Opportunistic Infections

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AETC AIDS Education & Training Center Program New England

Opportunistic Infections

This education packet is a curated compilation of resources on opportunistic infections.

The contents of this packet are listed below:

- Opportunistic Infections (HIV.gov)
- What Is an Opportunistic Infection? (HIVinfo)
- ¿Qué es una Infección Oportunista? (HIVinfo)
- AIDS and Opportunistic Infections (CDC)
- El SIDA y las Infecciones Oportunisticas (CDC)
- HIV-Related Infections and Cancers (Department of Veterans Affairs)

You may wish to customize this packet to meet the needs or interests of particular groups, such as event participants, providers, patients, clients, or the general public. So please feel free to distribute all or part of this document as either a printout or PDF.

Opportunistic Infections

hiv.gov/hiv-basics/staying-in-hiv-care/other-related-health-issues/opportunistic-infections

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What Are Opportunistic Infections?

Opportunistic infections (OIs) are infections that occur more frequently and are more severe in people with weakened immune systems, including people with HIV.

Many OIs are considered AIDS-defining conditions. That means if a person with HIV has one of these conditions, they are diagnosed with AIDS, the most serious stage of HIV infection.

What are Some of the Most Common Opportunistic Infections?

Some of the most common OIs in people living with HIV in the U.S. are:

- **Herpes simplex virus 1 (HSV-1) infection**—a viral infection that can cause sores on the lips and mouth
- ***Salmonella* infection**—a bacterial infection that affects the intestines
- **Candidiasis (thrush)**—a fungal infection of the mouth, bronchi, trachea, lungs, esophagus, or vagina
- **Toxoplasmosis**—a parasitic infection that can affect the brain

Visit CDC for a detailed list.

What Causes Opportunistic Infections?

OIs are caused by a variety of germs (viruses, bacteria, fungi, and parasites). These germs spread in different ways, such as in the air, in body fluids, or in contaminated food or water. They can cause health problems when a person's immune system is weakened by HIV disease.

Who Is at Risk for Opportunistic Infections?

People living with HIV are at greatest risk for OIs when their CD4 count falls below 200. However, some OIs can occur when a person's CD4 count is below 500. That's because weakened immune system makes it harder for the body to fight off HIV-related OIs.

Are Opportunistic Infections Common in People with HIV?

OIs are less common now than in the early days of HIV and AIDS when there was no treatment. Today's HIV medicines (called antiretroviral therapy or ART) reduce the amount of HIV in a person's body and keep the immune system stronger and better able to fight off

infections.

However, some people with HIV still develop OIs for reasons such as:

- they do not know they have HIV and so they are not on treatment
- they know they have HIV but are not taking ART
- they were living with HIV for a long time before they were diagnosed and so have a weakened immune system
- they are taking ART, but their drug combination is not working as expected and is not keeping their HIV levels low enough for their immune system to fight off infections

How Can You Prevent Getting Opportunistic Infections?

The best way to prevent OIs is to take HIV medication daily as prescribed so that you can get and keep an undetectable viral load and keep your immune system strong.

It is also important to stay in HIV medical care and get lab tests done. This will allow you and your health care provider to know when you might be at risk for OIs and discuss ways to prevent them.

Some of the ways people living with HIV can reduce their risk of getting an OI include:

- avoiding exposure to contaminated water and food
- taking medicines to prevent certain OIs
- getting vaccinated against some preventable infections
- traveling safely

Can Opportunistic Infections Be Treated?

If you develop an OI, there are treatments available such as antiviral, antibiotic, and antifungal drugs. The type of medicine used depends on the OI.

Once an OI is successfully treated, a person may continue to use the same medicine or an additional medicine to prevent the OI from coming back. Having an OI may be a very serious medical situation and its treatment can be challenging.

What is an Opportunistic Infection?

hivinfo.nih.gov/understanding-hiv/fact-sheets/what-opportunistic-infection

Last Reviewed: September 24, 2020

Key Points

- Opportunistic infections (OIs) are infections that occur more often or are more severe in people with weakened immune systems than in people with healthy immune systems. People with weakened immune systems include people living with HIV.
- HIV damages the immune system. A weakened immune system makes it harder for the body to fight off OIs.
- HIV-related OIs include pneumonia, *Salmonella* infection, candidiasis, toxoplasmosis, and tuberculosis (TB).
- For people with HIV, the best protection against OIs is to take HIV medicines every day. HIV medicines prevent HIV from damaging the immune system. Because HIV medicines are now widely used in the United States, fewer people with HIV get OIs.

What is an opportunistic infection?

Opportunistic infections (OIs) are infections that occur more often or are more severe in people with weakened immune systems than in people with healthy immune systems. People with weakened immune systems include people living with HIV.

