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VeCHAT: a proof-of-concept study on screening and managing veterans' mental health and wellbeing

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ABSTRACT

INTRODUCTION: New Zealand veterans may have complex mental and physical complaints related to multiple exposures to war environments. They are entitled to, but often do not, access a range of physical, mental health and social services funded through Veterans' Affairs New Zealand. eCHAT (electronic Case-finding and Help Assessment Tool) is a self-completed electronic holistic screen for substance misuse, problem gambling, anger control, physical inactivity, depression, anxiety, exposure to abuse; and assesses whether help is wanted for identified issues.

AIM: A proof-of-concept study was conducted to develop a modified version of eCHAT (VeCHAT) with remote functionality for clinical assessment of mental health and lifestyle issues of contemporary veterans, and assesses acceptability by veterans and Veterans' Affairs staff, and feasibility of implementation.

METHODS: We used a co-design approach to develop VeCHAT. Veterans' Affairs and service organisations invited veterans to remotely complete VeCHAT and a subsequent short online acceptability survey. Veterans' Affairs medical and case manager staff underwent semi-structured interviews on feasibility and acceptability of VeCHAT use.

RESULTS: Thirty-four veterans completed VeCHAT. The tool proved acceptable to veterans and Veterans' Affairs staff. Key emergent themes related to tool functionality, design, ways and barriers to use, and suggested improvements. Veterans' Affairs staff considered VeCHAT use to be feasible with much potential.

DISCUSSION: Capacity of Veterans' Affairs to respond if their engagement with veterans increases and employment of VeCHAT is scaled up, is unknown. Work is needed to assess how introducing VeCHAT as a standard procedure might influence Veterans' Affairs case management processes.

KEYWORDS: Veterans; mass screening; mental health; risk-reduction behaviour; substance-related disorders; stress disorder, post-traumatic

Introduction

New Zealand (NZ) veterans are members of the armed forces who have been deployed in active service in a qualifying operation overseas by government direction. Veterans include currently serving personnel and civilians, and number ~31,000.[1] Approximately 9500 personnel serve in the New Zealand Defence Force, of whom ~60% (5700) are veterans. There are a further 2000 civilian employee veterans of the NZ Defence Force. Community-based veteran numbers are unknown, but may be up to 30,000. People who served in World War II, Korea and Vietnam number only several thousand. The focus of this current project is

WHAT GAP THIS FILLS

What is already known: New Zealand veterans may have complex mental and physical complaints related to multiple exposures to war environments. eCHAT (electronic Case-finding and Help Assessment Tool) is a self-completed electronic holistic screen for substance misuse, problem gambling, anger control, physical inactivity, depression, anxiety, exposure to abuse; and assesses whether help is wanted for identified issues.

What this study adds: A modified version of eCHAT (VeCHAT) with remote functionality for clinical assessment of mental health and lifestyle issues of contemporary veterans was developed and proved acceptable and feasible for use by Veterans' Affairs New Zealand. The capacity of Veterans' Affairs to respond if their engagement with veterans increases, and employment of VeCHAT is scaled up, is unknown.

on contemporary veterans, the largest civilian group (served from the 1990 Gulf War onwards).

Contemporary veterans may have complex mental and physical complaints related to multiple exposures to war environments. This includes high levels of substance misuse, anxiety, depression and post-traumatic stress disorder (PTSD) compared to the general population, both in the United States (US)[2,3] and NZ.[4,5] International studies show that veterans have high rates of problem gambling,[6] often co-existing with substance misuse and mental health issues.[7–10] They may have difficulties with anger control, often associated with depression and other mental health and lifestyle disorders.[11,12]

eCHAT is a self-completed electronic holistic screen for smoking, drinking, other drugs, problem gambling, depression, anxiety, exposure to abuse, difficulty with anger control and physical inactivity,[13,14] and assesses whether help is wanted for identified issues,[15–17] thus enabling people to prioritise where they are ready to make changes. The tool has been evaluated and validated with NZ European, Māori, Pacific and Asian populations, and has proved acceptable.[18–21] Patients are generally more likely to disclose information, and feel more comfortable doing so, when disclosing via electronic format in the first instance.[22] eCHAT is a rapid screening system and can be completed on any electronic device with internet access. Once complete, a brief summary report is available to the authorised health provider, including scores, recommended support pathways and resources. An alert is issued for any indication of risk of self-harm.

