The unexpected effects of the HIV prevention pill

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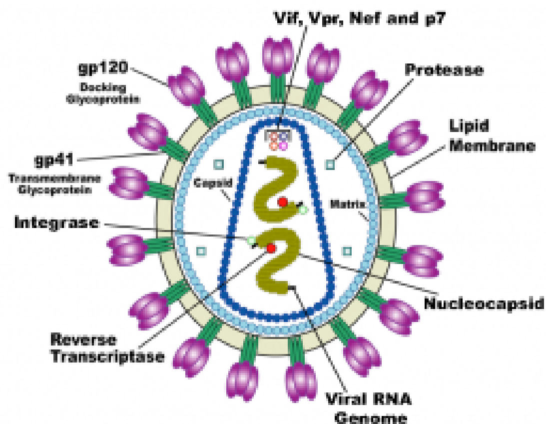

Diagram of the HIV virus. Image: US National Institute of Health/Wikipedia.

On a brilliant blue California morning, an ambulance idles up San Francisco's Castro Street. A small rainbow flag flutters from its antenna while its speakers blare:

"Young man, there's no need to feel down!"

Two days before one of the largest Gay Pride parades in the US, nearly everything in sight has been decked with rainbow flags. And balloons. And bunting.

Men young and old have begun streaming into the city's largest sexual health clinic, Magnet at Strut, while a free consultation service at the

University of California at San Francisco about two miles east is being swamped with calls from healthcare providers around the Bay Area. Many are desperate to get their patients started on the same blue pill before the weekend's festivities lead to a flurry of hook-ups.

It's not the little blue pill you might be thinking of. It's Truvada, the brand name of a daily HIV prevention pill known as pre-exposure prophylaxis, or PrEP.

The two-drug combination was originally formulated as a virus-suppressing therapy for HIV-positive people, but clinical trials later suggested it was also effective at blocking the virus from taking hold in the first place. In 2012 the US Food and Drug Administration gave it additional approval as a preventive drug, further expanding its use in May 2018 to include at-risk adolescents.

After a slow start, Truvada is surging in popularity around the world among men who have sex with men. Although good numbers are lacking, San Francisco is widely believed to have the highest uptake in the world. There, the rate of new HIV infections roughly halved between 2012 and 2016, attributed largely to more testing, better use of treatment to make people with HIV uninfectious, and PrEP.

In city after city, public health officials and doctors have begun crediting PrEP with helping to dramatically reduce HIV transmission rates. In New York, Chicago, London, Sydney, Melbourne. All this is in spite of some formidable barriers to access and an ongoing backlash – especially from other gay and bisexual men.

PrEP is a "party drug" for people who want to have riskier sex but who can't be expected to take the pills responsibly, critics have said.

- It is a "boutique intervention" that will only be used by the few.

- It will lead to more drug-resistant HIV.
- It will cause "complacent" men to abandon condoms en masse and drive up rates of other STIs.
- It will lead to more antibiotic-resistant gonorrhoea and could contribute to syphilis and other infections following suit.

In 2012, HIV campaigner and writer David Duran coined the phrase "Truvada whore," to blast PrEP as a gateway to "unsafe practices" by other gay men and as a likely contributor to the spread of other STIs. In their defiant response, PrEP supporters began wearing "Truvada whore" T-shirts. Writing since, Duran says his "slut-shaming" and "ignorant" attitudes have shifted and he now embraces the prevention strategy. But the assumption that PrEP has encouraged gay and bisexual men to forgo condoms and fuel the recent surge in other STIs has nevertheless become so widespread that a recent op-ed in the New York Times questioned whether the pill's arrival heralded "the end of safe gay sex."

Even gay publications have called the rise in other STIs PrEP's "nasty downside," while researchers have lamented a "failure" in safer sex messaging.

What if this common narrative isn't quite right?

More broadly, what does the divide over PrEP say about the deep-rooted tension between scientific advances and moral judgements around sex?

Most importantly, can today's public health campaigns really move past more than three decades of dread with effective prevention messages that promote sex without fear?

