





RESEARCH BRIEF

A comparison of contraceptive services for adolescents at school-based versus community health centers in Oregon

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Abstract

Objective: To compare Oregon school-based health centers (SBHCs) with community health centers (CHCs) as sources of adolescent contraceptive services.

Data sources: Oregon electronic health record data, 2012–2016.

Study design: We compared clinic-level counseling rates and long-acting reversible contraception (LARC) provision, adolescent populations served, and visit-level LARC provision time trends. We evaluated adjusted associations between LARC provision and Title X participation by clinic type.

Data collection/extraction methods: We used diagnosis and procedure codes to identify contraceptive counseling and provision visits, excluding visits for adolescents not at risk of pregnancy.

Principal findings: CHCs were more likely to provide LARC on-site than SBHCs (67.2% vs. 36.4%, respectively). LARC provision increased more at SBHCs (5.8-fold) than CHCs (2-fold) over time. SBHCs provided more counseling visits per clinic (255 vs. 142) and served more young and non-White adolescents than CHCs. The adjusted probability of LARC provision at Title X SBHCs was higher than non-Title X SBHCs (4.4% [3.9–4.9] vs. 1.7% [1.4–2.0]), but there was no significant association at CHCs.

Conclusions: In Oregon, CHCs and SBHCs are both important sources of adolescent contraceptive services, and Title X plays a crucial role in SBHCs. Compared with CHCs, SBHCs provided more counseling, showed a larger increase in LARC provision over time, and served more younger and non-White adolescents.

KEYWORDS

adolescent, CHC, community health center, contraception, LARC, SBHC, school-based health center

What is known on this topic

- School-based health centers (SBHCs) and community health centers (CHCs) are both sources of affordable reproductive health care for adolescents.
- However, it is not known how SBHCs compare with CHCs in providing contraceptive services to adolescents, and what role the Title X program plays in each clinic type.

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What this study adds

- Using electronic health record data, we directly compared contraceptive counseling and provision at school-based and community health centers in Oregon.
- We found that Oregon school-based health centers provided more counseling, increased long-acting reversible contraception (LARC) provision faster, and served more young and non-White adolescents than community health centers, although community health centers provided more LARC overall.
- Our findings suggest that increased participation in the Title X program could greatly improve on-site access to LARC at SBHCs.

1 | INTRODUCTION

Adolescent pregnancy rates in the United States are some of the highest among high-income countries,¹ and an estimated 75% of adolescent pregnancies are unintended.² Unintended pregnancy is a preventable outcome with negative consequences for both adolescents and their offspring.³ In recent years, adolescent pregnancy rates have declined, a trend partially explained by increased adolescent use of implants and intrauterine devices (IUDs),⁴ collectively termed long-acting reversible contraception (LARC). Although LARC methods are recommended as safe and effective contraceptive options for adolescents,^{5,6} less effective contraception, such as condoms and withdrawal, remain the most common methods used by adolescents in the United States.⁷

Adolescents experience the same barriers to effective contraception as older individuals, as well as unique challenges imposed by their age. Cost, confidentiality of services, and structural barriers such as transportation and clinic hours are paramount for adolescents.^{8–10} It is essential that adolescents receive contraceptive information and counseling that is appropriately tailored to their developmental stage¹¹; many adolescents may be first time contraceptive users⁷ and thus require additional time or counseling to ensure consistent and correct use.

School-based health centers (SBHCs) and community health centers (CHCs) are both sources of affordable reproductive health care for adolescents. SBHCs are partnerships with local healthcare organizations, located at school sites, and often offer services at reduced or no cost to students.¹² CHCs are not-for-profit healthcare safety net clinics serving clients of all ages and are located in medically underserved communities.¹³ Both clinic types serve diverse populations and provide care regardless of insurance status.^{12,13} SBHCs provide access to effective contraception¹⁴ and can lower pregnancy rates,¹⁵ although nationwide more than half of SBHCs cannot dispense contraception on-site.¹⁶ CHCs have also been shown to provide quality contraceptive services to adolescents.¹⁷

In Oregon, the state health authority oversees certification processes encouraging access to high-quality reproductive health services at both SBHCs and CHCs,^{18,19} making the state ideally suited for a comparison of clinic types. Certified Oregon SBHCs are located at more than 70 schools; the state recommends that they offer on-site contraception and requires them to provide contraceptive referrals if they opt not to dispense on-site.¹⁸ Similarly, certified CHCs must

offer a wide range of effective contraceptive methods on-site to receive state reproductive health program funding.¹⁹ Both SBHCs and CHCs can choose to participate in the federal family planning program, Title X, which provides funding for reproductive health services for low-income individuals. However, it is not known how SBHCs compare with CHCs in providing adolescent contraceptive services, and what role the Title X program plays in each clinic type.