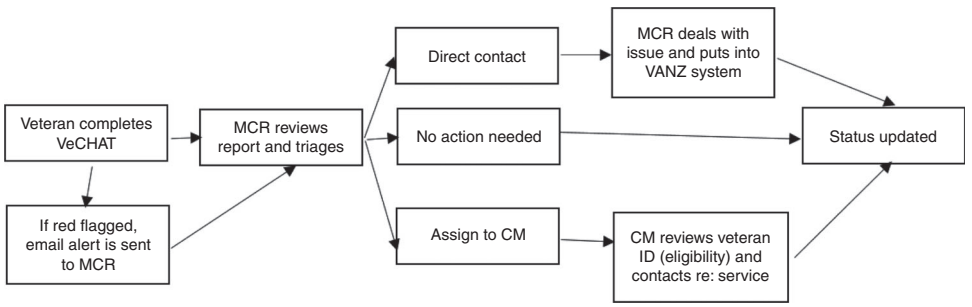
NZ veterans are entitled to a range of physical and mental health and social services specified by the Veterans' Support Act.[23] Veterans' Affairs New Zealand employs medical case reviewers to assess veterans' eligibility for services, arrange these directly or contact Veterans' Affairs case managers to arrange and coordinate the support. However, most ex-serving veterans are not registered with Veterans' Affairs; there is no systematic way to engage them, and generally they do not access the available support. Veterans' Affairs would like to proactively engage with ex-serving veterans, and wishes to know where to invest and target their care. Effective detection and intervention for the issues addressed in eCHAT can result in considerable health and well-being benefits to veterans and to their families.

This proof-of-concept study aimed to use co-design to develop a modified version of eCHAT (VeCHAT) for the clinical assessment of the mental health and lifestyle issues of contemporary NZ veterans. Traditionally, eCHAT is used in the context of a face-to-face clinician–patient encounter, but VeCHAT required modification to enable remote usage functionality. With Veterans' Affairs case managers located in only two NZ cities, a remote tool enabled a much larger reach, so that veterans could complete the questionnaire on their own, off-site and nation-wide. The second aim was to assess the acceptability of VeCHAT to community-based veterans and to Veterans' Affairs care providers, and feasibility for Veterans' Affairs using the VeCHAT to screen and intervene, as indicated with veterans living in the community. Should it prove feasible and acceptable, its use could be scaled up to all civilian veterans, and subsequently to defence force personnel in active service, and longitudinal collated anonymised data can be accumulated. This could have considerable impact on the clinical and social management of veterans' health issues and the wellbeing of NZ veterans.

Methods

The study was registered with the Australian New Zealand Clinical Trials Registry with the universal

Figure 1. Diagram of anticipated workflow. MCR (medical case reviewer); CM (case manager); Veterans' Affairs (New Zealand Veteran Affairs).



trial number, U1111–1206–0971. Ethical approval was received from the Health and Disability Ethics Committee on 28 November 2017 for 3 years (Reference 17/CEN/224).

Development of VeCHAT

The study used a mixed-method, co-design approach involving end-users (community-based veterans, veteran organisations and Veterans' Affairs providers) in the process. Qualitative (interviews) and quantitative (acceptability survey and VeCHAT responses) data were collected. Although randomised controlled trials enable research projects to gather evidence about the effectiveness of an intervention, to do so, they must be delivered in a rigorous, controlled and often artificial setting, with findings not generalisable nor applicable to real-life clinical settings. Co-design employed in an implementation study seeks to identify barriers or potential challenges to successful delivery of the intervention.[24,25] For the current study, on-the-ground users (veteran groups and Veterans' Affairs health and social service providers) and stakeholders were involved in the modification of the tool and the procedures around its use. This approach increases the likelihood of adoption, uptake and implementation satisfaction.

Initial information-gathering meetings were held with the Veterans' Affairs medical case reviewer to determine the current systems in place to identify veteran need, assess their eligibility for services and provide support where indicated. The technical team discussed how the current tool could be modified, with further detailed technical (requirements-gathering) meetings with the medical case reviewer regarding development of VeCHAT content and processes around its use (Figure 1). A final prototype was approved by the full project team. Veterans' organisations, NoDuff and the Royal New Zealand Returned and Services Association Inc. (RSA), provided ongoing input into approaching and recruiting civilian veterans, including appropriate messaging.