So far, the purported links between PrEP and STIs – whether positive or negative – have proven contentious.

It's true that PrEP alone doesn't prevent STIs beyond HIV; both Gilead Sciences, Truvada's manufacturer, and public health providers have made that limitation clear. In the relentlessly upbeat and slightly surreal formula of US pharmaceutical ads, a new Truvada spot features cheerful multicultural actors who declare, "I'm on the pill," and then cautiously recommend "safer sex" practices like condoms and recite the drug's potential side-effects while men play soccer. Among the rare but more serious side-effects: decreased kidney function and a loss of bone mineral density (read Mosaic's Q&A with a person on the UK's PrEP trial).

One study by researchers at the University of California at Los Angeles suggested another potential side-effect: a staggering increase in bacterial STIs among gay and bisexual men taking PrEP. In response, a second group of researchers from the same university contended that multiple mistakes had wildly inflated the study's estimate.

So far, the balance of evidence suggests that, despite prompting some behavioural changes in how men are having sex, PrEP hasn't been the main driver of increasing STI rates. In fact, the start of recent STI spikes in the US, UK, Australia and elsewhere, as well as across-the-board declines in condom use, all pre-dated the pill's availability.

One 2018 analysis of more than 300 gay and bisexual men from across the US found that as their PrEP use increased, so did the amount of anal sex without condoms they reported having. That increase, though, wasn't accompanied by a significant rise in rectal STIs.

Another major analysis of 17 studies concluded that PrEP's arrival didn't change the proportion of gay and bisexual men who reported having sex without condoms, or increase the number of partners they were having sex with. Rather, those who were already having some sex without condoms reported having more of it.

The analysis tentatively linked PrEP use to a rise in STIs overall. But pooled results by type of infection yielded a statistically significant increase only for rectal chlamydia and the authors urged other researchers to explore whether more testing due to expanding PrEP access might be influencing the STI rates.

Presciently, the authors suggested that decreases in condom use could be counteracted by earlier diagnosis and treatment of STIs through PrEP programmes. And, indeed, evidence is emerging that rigorous programmes may help find hidden STI cases and even drive down rates over time, by acting as gateways to more regular sexual health testing.

Some of the first hints of real-world success appeared in an August 2018 presentation at the National STD Prevention Conference in Washington, DC, and in a related study submitted for publication. For one part of the research, lead author Kellie Freeborn, a nurse practitioner at San Francisco's Magnet at Strut clinic, looked at 436 gay and bisexual men deemed high-risk due to inconsistent condom use or other criteria. Under the clinic's PrEP regimen, nurses tested the men before they started treatment, after one month, and then every three months thereafter.

After 13 months, the combined rectal chlamydia and gonorrhoea rate fell from 27 per cent to 5 per cent while syphilis dropped from 8 per cent to 5 per cent. The combined pharyngeal (throat) gonorrhoea and chlamydia rate, however, remained level at around 14 per cent.

Freeborn's study picked up other surprising trends: unlike the drift towards less frequent condom use documented by some other researchers, the high-risk men in her study didn't appear to be following suit. Older men began using condoms more, for example, and even some who had never used them began to start, especially after being diagnosed with an STI.

In a separate group of 81 men considered low-risk because they reported only having oral sex or always using condoms, her research revealed a higher-than-expected baseline rate of STIs before their start on PrEP. A combined 6 per cent had rectal chlamydia or gonorrhoea, 7 per cent tested positive for pharyngeal chlamydia or gonorrhoea and 1 per cent had syphilis. "A lot of them had never been tested because they were considered 'safe,'" Freeborn says.

Thirteen months later, this group's combined rectal chlamydia and gonorrhoea rates fell to zero. The pharyngeal chlamydia and gonorrhoea rate rose to 11 per cent, though, and syphilis returned to 1 per cent despite considerable variability in the intervening months.

The reported decline in rectal STIs for both groups may be the first clear affirmation of an earlier modelling study led by Samuel Jenness, an epidemiologist at Emory University in Atlanta.

