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# BMJ Open Quality **Initiating pre-exposure prophylaxis in the inpatient setting: a quality improvement project**

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## ABSTRACT

Many patients who are at high risk of HIV transmission do not receive pre-exposure prophylaxis (PrEP). HIV risk counselling and PrEP initiation have historically been limited to outpatient settings. Here we describe a novel quality improvement project at San Francisco's main safety-net hospital designed to incorporate universal screening for active HIV risk factors and PrEP initiation into standard inpatient care. Interventions included education sessions and dissemination of clinical materials to increase providers' knowledge and comfort with HIV risk screening, prevention counselling and prescribing PrEP. We implemented new workflows on the inpatient medicine service to encourage providers to universally screen all patients at the time of admission and initiate PrEP for appropriate patients during their hospitalisation. Over the first 9 months of the initiative, 14 inpatients were started on PrEP during their admission. As PrEP was initiated in particularly vulnerable patients, using inpatient admissions to engage at-risk patients in HIV prevention may help to reduce disparities in HIV outcomes.

## INTRODUCTION

Despite multiple studies supporting the safety and efficacy of pre-exposure prophylaxis (PrEP) for the prevention of HIV infection, many patients who are at high risk of HIV transmission do not receive PrEP.<sup>1,2</sup> HIV risk screening, counselling and the initiation of PrEP have historically been limited to outpatient settings.<sup>3,4</sup> However, inpatient providers frequently encounter patients with active HIV risk factors who are not regularly connected to outpatient care. Inpatient admissions, specifically at safety-net hospitals, represent an underused opportunity to screen and counsel patients about HIV risk factors, initiate PrEP and connect vulnerable patients to outpatient care. Here we describe a novel quality improvement project designed to incorporate universal screening for active HIV risk factors and PrEP initiation into standard inpatient care.

## METHODS

### Context

San Francisco, California, has a large population of people living with HIV and reducing

HIV transmission is a priority of the San Francisco Department of Public Health.<sup>5</sup> San Francisco's main safety-net hospital provides ~20% of the city's inpatient care and serves approximately 100 000 patients annually, many of whom have active risk factors for HIV.<sup>6</sup> Although the health system has an affiliated PrEP outpatient clinic and an interdisciplinary HIV team, there were no systematic efforts to initiate PrEP during inpatient admissions prior to this project.

## Interventions

Interventions included incorporating PrEP education for all inpatient medicine physicians into conferences and disseminating clinical support materials to increase knowledge and comfort with HIV risk screening, prevention counselling and PrEP prescribing. This quality improvement project instructed providers to universally screen all patients for HIV risk factors at the time of admission and provide counselling on HIV prevention strategies. If a patient had active risk factors and expressed interest in PrEP, we implemented new workflows for inpatient PrEP initiation (figure 1).

## Measures

Our primary outcome measure was the number of PrEP initiations on the inpatient medicine service. To further evaluate the impact on health disparities, we captured socioeconomic demographics, documented HIV risk factors and outpatient follow-up measures through retrospective chart review.

## RESULTS

Prior to this project, zero inpatients had been initiated on PrEP. Over the initiative's first 9 months, 14 inpatients were started on PrEP (table 1). During this time, the daily census on the entire medicine service averaged between 60 and 100 patients, and providers were encouraged to universally screen all patients at the time of admission. PrEP was