Pre-implementation design

The core structure of eCHAT as a composite tool assessing several conditions and providing an immediate summary of results was retained, but considerable changes were made to create VeCHAT. This included its own database on the eCHAT University of Auckland server, a logo and remote functionality to enable completion of VeCHAT by email invitation, with a range of functions related to support remote usage (eg renewing existing invite, ability for veterans to enter or correct their personal details, functionality to send multiple invitations at once, and email alert functionality to inform senders of completed questionnaires including those requiring urgent action) (Figure 2).

New roles were created in the system for Veterans' Affairs medical case reviewers and case managers. A dashboard was designed to ensure the medical reviewers could electronically review reports and engage the services of case managers as required (Figure 3).

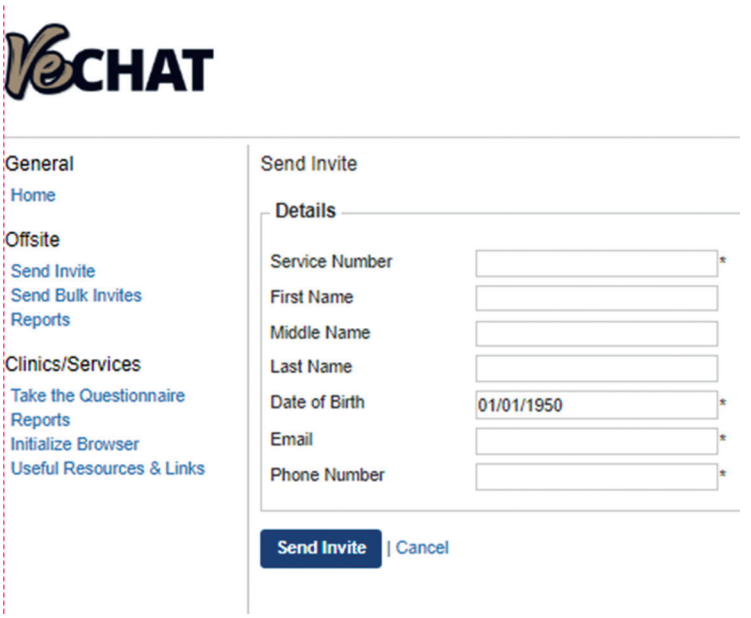
A module to assess PTSD using the validated Primary Care PTSD Screen[26] was added, plus relevant 'life situation' questions, including recent

employment history. A full VeCHAT user-manual was created.

Peri- and post-implementation activities and changes

Throughout and following implementation, feedback from the medical case reviewer led to further refinements. He socialised the idea of VeCHAT with the case managers, provided training and monitored ongoing use.

Figure 2. VeCHAT main navigation screen.