If 40 per cent of gay and bisexual men in the US go on PrEP, but 40 per cent of them stop using condoms as a result, Jenness and colleagues calculated, a twice-yearly STI testing regimen could still avert roughly 40 per cent of new gonorrhoea and chlamydia cases over the next decade. A quarterly testing regimen, they determined, could reduce STI incidence by an additional 50 per cent.

The reason, Jenness says, is that PrEP-related STI screening can significantly increase the treatment of asymptomatic and rectal infections.

He says his modelling was motivated in part by a desire to determine whether men on PrEP are driving the increase in STI rates. The available evidence, he says, points to a "resounding no."

Models don't account for all real-life variables. Even so, Jenness's results

helped prompt the US Centers for Disease Control and Prevention (CDC) to update its guidelines and recommend that gay and bisexual men on PrEP who are at high risk for bacterial STIs be tested for them in addition to HIV every three months – a policy already in place at clinics like Magnet.

At London's 56 Dean Street clinic, which likewise caters primarily to gay and bisexual men, a slightly different pattern has emerged. As STI testing has increased in frequency, rectal chlamydia diagnoses have risen in proportion – but rectal gonorrhoea diagnoses have not. They actually fell by 24 per cent from their peak in 2015 to the end of 2016.

"The drop in gonorrhoea, it's fascinating and definitely is real," says Sheena McCormack, a clinical epidemiologist at University College London and a doctor at the clinic. One possibility is that unlike more commonly asymptomatic chlamydia, rectal gonorrhoea may still cause a little "niggle" that prompts someone to be tested and treated sooner, she says.

Higher anxiety over the antibiotic-resistant gonorrhoea superbug also might prompt more willingness among notified sexual partners to go in for testing.

Freeborn says her own study supports the idea that STI rates may initially spike among gay and bisexual men enrolled in PrEP programmes because the comprehensive tests are often the first they've ever had. As she puts it: "You go fishing and you're going to get fish."

In addition, her research provides a stark reminder of the barriers to even basic care faced by many: when they enrolled in her study, nearly 60 per cent of the men lacked any health insurance.

The associations between gay sex and disease, and the moral imperative

attached to condom use, she and other providers say, may have made the problem worse.

"I think what we went through was an era of stigma and shaming and people would automatically say to their providers, "Yes, of course I use condoms,"" she says. Consequently, they were often considered low-risk and never tested for STIs. Freeborn blames the public health field for fuelling an avoidance of honest discussions over condom use or a reluctance to see doctors at all for fear of being lectured. "We created that," she says.

PrEP has helped men have much more realistic discussions with their doctors about what their risk really is and how to reduce it, McCormack adds. "I think individuals who found it very hard to self-report inconsistent condom use because that was socially undesirable are now able to do so."

Not everyone is on board with the idea that public health institutions should be celebrating sex, much less recreational sex, or that PrEP should be elevated to a status traditionally reserved for condoms.

The Los Angeles-based AIDS Healthcare Foundation, billed as the largest in the world, has promoted the "same clear message" for nearly 25 years: "If you're having sex, you need to use a condom, consistently – every time." The charity has unapologetically promoted stark ads like a recent "Syphilis is Serious" campaign that depicts syphilis sores and a "Drug-Resistant Gonorrhea Alert!" counterpart in which the conjoined bacteria resemble underwater mines.

Few PrEP critics have been more outspoken than Michael Weinstein, the foundation's president. In 2014, the foundation released a blistering "What if you're wrong?" takedown of the CDC's decision to back PrEP as an additional HIV prevention tactic.

Amid growing evidence of good adherence and successful prevention, the foundation softened its stance in 2015 to seek "common ground" on PrEP. In a 2017 op-ed, though, Weinstein and two foundation scientists remained deeply sceptical. In the journal AIDS, they wrote that although the pill is highly effective when taken correctly, the data on uptake, adherence and risky behaviour suggested that it had not achieved "the positive impact anticipated by the CDC."

Foundation spokesman Ged Kenslea emphasises that although the charity isn't questioning PrEP's clinical effectiveness, "there is concern about deploying it as a community-wide public health intervention."