The purpose of this study was to describe the role Oregon SBHCs, as compared to CHCs, play as sources of adolescent contraceptive care (counseling and provision of most effective methods). We assessed counseling and LARC provision at the clinic level. At the visit level, we compared adolescent populations served, trends in implant and IUD provision over time, and how participation in the Title X program impacts provision of the most effective methods. We hypothesized that CHCs would provide more LARC methods than SBHCs, and that both SBHCs and CHCs participating in the Title X program would provide more LARC methods than non-Title X clinics.

2 | METHODS

We conducted a retrospective cohort study using electronic health record (EHR) data from in-person contraceptive counseling and provision visits by adolescents ages 14–19 at Oregon SBHCs and CHCs between 2012 and 2016. Our study data have been described previously.¹⁴ We excluded data from clinics that did not provide data for the full study period, and visits for pregnant adolescents (1357 visits; Table S1 for exclusion codes). We also excluded visits for contraceptive discontinuation (1017 visits), which represented fewer than 2% of adolescent contraceptive visits.

At the clinic level, our primary outcome was contraceptive method type provided. We categorized each clinic by the LARC methods provided over the study period: implants and IUDs, only implants, only IUDs, or neither. At the visit level, our primary outcome was contraceptive method type: implant, IUD, or other methods (Table S2 for method and visit type codes). For regression modeling, we collapsed method into a binary variable: provision of LARC methods versus other methods. We categorized visits as provision visits if there was any evidence of contraceptive provision, regardless of concurrent counseling, and categorized visits as counseling if there was only evidence of counseling.

Our primary independent variable was clinic type: SBHC or CHC. We also included variables at the adolescent, visit, clinic, and census tract or county level. At the adolescent level, we included age (14–16 or 17–19) and race/ethnicity. We defined race/ethnicity as Latina, non-Latina White (“White”), non-Latina Black (“Black”), and non-Latina of some other race (6.2% of the sample: 4.0% Asian, 1.6% American Indian/Alaska Native, and 0.6% Native Hawaiian/Pacific Islander). At the visit level, we included visit year and binary variables for use of an interpreter and whether insurance was used for the visit. At the clinic level, we included binary variables for urban/rural²⁰ and Title X status.²¹ Finally, we included the percent of the adolescent's census tract living below 200% of the 2010–2014 federal poverty level (FPL), divided at the median, as a contextual indicator of socioeconomic status, and a binary variable for the presence of a Planned Parenthood clinic in the county to control for other potential sources of family planning services.

2.1 | Analysis

We performed analyses at the clinic and visit levels. At the clinic level, we quantified contraceptive counseling and provision visits in CHCs and SBHCs per clinic, and then compared clinic-level LARC provision between CHCs and SBHCs using Fisher's exact test.

At the visit level, we described contraception provision visits and method type, overall and by clinic type, using Pearson's chi-squared test. We assessed rates of implant and IUD provision, as a proportion

of all contraceptive provision visits, over time by clinic type. Finally, we developed multivariable logistic regression models with robust standard errors clustered at the adolescent level (87% of adolescents had more than one provision visit) and provision of LARC as the outcome. In our initial model, an interaction term between clinic type and Title X status was significant, so we stratified our models by clinic type to isolate the relationship of Title X. Models included all contextual variables discussed above. We calculated absolute adjusted probabilities of LARC provision by clinic type and Title X status, holding all other variables at their means, to improve the interpretability of our results.²² We performed all analyses in *Stata* version 14.2 (Stata Corp, College Station, TX) and generated all figures in R version 4.0.3 (R Foundation for Statistical Computing, Vienna, Austria). The Oregon Health and Science University's Institutional Review Board approved this de-identified secondary analysis as non-human subject research.