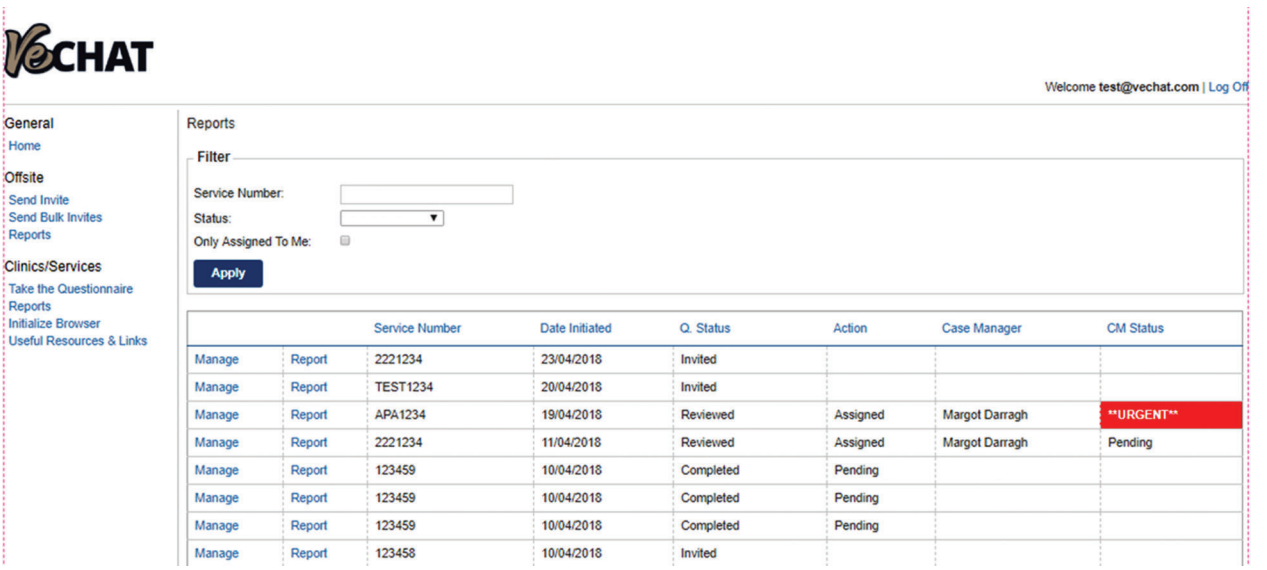
Study participants

We recruited veteran participants from August 2018 to March 2019. A sample of 200 was sought. Veterans' Affairs were asked to invite ex-service contemporary veterans to participate, augmented by a snowball approach. NoDuff and RSA disseminated study information through their networks, and several groups within the veteran community (including WeServed, RedSix and Workbridge) were invited to post study information on their Facebook pages or websites. The medical case reviewer trained three case managers to use VeCHAT, who consented to semi-structured interviewing at study completion.

Data

The four data sources were: screening data extracted from VeCHAT; brief online follow-up survey sent to participants approximately 2 weeks after completing VeCHAT; email and verbal feedback from the medical case reviewer; and transcribed semi-structured interviews conducted with case managers.

Figure 3. VeCHAT report dashboard example.



Analyses

Descriptive statistics were computed using Microsoft Excel (Microsoft Corporation). Thematic analysis of interview responses used a general inductive approach.

Results

Veteran participants

Thirty-four veterans completed VeCHAT and 15 the follow-up survey. Most (94%) were male; 85% were NZ European, with three Māori and Pacific respondents and two 'Other'. Nine percent were aged 20–29 years, 47% 30–49 years, and 44% ≥50 years. Fifteen percent served before 1990, 32% between 1990 and 2000, and 53% after 2000. Thirty-two percent reported being unemployed for the past 2 years, 62% had had one or two jobs, and 6% three or four jobs. The screening results of the 34 respondents is shown in Table 1.

Table 1. Positive screens in the 34 respondents

Domain	Numbers screening positive
Smoking	3 were current smokers
Drinking	26 drank alcohol, with 2 categorised as 'at risk'
Other drugs	3 took recreational drugs
Gambling	5 gambled, but none reported this caused distress
Anxiety	8 had mild; 3 moderate, and 2 severe anxiety
Depression	3 had mild; 4 moderate, and 1 severe depressive symptomology
PTSD	5 experienced all 4 symptoms; 3 reported 3; 11 reported 2; 7 reported 1; and 8 reported no PTSD symptoms
Anger	14 reported issues with controlling anger
Abuse	4 reported abuse concerns
Physical inactivity	10 reported physical inactivity

Veteran acceptability

Of the 15 veteran participants who completed follow-up surveys, nine heard about the study via NoDuff, three from RSA and three from other sources. Most found VeCHAT easy to use and understand, and not too long (Table 2). They mostly felt comfortable answering the questions, were generally not worried about the privacy of responses, and two-thirds would recommend VeCHAT to others. One commented:

> 'I liked it as a tool and have recommended it to others. In terms of comfort answering questions I only found it difficult in the sense it highlighted some things I hadn't consciously considered, which was good in a way and it gave me some time to think about it.' [V6]

Eight participants thought VeCHAT should also screen for other domains (sleep, physical health, relationship issues) and health issues from service exposures (eg hearing loss). All but two thought it should be available for all veterans. One wanted a free-text box. The standard screening tools used in VeCHAT (PHQ-9 for depression, GAD-7 for anxiety) ask about the previous three months, and one participant commented 'Most questions were directed at the last three months and I've been on and off over 10 years so I couldn't answer a lot of questions accurately.' [V4]