In particular, the foundation believes decreased condom use by men on PrEP is "a contributing factor to the explosion of STDs." The organisation remains concerned about adherence as well, though Kenslea is optimistic that the ongoing development of a long-acting implant, akin to a contraceptive implant, could make PrEP's effectiveness far less dependent on daily compliance.

Even so, he questions whether the pill in its present form deserves credit for helping to dramatically reduce San Francisco's HIV transmission rate. "It could be that people who are at higher risk for HIV acquisition have been priced out of that city," Kenslea says.

That view isn't widely shared, though epidemiologists agree that the HIV/AIDS crisis is far from over. In a 2016 analysis, the CDC warned that if the rate of new HIV diagnoses remained constant, half of all gay and bisexual black men and a quarter of their Latino counterparts in the US would become HIV positive within their lifetimes.

Even in wealthy countries, public health agencies are still struggling to get anti-HIV drugs – whether as treatment or prevention – to those who need them most. In the US alone, the CDC estimates that 1.1 million

people could benefit from taking PrEP; as of mid-August 2018, higher estimates suggested that only 220,000–225,000 were on it. Surging bacterial STI rates have compounded health concerns, especially since they can heighten the risk of HIV.

The soaring cost of the medicine is no small barrier, with discounted prices at local US pharmacies now averaging more than $1,700 for 30 tablets. Most of the country's insurers negotiate lower costs and pick up much of the tab, but out-of-pocket deductibles can still run into the thousands every year. Gilead offers a co-pay assistance programme to cover those costs as well, but uninsured patients who aren't eligible for financial assistance and who cannot access city- or state-sponsored aid are often out of luck.

Activist groups like PrEP4All are pushing for lower costs and wider availability of generic alternatives to get more at-risk people on the pill, reflecting growing concern over the sustainability of PrEP programmes given the limited budgets of many public health agencies.

If the thorny questions of access and cost can be resolved, multiple researchers and health officials say PrEP could be a tipping point in the fight against HIV.

That effort has received a crucial boost from a new draft statement by the US Preventive Services Task Force, in which the independent panel recommends that primary care doctors offer PrEP to everyone at high risk of acquiring HIV. The recommendation carries an "A" grade, denoting high certainty of a "substantial" net benefit. If the task force finalises its recommendation, federal law would mandate that insurers cover it without requiring a copayment.

According to the CDC, taking the pill consistently and as indicated reduces the risk of acquiring HIV by 92 per cent among gay and bisexual

men, though a 2014 study suggested that "optimal" use of the pill – verified by the drug's presence in blood samples – may reduce the risk by nearly 100 per cent.

Documented failures of PrEP in preventing HIV have been exceedingly rare: to date, researchers have reported only a handful of cases in people who took the pill consistently.

For commercially available condoms, the story is different. In a 2015 analysis of two studies of gay men who reported that their HIV-positive partners "always" used condoms for insertive anal sex with them, the effective prevention rate was estimated at only 72 per cent. According to the CDC's HIV Risk Reduction Tool, in fact, having anal sex with an HIV-positive partner who is using a condom is three to four times as risky as using PrEP for protection instead.

And if an HIV-positive individual's viral load has been reduced to undetectable levels by antiretroviral therapy for at least six months, the CDC and other agencies agree that there's effectively no risk of transmitting the virus to any sexual partners (a concept known as "Undetectable = Untransmittable").

Demetre Daskalakis, deputy commissioner at the New York City Department of Health and Mental Hygiene, says that although (cheap and readily available) condoms are the right prevention option for many, hectoring the public to use them has lost its effectiveness.

For years, health officials told people they would die without using condoms; ads featured the Grim Reaper, a giant scorpion, skeletons having sex and other overt references to death.

The addition of PrEP and treatment as prevention to public health toolkits means that many people are no longer "scared for their lives"

when they have sex, Daskalakis says. "I think human nature would say that they use condoms less frequently, and so that's what we're given," he says. "We need to evolve how we strategise STI prevention."