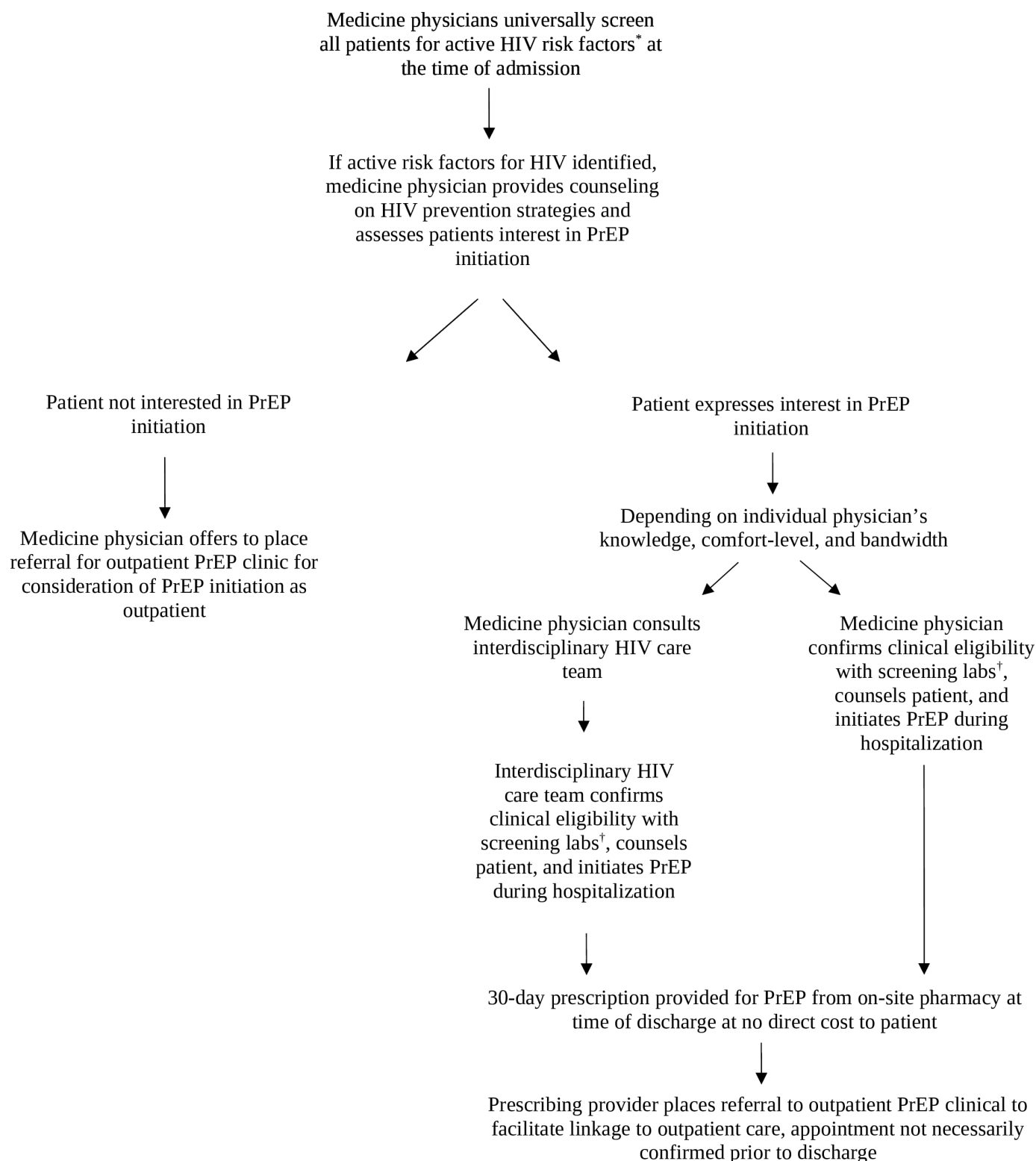
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**Figure 1** Workflow for inpatient providers to screen, facilitate PrEP initiation and increase utilisation of existing institutional resources for hospitalised patients with active HIV risk factors. PrEP, pre-exposure prophylaxis.

\*HIV risk factors: sexual partner with HIV or HIV risk factors, engaging in sex work/survival sex, active injection drug use, history of gonorrhoea or syphilis infection within the past 6 months, being a man or transwoman engaging in condomless anal sex, or having received post-exposure prophylaxis within the last year.

†Screening labs: HIV antibody/antigen, HIV RNA viral load, creatinine/glomerular filtration rate, Hepatitis B surface antigen, and if relevant risk factors to consider Rapid Plasma Reagin to test for syphilis, 3-site gonorrhoea/chlamydia testing (oral, genital, rectal), urine pregnancy test, and Hepatitis C Virus testing.