Table 2. Acceptability of VeCHAT to veteran participants

Statement (1 = disagree; 10 = agree)	Mean	Std Dev	Variance
VeCHAT was easy to use	**8.40**	1.74	3.04
I had difficulty opening the link to VeCHAT	**2.00**	2.22	4.93
I had difficulty completing VeCHAT because of the internet/technology	**2.00**	2.22	4.93
I liked the way VeCHAT looked	**6.33**	3.22	10.36
VeCHAT was too long	**2.53**	2.31	5.32
VeCHAT was hard to understand	**2.60**	2.85	8.11
There were too many questions	**2.73**	2.54	6.46
I felt comfortable answering questions about mental health (eg mood) on VeCHAT	**7.47**	2.53	6.38
I felt comfortable answering questions about my lifestyle (eg smoking) on VeCHAT	**7.40**	2.52	6.37
It was easier answering mental health and lifestyle questions on VeCHAT than in a face-to-face situation	**6.13**	2.99	8.92
I was worried about the privacy of my responses	**2.40**	2.42	5.84
I would recommend VeCHAT to others	**6.80**	3.15	9.89

Std Dev (standard deviation).

One commented that 'no veteran I have talked to has had good response from the government or VANZ' [V3], but another gave good feedback about

the follow-up received from VANZ, commenting 'It should be available to all current and former service personnel. I know there is a huge amount of distrust of NZDF from a large amount of people still serving who fear putting their hand up for help may affect their career… but this [VeCHAT] is a very good start.' [V10]

Case manager acceptability and feasibility

All case managers agreed that VeCHAT was an acceptable tool with much potential to deliver benefit: 'It's got a hell of a lot potential' [P1]; 'Big thumbs up for the tool' [P2]; 'In terms of content very happy with it. It's the next step after that… it's just how we sell it to them' [P3]. The principal medical case reviewer reported 'Very positive response from the team [case managers exposed to VeCHAT]… rehab caseworkers are very happy'.

One case manager wondered whether VeCHAT delivers honest results:

> 'Some of those questions asked were pretty meaty … purpose of VeCHAT was to get that information, but I was thinking woah I don't have any of those issues, but if I had serious mental health or addiction issues how honest would I be?' [P2]

In the analysis of transcribed interviews, four key themes emerged: general functionality and design; incorporating VeCHAT into 'business as usual'; barriers to use; and suggestions for improvement.

General functionality and design

Generally, the tool was well received:

> 'No problems [accessing] it was pretty straight forward if I could navigate myself around it then I don't see anybody else having any issues.' [P1]
>
> 'I like the tool design, we all liked it. Drop-down menus and how one question led to another. Didn't feel too onerous and also language seemed very clear.' [P2]
>
> 'Very easy [to use]. Running it off the iPad is just fantastic… it was faster than the desktop.' [P2]
>
> 'Validated screening allows comparison with other cohorts, the online format is engaging once into it.' [P3]

A noted challenge affecting its acceptability to veterans was the original sign-up process. 'Issue for veterans was ease of access [ie signing up to study, starting the questionnaire] - once into it, it was easy. Most are smartphone not desktop users' [P3]. This feedback led to provision of a webpage accessible from a smartphone.

Incorporating VeCHAT into 'business as usual'

Case managers suggested VeCHAT should be part of routine veteran engagement:

> 'Could be expanded and included in case management job description … another tool to connect with our veterans or for veterans to connect with us.' [P1]
>
> 'There may be value in this as the entry screening tool at first interview in the claims registration process.' [P3]
>
> 'It had huge potential in being a really good kick-starter for those conversations that are possibly had but asked in a more ad-hoc way… also potentially a training method for the some of our case managers who are the main people to have the direct contact on a more regular basis with veterans.' [P2]

Barriers to use

Respondents acknowledged how difficult it was for Veterans' Affairs to engage with veterans, and this was demonstrated by the poor study recruitment:

> 'Disappointed at the number of participants.' [P1]
>
> 'The primary barrier.. was just the uptake.' [P2]
>
> 'We (Veterans' Affairs) have the same problem trying to contact them once they are ex-service, once they've gone.' [P1]

It was suggested that suspicion and paranoia about their information contributes to poor engagement:

> 'General disengagement in the contemporary cohort, high levels of suspicion especially about anything that may involve NZDF.' [P1]
>
> 'That whole contemporary group is very suspicious, very disengaged.' [P3]

One commented that having to work with an online tool might have been an issue for older veterans:

> 'Generational issues around access or familiarity ... may have had access to a computer but if they

aren't that familiar with it, they got stuck or they missed the link ... could have been an issue… having to work around an online tool.' [P2]

Suggestions for improvement

The case managers made several technical and other useful suggestions for tool refinement:

'Ability to do serial screening … Perhaps baseline and then follow-up.' [P1]

'Ability to email veterans directly from within VeCHAT dashboard … eg once their completed questionnaire report is read by the Case Manager, can click a button to directly email the veteran to make contact.' [P3]

'Moving forward this sort of system needs to have some business intelligence built in, so self-screening and self-manage takes the load off. The ones that get elevated get tied into peer supporters or clinicians as the risk level increases.' [P2]

Discussion

This study achieved its aims of developing a veterans' version of eCHAT, demonstrating the feasibility of use by Veterans' Affairs, and delivering a tool acceptable to both veterans and case managers. VeCHAT is able to rapidly screen veterans, and the workflow arranged within Veterans' Affairs has the potential to streamline their responses, providing veterans with the services they need and are entitled to receive. However, despite attempting to connect with veterans in numerous ways, VeCHAT uptake was low. The disengagement of veterans with Veterans' Affairs and its support is not unique to NZ. There is similar poor veteran engagement with mental health services in the US after transition to civilian life.[27]

Access to the internet may be a barrier for some, especially older veterans, but most New Zealanders have internet access from a variety of means including personal computers, tablets and mobile phones, or free computer use in public libraries. The 2013 Census found that 85% of people aged <65 years had at-home internet access, compared with 75% of people aged 65–74 years, and 49% of people aged ≥75 years.[28] These numbers are likely to have increased since 2013. A US study found veterans did not differ significantly from non-veterans with respect to internet use.[29]

This project managed to engage with Veterans' Affairs staff and veteran support groups such as NoDuff to co-design a remote-access mental health and lifestyle screening tool for contemporary civilian veterans. The tool successfully sent electronic invites, veterans completed it at home using a phone or other device, and results were immediately accessible to the medical case reviewer for triage, either dealing with the veteran directly or referring to a case manager for further follow up. The tool proved feasible to use and acceptable to veterans and Veterans' Affairs staff.

We have subsequently used this remote functionality in another 'CHAT' product, YouthCHAT. During the New Zealand COVID-19 lockdown in the first half of 2020, YouthCHAT was programmed to enable doctors, nurses and counsellors to text or email adolescents isolated at home, send them a link to complete YouthCHAT, and then follow up with a telephone or video remote consultation to address the issues revealed in their YouthCHAT screen. Mobile nurses in Northland are continuing to use this feature.

However, the underlying issue of Veterans' Affairs' inability to engage with contemporary veterans was not addressed. This means the veteran sample was small and not representative of the overall civilian veteran population, hence an indication of the mental health and health risk behaviours prevalence in this population was not possible. A sample of 200 veterans could have given an indication of prevalence rates of mental health issues and risky health behaviours. Should Veterans' Affairs find a means to identify and connect with community-based veterans, providing remote-based services may increase their engagement. A telephone-administered motivational interviewing programme has been shown to enhance treatment for Iraqi and Afghanistan veterans with mental health problems.[30]

All case managers suggested standardisation or systematisation of conducting VeCHAT screens. How that is best implemented is a question for future research.

Implications

VeCHAT is an effective tool for engagement by Veterans' Affairs with contemporary veterans, who would benefit from mental health and other support they are entitled to but not accessing. It could be of value for both serving and ex-service veterans. With noted issues around veteran suspicion of the Defence Force, ensuring protection of privacy, and assurance that their information only goes to Veterans' Affairs is important.

VeCHAT could be deployed routinely at first interview in claims registration, during regular case management of clients or repeated regularly over time for monitoring purposes, as well as *ad hoc*, to assess individuals' risks and needs. More work is needed to determine how Veterans' Affairs can best connect with their veterans, and then integrate larger numbers into their workflow.

Competing interests

The authors declare no competing interests.

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