He credits the "explosive jump" in PrEP and the city's embrace of sex-positive messaging as major contributors to the nearly 15 per cent drop in new HIV diagnoses among gay and bisexual men from 2015 to 2016. "If you acknowledge that some of people's sex lives is for pleasure, if you acknowledge that and say, "Embrace the pleasure in your sex life, but make a plan to keep yourself healthy," all of a sudden, this all flows better versus, like, "Don't have sex or you're going to die,"" he says.

And for STIs other than HIV? "PrEP will not – at least the drug – prevent STIs," he says. "Although boy will it if you're doing the testing right and the treatment right."

Damon L Jacobs, a marriage and family therapist from Brooklyn, was one of the first in the US to start using PrEP beyond the confines of a clinical trial. He began in July 2011. "At that point I was 40 years old. I had been living with HIV hovering over me for over 20 years," he says. An urban gay white man who was using condoms less and less, he recalls how tired he was of being afraid of the virus, how part of his brain had acclimated to the idea that contracting it was all but inevitable.

Learning about PrEP, Jacobs says, completely changed his outlook: he could dramatically reduce his risk of HIV while preserving the sexual intimacy and connection he wanted with other men. He has written and spoken extensively about his experience since then, including the insults he has endured and the cloud of anxiety that dissolved due to the daily pill.

Five years ago, he launched the "PrEP Facts: Rethinking HIV Prevention and Sex' Facebook page. The group now has over 20,000 members from

around the world.

Members regularly debate the merits of new studies, including some that have suggested the decline in condom use over the past 20-plus years is accelerating. They are divided, as are researchers and healthcare providers, on the relative influence of PrEP.

One frequent argument revolves around the social science notion of "risk compensation," or the idea that if people feel more protected, they may take more risks – like wearing a seatbelt and then speeding. Risk compensation around sex is hardly a new concern – before PrEP, it was raised for condoms, adult male circumcision and the birth control pill.

A 2013 review, "A Pill for HIV Prevention: Déjà Vu All Over Again?", points out that birth control's debut in 1960 was likewise politically charged and accompanied by concerns over cost, safety and sexual promiscuity. "Introducing a product that would allow sex to be 'uncoupled' from procreation generated both hope and fear. A decline of moral standards was expected by some but doubted by others, including young women themselves," the review suggests. It took time for unmarried women to warm to the pill, in part because they "found it stigmatizing to admit to planning sex (rather than getting swept up in the moment)".

New methods that help sexually active adults avoid unwanted consequences, in other words, are often seen as morally questionable.

Stephanie Cohen, medical director of the San Francisco City Clinic, says the city has long embraced the separate philosophy of harm reduction: her clinic tries to help people understand the risks they may be taking and what they can do to minimise them.

Like the concerns over previous tools, she recalls the initial anti-PrEP

backlash from critics who asked, "Why can't these people just use condoms?"

For some older men who lived through the worst of the epidemic, embracing other forms of prevention has been difficult, Cohen says.

"It's a big shift in thinking and I think some of it comes just from a place of fear. Like, "Well, could there be something else?"" At the same time, because public health messages tended to promote condoms primarily in the context of HIV, she says, other men may believe they're no longer needed amid the increased availability of other prevention strategies.

"PrEP is not going to make people use condoms more. It's designed for people who may not be able to use condoms or don't use condoms 100 per cent of the time," Daskalakis says. For him, the new reality requires an accompanying shift in public health messaging, away from "scaring the bejesus out of people" and towards blame-free campaigns that encourage them to undergo more regular testing.

It also means understanding the strengths and limitations of PrEP as a harm reduction strategy. For those who cannot or will not use condoms, he says, it has been a game-changer for HIV prevention.

The rise of PrEP may be exposing other shortcomings in public health. The unreliability of self-reported risk documented by Kellie Freeborn and others suggests that the true burden of STIs in straight men and women – many of whom are considered low-risk and never offered the full battery of tests – might be vastly underestimated as well.

"We've decided, based on the AIDS crisis, that gay men are the problem, which may not be true because we don't test heterosexual men and women," Freeborn says. The testing gap is especially pronounced among straight men. But because of that blind spot, she argues, young women in

particular may be needlessly suffering from the recent spike in STIs.