3 | RESULTS

Our study sample included 33 SBHCs and 58 CHCs providing 16,639 adolescent contraceptive counseling visits and 47,902 contraceptive provision visits between 2012 and 2016. All clinics in our sample had evidence of contraceptive provision. SBHCs provided slightly under half of these visits (28,752 visits counseling or provision visits, 44.5%; data not shown). SBHCs provided both contraceptive counseling and provision to adolescents at higher rates per clinic than CHCs (Figure 1A), with 255 counseling visits per clinic and 616 provision

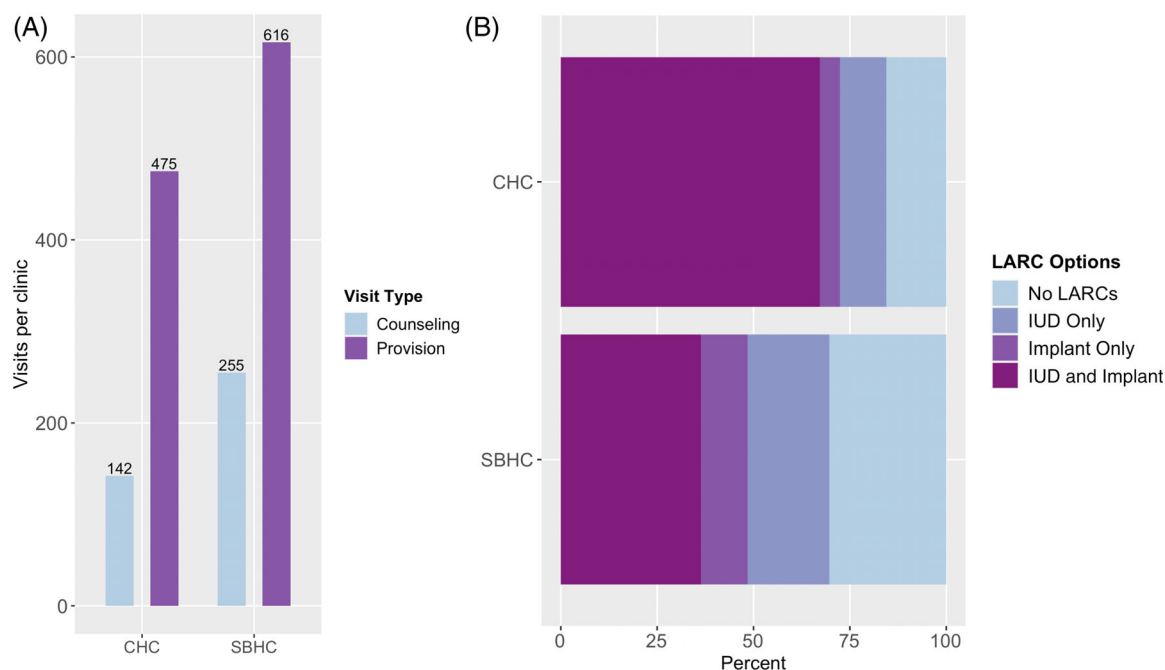


FIGURE 1 Clinic-level characteristics among Oregon community health centers (CHCs; $n = 58$) and school-based health centers (SBHCs; $n = 33$) providing adolescent contraception, 2012–2016. (A) Contraception counseling or provision visits per clinic, by clinic type. (B) Provision of long-acting reversible contraception (LARC) methods. A clinic was categorized as providing a LARC method (intrauterine device [IUD] or implant) if there was evidence of at least one adolescent contraception provision visit for that method during the 5-year study period [Color figure can be viewed at wileyonlinelibrary.com]