OIs are caused by a variety of germs (viruses, bacteria, fungi, and parasites). OI-causing germs spread in a variety of ways, for example in the air, in body fluids, or in contaminated food or water.

Some OIs that people with HIV may get include candidiasis, *Salmonella* infection, toxoplasmosis, and tuberculosis (TB). The *Guidelines for the Prevention and Treatment of Opportunistic Infections in Adults and Adolescents with HIV* provide detailed information on HIV-related OIs.

Why do people with HIV get OIs?

Once a person has HIV, the virus begins to multiply and to damage the immune system. A weakened immune system makes it harder for the body to fight off OIs.

HIV medicines prevent HIV from damaging the immune system. But without treatment with HIV medicines, HIV can gradually destroy the immune system and advance to AIDS. Many OIs, for example, certain forms of pneumonia and TB, are considered AIDS-defining

conditions. AIDS-defining conditions are infections and cancers that are life-threatening in people with HIV.

Are OIs common in people with HIV?

OIs are less common among people with HIV in the United States now than they were in the past. Because HIV medicines are now widely used in the United States, fewer people with HIV get OIs. By preventing HIV from damaging the immune system, HIV medicines reduce the risk of OIs.

However, OIs are still a problem for many people with HIV. Some people with HIV get OIs for the following reasons:

- They may not know that they have HIV. Because of this, they are not getting HIV treatment. An OI may be the first sign that they have HIV.
- They may know that they have HIV, but they are not getting HIV treatment.
- They may be getting HIV treatment, but the HIV medicines are not controlling their HIV.

What can people with HIV do to prevent getting an OI?

For people with HIV, the best protection against OIs is to take HIV medicines every day.

People living with HIV can also take the following steps to reduce their risk of getting an OI.

Avoid contact with the germs that can cause OIs.
The germs that can cause OIs can spread in a variety of ways, including in body fluids or in feces. To avoid sexually transmitted infections, use condoms every time you have sex. If you inject drugs, don't share drug injection equipment. After any contact with human or animal feces, wash your hands thoroughly with warm, soapy water.

Ask your health care provider about other ways to avoid the germs that can cause OIs.

Be careful about what you eat and drink.
Food and water can be contaminated with OI-causing germs. To be safe, don't eat certain foods, including undercooked eggs, unpasteurized dairy products or fruit juices, or raw seed sprouts.

In addition, do not drink water directly from a lake or river. For more information, read the ClinicalInfo HIV and Nutrition and Food Safety fact sheet.

Travel safely.
If you are visiting a country outside the United States, avoid eating food and drinking water that could make you sick. Before you travel, read the CDC fact sheet on Traveling with HIV.

Get vaccinated.
Talk to your health care provider about which vaccines you need. To learn more, read the ClinicalInfo fact sheet on HIV and Immunizations.

Can OIs be treated?

There are many medicines to treat HIV-related OIs, including antiviral, antibiotic, and antifungal drugs. The type of medicine used depends on the OI.

Once an OI is successfully treated, a person may continue to use the same medicine or an additional medicine to prevent the OI from coming back.

The Clinicalinfo Drug Database includes information on many of the medicines used to prevent and treat OIs.

This fact sheet is based on information from the following sources:

- From CDC: AIDS and Opportunistic Infections
- From CDC, the National Institutes of Health, and the HIV Medicine Association of the Infectious Diseases Society of America: Guidelines for the Prevention and Treatment of Opportunistic Infections in Adults and Adolescents with HIV: Introduction
- From the U.S. Department of Veterans Affairs: Preventing Opportunistic Infections (OIs)

¿Qué es una infección oportunista?

hivinfo.nih.gov/es/understanding-hiv/fact-sheets/que-es-una-infeccion-oportunista

Última revisión: October 6, 2020

Puntos importantes

- Las infecciones oportunistas (IO) son infecciones que ocurren con más frecuencia o son más graves en personas con debilidad del sistema inmunitario en comparación con quienes tienen un sistema inmunitario sano. El primer grupo de personas incluye a las que tienen el VIH.
- El VIH causa daño al sistema inmunitario. Un sistema inmunitario debilitado dificulta más la lucha del cuerpo contra las IO.
- Las IO relacionadas con el VIH incluyen neumonía, infección por *Salmonella*, candidiasis (algodoncillo), toxoplasmosis y tuberculosis (TB).
- Para las personas con el VIH, la mejor protección contra las IO es tomar a diario medicamentos contra el VIH. Estos últimos evitan que el virus cause daño al sistema inmunitario. Puesto que en la actualidad los medicamentos contra el VIH se usan ampliamente en los Estados Unidos, es menor el número de personas seropositivas que contraen IO.

Las infecciones oportunistas (IO) son infecciones que ocurren con más frecuencia o son más graves en personas con debilidad del sistema inmunitario en comparación con quienes tienen un sistema inmunitario sano. El primer grupo de personas incluye a las que tienen el VIH.