One case history from Japan describes a woman with abdominal pain and bloody diarrhoea who was referred for an expensive colonoscopy and other tests. Her real problem was a chlamydia infection that could have been detected and treated for a fraction of the cost.

Asymptomatic cases have widened the blind spot.

Among the low-risk men on PrEP in Freeborn's research, the combined pharyngeal gonorrhoea and chlamydia rate actually increased, from 7 to 11 per cent, despite their regular check-ups. The jump, she says, underscores the particular importance of testing for gonorrhoea in the throat, which is less likely to produce symptoms than in the urethra or rectum. It is, however, more likely to drive antibiotic resistance due to the presence of other microbes in the mouth and throat that can pass along drug-evading genes.

Matthew Golden, director of the Public Health Seattle and King County HIV/STD Program and a professor of medicine at the University of Washington, says his estimates suggest that one-third of all gonorrhoea cases may be pharyngeal.

"I think our failure to consistently screen for that is a contributing factor, probably, to the persistence of very high rates of STDs among men who have sex with men," he says.

The frequent transmission shouldn't be a surprise, since doctors and patients readily agree that almost no one uses condoms for oral sex. Public health officials dutifully explain that wearing condoms during fellatio can reduce the risk of HIV and other STIs. But even the CDC acknowledges that the risk of acquiring HIV from oral sex is "extremely low," especially in the absence of open sores or bleeding gums.

The same isn't true for bacterial infections, and a lack of symptoms often leaves them undetected. Christopher Schiessl, a doctor at One Medical's Castro clinic in San Francisco, says he rarely sees evidence of pharyngeal gonorrhoea on exam, "other than a little bit of redness." He says his patients often don't feel it or attribute the mild symptoms to allergies.

PrEP, though, helps ensure that even asymptomatic cases are diagnosed. Like the Magnet clinic, Schiessl requires STI testing every three months for his sizeable population of PrEP patients. "I've never tested people so much for STDs than I am now that I'm seeing these patients every three months for labs," he says. "And that's a very good thing."

Although Schiessl believes the pill is "definitely" contributing to increased STIs, he says he rarely sees new cases of HIV except among patients who have moved from other parts of the country and want to start on PrEP – only to discover that they're too late.

In San Francisco, at least, he hasn't worried about drug adherence among those who are willing and able to take it. Pharmacies have asked him how they can help his patients stay on Truvada. "I'm like, that's not really a problem at all."

Among the handful of patients in which the pill has interfered with another drug or led to elevated kidney enzyme levels, his patients have almost uniformly told him to drop the other drug and keep them on PrEP. Some have even had other providers prescribe it when he's refused. Schiessl's patients, in other words, are committed "to the point that even if they know it's hurting them, they're going to keep taking it."

Freeborn says her own findings suggest that men on PrEP who come in for testing every three months – sometimes even more often – are less of an STI concern than those who aren't taking the pill and come in more

erratically. Some of Schiessl's PrEP patients, mindful of their number of new partners, have asked to be tested for STIs every two weeks.

Mudhillun, a substitute teacher, part-time tutor and "medical guinea pig" in his late 30s and who lives in suburban Philadelphia, gets tested every six weeks – alternating between a Saturday public health clinic in the city's "gayborhood" and his PrEP-based testing regimen.

"I do that because I have enough sex with enough different people that I just need to feel good about: the less this is rolling around inside of me, the less this is rolling around in the community, honestly," he says.

Mudhillun, an African American man who identifies as queer, has been on PrEP since 2014. His enrolment in a clinical trial testing a new PrEP combination, along with other medical trials before that, gave him access to doctors and lab tests during a seven-year stint when he lacked health insurance.

It was also a "training wheel" period for him to determine whether he could stay on the daily pills, and he switched to a Truvada regimen when he began receiving health insurance in 2015. He's been on it ever since.

Being open about risk reduction strategies, he says, has helped him and his sexual partners build trust and have better sex as a result.