	Overall	CHC	SBHC
Number of clinics	91	58	33
Number of visits ^a	47,902	27,563	20,339
Total number of individuals	16,530	11,482	5934
Age (years)			
14–16	20,462 (42.7)	8943 (32.5)	11,519 (56.6)
17–19	27,440 (57.3)	18,620 (67.5)	8820 (43.4)
Race/ethnicity			
Latina	9764 (20.4)	5568 (20.2)	4196 (20.6)
White	30,859 (64.4)	19,513 (70.8)	11,346 (55.8)
Black	3524 (7.4)	885 (3.2)	2639 (13.0)
Other	2842 (5.9)	826 (3.0)	2016 (9.9)
Missing	913 (1.9)	771 (2.8)	142 (0.7)
Need for interpreter at visit	1481 (3.1)	743 (2.7)	738 (3.6)
Insurance used for visit	39,242 (81.9)	24,846 (90.1)	14,396 (70.8)
Urban clinic location	45,657 (95.3)	26,368 (95.7)	19,289 (94.8)
Title X clinic	24,838 (51.9)	11,798 (42.8)	13,040 (64.1)
Percent of census tract population with income <200% of federal poverty level			
<40%	20,413 (42.6)	11,294 (41.0)	9119 (44.8)
≥40%	23,026 (48.1)	13,552 (49.2)	9474 (46.6)
Missing	4463 (9.3)	2717 (9.8)	1746 (8.6)
Planned Parenthood clinic in county	33,578 (70.1)	17,653 (64.1)	15,925 (78.3)

Note: Data are *n* (%); all *p*-values are <0.001.

^aThe sum of individuals visiting SBHCs and CHCs is larger than the overall number of individuals because some adolescents visited both clinic types during the study period.

TABLE 1 Adolescent-, clinic-, and residence-level characteristics of contraception provision visits in Oregon school-based health centers (SBHCs) and community health centers (CHCs) by clinic type, 2012–2016 (*N* = 47,902)

visits per clinic at SBHCs compared to 142 counseling visits per clinic and 475 provision visits per clinic at CHCs.

A significantly lower proportion of SBHCs provided both IUDs and implants at the clinic level (Figure 1B). Among the 33 SBHCs in our sample, 12 (36.4%) provided both LARC methods while 39 of the 58 CHCs (67.2%) provided both (*p* = 0.032).

At the visit level, the 47,902 contraceptive provision visits served 16,530 unique adolescents (Table 1). The majority of visits were by adolescents aged 17–19 (57.3%) or who identified as White (64.4%), the remaining visits by adolescents identified as Latina (20.4%), Black (7.4%), or some other race (5.9%). The majority (81.9%) used insurance for the visit. The vast majority of visits (95.3%) were at urban clinics, and about half of visits (51.9%) were at Title X clinics. SBHCs served younger adolescents (14–16 years old) in significantly higher proportions than CHCs (56.6% of visits vs. 32.5% for CHCs; *p* < 0.001) and also served more non-White adolescents: 13.0% of SBHC visits were by Black adolescents and 9.9% by adolescents of other races compared to 3.2% and 3.0% at CHCs, respectively (*p* < 0.001). The proportion of visits for Latina adolescents was approximately 20% at both clinic types. Insurance was used at significantly fewer SBHC visits (70.8% vs. 90.1% for CHCs; *p* < 0.001) and a greater proportion of SBHC visits took place at Title X clinics (64.1% vs. 42.8% for CHCs; *p* < 0.001).

Over the study period, LARC methods comprised fewer than 6% of contraception provision visits at SBHCs (2.3% for IUDs, 3.3% for implants; data not shown) and almost 10% of provision visits at CHCs (3.7% for IUDs, 6.2% for implants). Over time, SBHCs increased rates of both IUD and implant provision as a proportion of all provision visits faster than CHCs (Figure 2). From 2012 to 2016, IUD provision at SBHCs increased almost 5-fold (from 0.9% to 4.4%) and implant provision increased about 6.5-fold (from 1.1% to 7.2%). During the same period at CHCs, IUD provision increased about 1.5-fold (from 3.2% to 5.1%) and implant provision increased almost 2.5-fold (from 3.7% to 9.0%). Combined, overall LARC provision increased 5.8-fold at SBHCs (from 2.0% to 11.6%) but only 2-fold at CHCs (from 6.9% to 14.1%).

