delayed entry to care upon HIV diagnosis.³³

Among people with HIV-negative test results, MSM and older adults (≥ 50 years of age) were also more likely to have provision of posttest counseling, although STD clinics generally serve younger,^{10,14,17} heterosexual^{10,18} populations. MSM have been highly impacted by HIV infection since the beginning of the epidemic and may therefore be more aware of the need to know one's serostatus. In addition, national HIV testing guidelines encourage annual screening for MSM,⁷ which may impact provision of test results. Older adults may also have had more exposure to these messages over time and may be more focused on their health than young people. In a study comparing health-promoting behaviors, older adults had higher scores in overall health-promoting lifestyle and in the dimensions of health responsibility than both young

and middle-aged adults.³⁴ It is difficult to assess the increased/decreased provision of posttest counseling among people reporting other transmission risks and other race, as the pooling of disparate but less frequently reported risk factors or racial/ethnic groups may mask the unique characteristic that serves as a predictor for these results.

It is also important to note, however, that documentation of posttest counseling was missing for more than 20% of the tests. This figure is similar to the proportion of HIV tests with missing information for documentation of posttest counseling in previous years.^{12,24} Monitoring and evaluation of HIV testing programs, in any setting, necessitate the documentation of receipt of all test results, and receipt of posttest counseling among people with HIV-positive test results. It may be postulated that the high percentage of tests with missing documentation of posttest counseling stems from the time frame within which test results and posttest counseling are documented. For example, when test results are provided on the same day as the test, as is possible with rapid test technology, the results may be easily documented on an HIV test form or client chart. However, if there is a delay, there may be an increased likelihood that the documentation of test results and posttest counseling may not be properly conducted. The introduction of rapid HIV testing since 2002 should have increased the documentation of posttest counseling,³⁵ which was not observed in these results. However, information on use of a rapid HIV test was not reported to CDC in 2007.

It is possible that the increased use of rapid HIV tests had not sufficiently increased by 2007 at STD clinics to achieve improved documentation. STD clinics offering HIV testing may need to increase their emphasis not only on increasing the proportion of clients who are provided test results and posttest counseling, but also on improving the quality assurance of the documentation of this information, as the proportion may be greater than is indicated in this analysis. It should be noted that CDC requires the collection of HIV testing variables and may need to consider evaluating the validity and reliability of these data. CDC does not require that specific data-collection tools or systems be used, but it does encourage evaluation of these tools and systems at the local level. Provision and documentation of posttest counseling may be improved with increased staff training and structural interventions, such as integrating alternate methods of providing test results and posttest counseling. Hutchinson and colleagues found that rapid testing, provision of results by telephone, and home-collection specimen kits significantly increased the provision of test results compared with

conventional HIV testing.³⁶ Use of other digital media, such as the Internet or text messages, may also prove useful in providing test results and counseling messages in a secure format that users, especially young people, may be accustomed to using.³⁷⁻³⁹

Limitations

This analysis was subject to several limitations. The testing data presented are not representative of all HIV tests conducted nationally, or even of all HIV testing conducted at CDC-funded STD clinics, as the analysis was limited to those health departments funded by CDC that provided test-level data. Secondly, documentation of posttest counseling was missing for more than 20% of the tests, thereby limiting our ability to conduct statistical analyses. This large proportion of missing data points to the need to increase the percentage of clients who receive test results and posttest counseling, as well as the need to improve program documentation practices. Lastly, provision of test results and posttest counseling used the proxy variable “receipt of posttest counseling.” Although posttest counseling protocol includes the provision of test results to clients, it is recommended that the specific provision of results are documented separately from posttest counseling, to lend assurance that these results were in fact provided.

CONCLUSIONS

The NHAS acknowledges that it will take more than one approach to HIV prevention to bring an end to the epidemic.²⁶ Multiple approaches should be taken to improve the provision and documentation of HIV test results and posttest counseling. STD clinics should consider offering rapid HIV tests and pairing them with reminders to obtain test results via cell phones, texts, or Internet-based programs in ways that are simple and secure to increase the provision and documentation of HIV test results and posttest counseling. HIV testing programs should assess their quality assurance plans to ensure that the provision of HIV test results takes place and that this activity is documented.

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The findings and conclusions in this article are those of the authors and do not necessarily represent the views of CDC.

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