But he's still had to deflect some shame and misconceptions, like the sting of being judged by two partners when they all tested positive for an STI. Because he doesn't always use condoms, the other men assumed that Mudhillun was to blame. He watched sadly as the same cycle of stigma and blame unfolded when one of the men later contracted HIV from someone else.

The clinical infrastructure supporting shame-free and sex-positive

healthcare for gender and sexual minorities could be paying broader dividends. London's 56 Dean Street, its Dean Street Express adjunct and clinics like them are contributing to surveillance networks for antibiotic-resistant gonorrhoea by virtue of the sheer numbers of men they see, Sheena McCormack says.

"It's quite easy to get gay men in the clinic," she says – more so than straight men. By 2016, the two Dean Street clinics accounted for about one-quarter of all STI tests and nearly one-third of all gonorrhoea diagnoses among England's gay and bisexual men.

"They might be more likely to come to Dean Street than elsewhere because it's got a reputation, because it's non-judgmental, because it appeals to the young, because it looks nice," McCormack says. And the crowd it draws means that "it definitely contributes a massive proportion of numbers to the overall dataset."

Health officials say their experience with HIV and STI prevention efforts targeting the gay and bisexual community has underscored the importance of customised outreach efforts for other groups as well.

In March 2018, New York City created a PrEP campaign called "Living Sure" that emphasises women's empowerment and aims to curb a recent uptick in HIV transmission rates among black and Latina women. The messaging assures them that the pill won't interfere with contraception drugs or with trans women's hormone therapy.

Regardless of whether people choose to be on PrEP, though, officials like Daskalakis say they hope the message of more regular testing as a normal part of sexual health hygiene will sink in.

"If over time we can get gonorrhoea rates down, that's how you get rid of resistance, right? No gonorrhoea, no resistance," he says. "And so in the

absence of drugs that work and drug companies that are willing to put research dollars and effort into these infections, what we need to do is really work to test ourselves out of STI epidemics."

Whether that's possible remains controversial, and advocates like Jacobs and critics like Weinstein agree that PrEP's effectiveness may be undermined if it is not accompanied by regular follow-ups.

As Samuel Jenness suggested in his model, the STI-reducing benefit is attributable "only to the recommended on-going screening and treatment of STIs as part of the broader PrEP intervention."

Given the enduring barriers to access in the US, UK and other countries, many men have been importing generic versions of the drug on their own, often for a fraction of the cost but with uncertain medical oversight. Concern is especially high in areas with little or no public health infrastructure or a lack of gay-friendly services that can offer the necessary tests.

Determined advocates have found ways around at least some of the roadblocks, though. In 2015, a homeless and jobless man named Greg Owen and a friend launched a website, iwantPrEPnow.co.uk, to help others in the UK get what Owen could not. He tested HIV-positive before he could start on PrEP, which was available only through a single clinical trial, expensive private prescriptions or online pharmacies.

With the website's aid, so many men began importing generic PrEP and attending 56 Dean Street and other clinics for their tests that McCormack and others credited the campaign with helping London achieve an unprecedented drop in new HIV cases.

Could PrEP help prompt a similar decline in other STIs? If so, perhaps it will begin somewhere like San Francisco, where guilt-free and sex-

positive public health messages pepper the route along the annual Pride Parade slowly making its way down Market Street.

Amid the dangerously high heels and waving politicians and scantily clad angels on stilts and Lutherans and nudists and cheerleaders and marching bands and seemingly every tech company in the Bay Area, the San Francisco Fire Department is getting a rousing reception.

Atop an antique fire truck, a muscled go-go boy in red shorts swings his hips to a Quad City DJ's dance classic while a fireman playfully sprays him with bottled water.

"C'mon ride the train. Hey ride it!"

On this clear blue afternoon, cheering and dancing spectators are raising their arms, decked with rainbow beads or pink bracelets that say "HEALTHYSEXUAL." Amid the commotion, two handsome young Latino men in Mariachi costumes are sharing a more private moment on a nearby public health placard. It reads: "Acá entre nos… yo uso PrEP."

"Just between us… I use PrEP."

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