In multivariable regression models of all contraceptive provision visits stratified by clinic type, SBHCs had a lower adjusted probability of LARC provision (compared to other methods) than CHCs (3.2% vs. 9.1%, data not shown). Title X status was significantly associated with increased adjusted probability of LARC provision at SBHCs, but not at CHCs (see Table S3 for full modeling results). At non-Title X SBHCs, the adjusted probability of LARC provision was 1.7% (95% CI: 1.4%–2.0%) compared to 4.4% (95% CI: 3.9%–4.9%) at Title X SBHCs. Among CHCs, there was a nonsignificant difference in the adjusted probability of LARC provision by Title X status: 9.4%

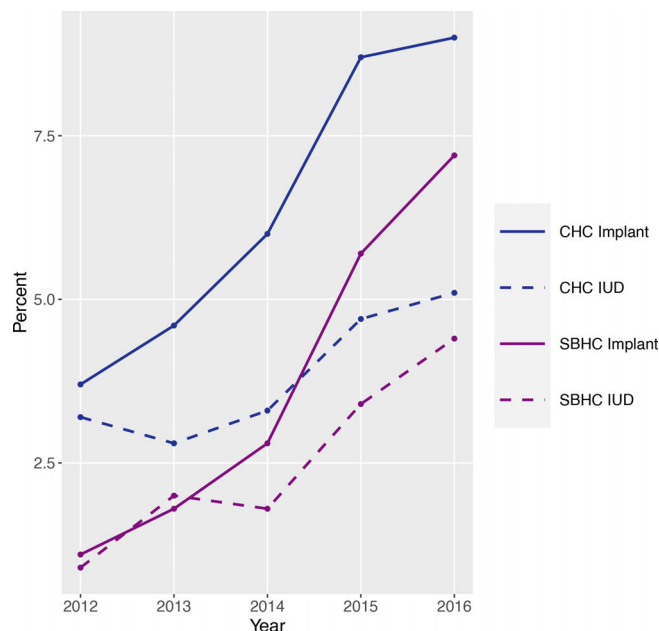


FIGURE 2 Changes in adolescent implant (solid line) and intrauterine device (IUD; dashed line) provision rates among all contraceptive provision visits at Oregon community health centers (CHCs; dark blue, $n = 27,563$ for all years) and school-based health centers (SBHCs; purple, $n = 20,339$ for all years) over time, 2012–2016 [Color figure can be viewed at wileyonlinelibrary.com]

(95% CI: 8.9%–9.9%) at non-Title X CHCs versus 8.8% (95% CI: 8.2%–9.4%) at Title X CHCs.

4 | DISCUSSION

Both SBHCs and CHCs in Oregon are important sources of adolescent contraception counseling and provision. Compared to SBHCs, CHCs were more likely to provide LARC at the clinic (67.2% of CHCs vs. 36.4% of SBHCs). LARC provision increased more at SBHCs (5.8-fold) than CHCs (2-fold) over the study period. SBHCs provided more counseling visits per clinic than CHCs (255 vs. 142, respectively) and served a greater proportion of younger and non-White adolescents than CHCs. At SBHCs, Title X status was associated with a higher adjusted probability of LARC provision (4.4% [95% CI: 3.9%–4.9%] Title X vs. 1.7% [95% CI: 1.4%–2.0%] non-Title X), but this was not the case at CHCs.

Our results suggest that Oregon SBHCs play a vital role in providing contraceptive information and access to the adolescent population, particularly among non-White and younger adolescents. In 2016, approximately 2% of adolescent females in Oregon identified as Black and 11% identified as some other non-White race.²³ In our sample, these proportions were 13% and 10% at SBHCs, compared with just 3% for both groups at CHCs. To our knowledge, this is the first study focusing specifically on contraceptive services at SBHCs and CHCs, although previous work comparing overall clinical health service use at SBHCs and CHCs found non-White adolescents used SBHCs at

higher rates, similar to our findings.²⁴ SBHCs in our sample also more effectively reached younger adolescents (14–16 years old) and may be uniquely positioned to reduce barriers to healthcare access for younger adolescents such as cost and transportation.^{18,25}

We found that SBHCs provided more contraceptive counseling than CHCs. This may be due in part to the fact that LARC provision is reimbursed at a higher rate than counseling.²⁶ CHCs, which provide more LARC methods, may provide counseling at LARC provision visits but not document or bill for it. Regardless of reimbursement, contraceptive counseling is of paramount importance for adolescents. Evidence suggests that most young women rate healthcare providers as their most trusted source of contraception information.²⁷ Patient-centered counseling can help to overcome barriers to adolescent contraception use, including fear of pelvic exams⁸ and potential side effects.^{28–30} Furthermore, adolescents who report receipt of contraceptive counseling are more likely to use a moderately or most effective method.³¹ Counseling must always respect adolescent autonomy,³² and counseling for adolescents must be tailored for developmental stage, information needs, and need for confidentiality.^{8,11}