**Table 1** Demographic characteristics and process measures of inpatients initiated on PrEP during the first 9 months of the intervention (N=14)

	PrEP prescribed n (%)
<b>Demographic characteristics</b>	
Age, mean (range)	40 years (25–64)
Gender	
Cisgender man	9 (64.3)
Cisgender woman	4 (28.6)
Transgender woman	1 (7.1)
Race	
Asian	1 (7.1)
Black/African American	1 (7.1)
Latinx	4 (28.6)
White	8 (57.1)
Unhoused	12 (85.7)
Active HIV risk factor*	
Injection drug use	9 (64.3)
Multiple sexual partners without protection	9 (64.3)
HIV+partner	4 (28.6)
Documented STI within 6 months	1 (7.1)
<b>Process measures</b>	
Involvement of interdisciplinary HIV care team during hospitalisation	5 (35.7)
Discharge referral to outpatient PrEP clinic placed prior to discharge	5 (35.7)
Active PrEP prescription 12 months after discharge	6 (42.9)
*Not mutually exclusive, multiple patients with more than one documented active HIV risk factor. PrEP, pre-exposure prophylaxis; STI, sexually transmitted infection.	

initiated in particularly vulnerable populations: 85% of patients were experiencing homelessness and 64% injected drugs. In the first 12 months after discharge, 6 patients (42.9%) had active PrEP prescriptions continued by outpatient providers.

## DISCUSSION

PrEP initiation can be incorporated into inpatient care. Although we recognise there are times when patients' psychosocial and medical concerns may need to be prioritised over inpatient HIV prevention efforts, our intervention successfully implemented workflows for inpatient PrEP screening and initiation. Since our initiative reached particularly vulnerable populations, using inpatient admissions to engage at-risk patients in HIV prevention may help to reduce disparities in HIV outcomes. Inpatient providers independently counselled and initiated PrEP for most patients (64.2%) without involving the interdisciplinary HIV team. This suggests that comparable initiatives could be successfully implemented in organisations without similar institutional resources.

Major limitations of our study include the lack of available data on the total number of patients screened and

the inability to accurately measure the number of patients with active HIV risk factors that may have benefited from PrEP initiation. We also did not track the number of patients who subsequently started PrEP as an outpatient after discharge. Although our primary outcome measure of the absolute number of PrEP initiations was small given the number of patients on the inpatient medicine service, we likely have underestimated the impact of this intervention by not quantifying the effects of patient counselling.

This project required a substantial culture change since PrEP initiation was considered an outpatient intervention in our healthcare system. After 9 months, the implemented workflows remained in place although we stopped collecting data owing to reallocation of resources and personnel as a result of the COVID-19 pandemic. Although further dedicated monitoring may have helped ensure sustainability, the project's emphasis on increasing providers' knowledge and confidence as well as integrating new workflows allowed providers to continue HIV risk screening, prevention counselling and PrEP prescribing after data collection ended. More research is needed to investigate the sustainability of this novel inpatient initiative, to evaluate patient-level barriers to



inpatient PrEP initiation and to compare the longitudinal impact of inpatient vs outpatient PrEP initiations.

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#### REFERENCES

- 1 Huang YA, Zhu W, Smith DK, *et al.* HIV preexposure prophylaxis, by race and ethnicity—United States, 2014–2016. *MMWR Morb Mortal Wkly Rep* 2018;67:1147–50.
- 2 Mayer KH, Agwu A, Malebranche D. Barriers to the wider use of pre-exposure prophylaxis in the United States: a narrative review. *Adv Ther* 2020;37:1778–811.
- 3 Liu A, Cohen S, Follansbee S, *et al.* Early experiences implementing pre-exposure prophylaxis (PrEP) for HIV prevention in San Francisco. *PLoS Med* 2014;11:e1001613.
- 4 Liu AY, Cohen SE, Vittinghoff E, *et al.* Preexposure prophylaxis for HIV infection integrated with municipal-and community-based sexual health services. *JAMA Intern Med* 2016;176:75–84.
- 5 Getting to Zero SF. Getting to zero San Francisco. Available: <https://gettingtozerosf.org> [Accessed 10 Jan 2023].
- 6 University of San Francisco California. About UCSF at ZSFG. Available: <https://zsfg.ucsf.edu/about-ucsf-zsfg> [Accessed 10 Jan 2023].