

**We have more tools to effectively prevent HIV than ever before.** Since no single strategy provides complete protection or is right for all individuals, a combination of methods is needed to help reduce HIV transmission. CDC and its partners are currently pursuing a High-Impact Prevention approach to reducing the continued toll of HIV. This approach seeks to use the best mix of proven, cost-effective, and scalable interventions for high-risk populations and areas of the nation (see “Future of HIV Prevention” fact sheet for information). Below is an overview of proven prevention strategies to date.

## HIV Testing and Linkage to Care

HIV testing is the first critical step to ending the HIV epidemic in the United States, and CDC recommends that all Americans aged 13-64 get tested at least once for HIV as a routine part of medical care, and that gay and bisexual men and others at high risk get tested at least once a year. HIV testing is the only way to identify the nearly one in five Americans currently living with HIV who do not know they are infected and may be unknowingly transmitting the virus to others.

Knowledge of HIV status is empowering. When people test negative, they are in a better position to assess – and can modify – their risk behaviors to help them stay uninfected. When people learn they are infected, research shows that they take steps to protect their own health and prevent HIV transmission to others.<sup>1</sup> In addition, linkage to care following a positive test helps ensure people living with HIV receive life-saving medical care and treatment, and helps reduce their risk of transmitting HIV (see “Treatment as prevention” below).

## HIV Medications

Antiretroviral medications used to treat HIV can also be used to prevent it:

### Preventing mother-to-child transmission.

Administering antiretroviral medications to HIV-infected pregnant women and their newborns significantly reduces the risk of HIV transmission to infants during pregnancy, labor and delivery, and breastfeeding.<sup>2,3</sup>

### Treatment as prevention for people with HIV.

Treating people with HIV lowers the amount of virus in their body and can dramatically reduce their risk of transmitting HIV to others, underscoring the importance of HIV testing and access to medical care and treatment. In fact, a landmark clinical trial in 2011 showed that people with HIV who began taking anti-HIV medications early (before their immune systems were significantly weakened) experienced a 96 percent reduction in their risk of transmitting HIV to their sexual partners.<sup>4</sup>

**Post-exposure prophylaxis (PEP).** When started promptly after exposure to HIV, antiretroviral medica-

tions can reduce the risk of infection.<sup>5,6</sup> For example, a nurse accidentally stuck with a needle that may have been in contact with HIV-infected blood can reduce the risk of infection by completing a four-week course of medications. Partially thanks to PEP, there have been no confirmed cases of occupational HIV transmission to health care workers in the United States since 1999. Non-occupational PEP can also reduce risk of infection if started promptly after exposure to HIV through sexual risk behavior or injection drug use.

## Proven HIV Prevention Methods

- HIV testing and linkage to care
- HIV medications
- Access to condoms
- Prevention programs for people with HIV and their partners
- Prevention programs for people at high risk for HIV infection
- Substance abuse treatment and access to sterile syringes
- STI screening and treatment

**Pre-exposure prophylaxis (PrEP).** With PrEP, HIV-negative individuals take a daily dose of antiretroviral medication to lower their chances of acquiring HIV. Daily PrEP using the drug TDF/FTC has been shown to be safe and effective in reducing the risk of HIV infection among gay and bisexual men and heterosexual men and women when consistently used. Studies have shown that the level of protection is strongly related to the level of adherence to the daily regimen.<sup>7,8,9</sup> One additional trial of the effectiveness of daily PrEP among heterosexual women is ongoing and may provide additional insight into any factors that may make PrEP more or less effective in that population, and CDC is also working to complete a trial of the effectiveness of daily PrEP in reducing HIV transmission among injection drug users.

In time, PrEP may play an important role in HIV prevention, and work is ongoing to determine how to successfully implement PrEP programs in an efficient and cost-effective manner. Demonstration projects and open-label studies now underway will begin to address some of the critical real-world questions about how to most effectively use PrEP in combination with other proven prevention methods.

## Access to Condoms

When used consistently and correctly, latex condoms are highly effective in preventing sexual transmission of HIV<sup>10</sup> – but for these prevention tools to work, they need to be available and accessible to people who are living with or at risk for HIV. Research has shown that increasing the availability of condoms is associated with significant reductions in HIV risk.<sup>11</sup>

## Prevention Programs for People with HIV and Their Partners

Individual and small-group behavior-change programs delivered by health care providers, peers, and others have been shown to significantly reduce risk behaviors among people who have been diagnosed with HIV to help ensure they do not transmit the virus to others.<sup>12</sup> In addition, partner services can reduce the spread of HIV by confidentially identifying and notifying partners who may have been unknowingly exposed to HIV, providing them with HIV testing and linking them to prevention and care services.<sup>13,14</sup>

## Prevention Programs for People at High Risk for HIV Infection

Individual, small-group, and community interventions for people who are at high risk of HIV infection can reduce risk behavior and can play an important role in many comprehensive HIV prevention strategies.<sup>12</sup>

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## Substance Abuse Treatment and Access to Sterile Syringes

Effective substance abuse treatment that helps people stop injecting drugs eliminates the risk of HIV transmission through needle sharing and has also been shown to reduce risky sexual behaviors.

Additionally, increasing the availability of sterile syringes is associated with significant reductions in HIV risk.<sup>15</sup>

## STI Screening and Treatment

Sexually transmitted infections (STIs) increase an individual's risk of acquiring and transmitting HIV<sup>16</sup>, and STI treatment may reduce HIV viral load.<sup>17-19</sup> Therefore, STI screening and treatment may reduce risk for HIV transmission.

### Research Continues

Research also continues on the development and assessment of other urgently needed prevention strategies, including topical gels that could potentially be applied to the vagina or rectum to interrupt transmission during sex and an effective HIV vaccine.

While additional research is needed, promising results from one South African study in 2010 suggest that a topical gel using antiretroviral drugs may ultimately prove to be an effective female-controlled strategy for HIV prevention.<sup>20</sup> In 2009, researchers also reported the first evidence that an HIV vaccine could have a modest effect in preventing HIV infection.<sup>21</sup> While the vaccine's effectiveness was too low to support real-world use, the trial has provided valuable data that will help guide the search for more effective vaccines.

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