SBHCs in our sample provided LARC at lower rates than CHCs. LARC provision rates should not meet specific benchmarks as these methods may not be right for every adolescent.³³ However, the rates highlight access differences by clinic type. Certified SBHCs in Oregon are encouraged to offer a variety of effective methods on-site, but some may only provide contraceptive referrals.¹⁸ In addition, IUD insertion training may pose a significant challenge to SBHCs. However, rates of implant and IUD provision are increasing faster at SBHCs than at CHCs in our sample, and future research is needed to assess whether these differences persist beyond 2016.

Title X participation was associated with a substantial increase in LARC provision among Oregon SBHCs, but not CHCs. This may be explained by Oregon's robust reproductive health program,³⁴ which offers reimbursement for reproductive health services to over 140 certified clinics statewide.³⁵ Certification requires high-quality reproductive health care and provision of a wide range of methods.^{19,36} Thus, in Oregon, Title X funds help cover the cost of services for uninsured women but do not necessarily impact the range of methods provided or service quality at CHCs.^{17,37} SBHCs are not required to offer all contraceptive methods on-site, while those that comply with Title X requirements (prior to 2019 changes)³⁸ have a broader range of methods available. Our findings suggest that increased participation in the Title X program could greatly improve on-site access to LARC at SBHCs. Our study period ended before the policy changes that resulted in Oregon leaving Title X, but Title X funds were immediately replaced with state general funds³⁹ so we would not expect substantive service changes. The Department of Health and Human Services recently reversed the 2019 policy changes⁴⁰ opening a path for Oregon to rejoin Title X, thus restoring the importance of Title X participation at Oregon's SBHCs.

Our study should be interpreted in light of the following limitations. First, we were not able to analyze contraceptive method type for counseling visits as most used codes for unspecified methods

(e.g., V25.09), although counseling visit counts allowed us to compare the overall amount of counseling-only visits at both clinic types. Second, counseling may not be documented in our data at the same rate as contraceptive provision or by clinic type, depending on reimbursement rates. However, the Reproductive Health Program of the Oregon Health Authority reimburses counseling at the same rate as initiation of non-LARC methods,²⁶ proportions of provision visits with documentation of counseling were roughly similar across clinic types (70.4% for SBHCs and 78.5% for CHCs), and all clinics in our dataset provided contraception, suggesting limited differences in counseling documentation. Third, our data do not capture method preference, which may differ by clinic type, although the converging time trends we observed suggest that potential differences in LARC preference are relatively small.

Finally, our results may not be generalizable to all adolescents or other states. Our data do not include visits from Planned Parenthood or other family planning service sites such as hospitals or private clinics. However, our study focuses on contraceptive services for low-income adolescents, who are most likely to seek care in SBHCs and CHCs. We included the number of Planned Parenthood clinics within the county as an adjustment for this alternative source of free or sliding-scale care for this population. Importantly, SBHCs are located at just 7% of Oregon schools, so many adolescents do not have access to an SBHC.^{18,41} Although adolescent pregnancy rates are falling in Oregon⁴² and only 10 states have lower rates,⁴³ our findings indicate that expanding the SBHC system could help to further reduce adolescent pregnancy. Nationwide, some states have few or no SBHCs and more than 50% of SBHCs are prohibited from dispensing contraceptives,¹⁶ while Oregon has progressive policies and programs to promote reproductive healthcare access. Thus, while somewhat unique, Oregon provides a model of how to provide essential adolescent contraceptive services for both SBHCs and CHCs.

In summary, we found that Oregon CHCs provided implants and IUDs at higher rates than SBHCs. SBHCs offered more contraceptive counseling, served a younger and more diverse adolescent patient population, and increased implant and IUD provision rates faster than CHCs. Participation in the Title X program was associated with more LARC provision in SBHCs, but not at CHCs. Both SBHCs and CHCs are important sources of contraceptive services for Oregon adolescents.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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