Las IO son causadas por una variedad de gérmenes (virus, bacterias, hongos y parásitos). Los gérmenes que las causan se propagan de varias maneras, por ejemplo, por medio del aire, las secreciones corporales, el agua o los alimentos contaminados. Entre las infecciones oportunistas que podrían tener las personas con el VIH se incluyen candidiasis, *Salmonella*, toxoplasmosis y tuberculosis (TB). Las Guías clínicas para la Prevención y el Tratamiento de las Infecciones Oportunistas en Adultos y Adolescentes con el VIH tiene información detallada sobre las infecciones oportunistas relacionadas con el VIH.

¿Por qué contraen infecciones oportunistas las personas con el VIH?

Una vez que una persona tiene el VIH, el virus comienza a multiplicarse y a causar daño al sistema inmunitario. Un sistema inmunitario debilitado dificulta más la lucha del cuerpo contra las IO.

Los medicamentos contra el VIH evitan que el virus dañe el sistema inmunitario. Pero sin tratamiento con medicamentos contra el virus, el VIH puede destruir gradualmente el sistema inmunitario y evolucionar a SIDA. Muchas IO, por ejemplo, ciertas formas de neumonía y TB, se consideran afecciones características del SIDA. Estas últimas son infecciones y clases de cáncer potencialmente mortales en las personas con el VIH.

¿Son comunes las IO en las personas con el VIH?

Hoy en día, las infecciones oportunistas en los Estados Unidos son menos comunes entre personas con VIH que en el pasado. Puesto que, en la actualidad, los medicamentos contra el VIH se usan ampliamente en este país, es menor el número de personas seropositivas que contraen esas infecciones. Al evitar que el virus dañe el sistema inmunitario, los medicamentos para tratarlo reducen el riesgo de IO.

Sin embargo, las IO son todavía un problema para muchas personas VIH-positivas. Algunas personas seropositivas contraen infecciones oportunistas por las razones siguientes:

- Es posible que no sepan que tienen el VIH, y por lo tanto no están recibiendo tratamiento contra el VIH. Una infección oportunista podría ser la primera señal de que tienen el VIH.
- Es posible que sepan que tienen el VIH, pero no están recibiendo tratamiento contra este virus.
- Es posible que estén recibiendo tratamiento contra el VIH, pero los medicamentos no están controlando el virus.

¿Qué pueden hacer las personas con el VIH para evitar una IO?

Para las personas con el VIH, la mejor protección contra las IO es tomar dos medicamentos contra ese virus todos los días.

También pueden tomar las siguientes medidas para reducir su riesgo de contraer una IO.

Evitar el contacto con los gérmenes que pueden causar IO.
Los microbios que pueden causar infecciones oportunistas pueden propagarse de varias maneras, incluso a través de fluidos corporales o heces. Para evitar las infecciones de transmisión sexual, deben usar condones cada vez que tengan relaciones sexuales. Si se inyectan drogas, no deben compartir el equipo para la inyección de drogas. Después de cualquier contacto con heces humanas o animales, lávense muy bien las manos con agua tibia y jabonosa. Pregúntele a su proveedor de atención de salud sobre otras formas de evitar los gérmenes causantes de IO.

Tener cuidado con lo que comen y beben.

Tener cuidado con lo que comen y beben.
Los alimentos y el agua pueden estar contaminados con gérmenes causantes de IO. Para estar seguros, no deben consumir ciertos alimentos, como huevos poco cocidos, productos lácteos o jugos de frutas no pasteurizados o brotes de semillas crudas.
Además, no tomen agua directamente de un lago o de un río. Para mayores detalles, lea la hoja informativa de Hivinfo titulada El VIH, la nutrición y la seguridad alimentaria.

Viajar con seguridad.

Si visitan un país fuera de los Estados Unidos eviten comer alimentos y beber agua que pudiera causarles enfermedad. Antes de viajar, lean esta hoja informativa de los Centros para la Prevención y el Control de Enfermedades (Centers for Disease Control and Prevention, CDC) sobreviajar al exterior para personas con el VIH.

Hacerse vacunar.

Hable con su proveedor de atención de salud sobre las vacunas que va a necesitar. Para mayores detalles, lea la hoja informativa de Hivinfo sobre el VIH y las inmunizaciones.

¿Se pueden tratar las IO?

Hay muchos medicamentos para tratar las IO relacionadas con el VIH, incluso productos antivirales, antibióticos y antimicóticos (contra los hongos). El tipo de medicamento empleado depende de la IO.

Una vez que se trata con éxito una IO, la persona puede seguir tomando el mismo medicamento u otro para evitar la reaparición de la IO.

La base de datos de medicamentos de Clinicalinfo incluye información sobre muchos de los medicamentos empleados para prevenir y tratar las IO.

AIDS and Opportunistic Infections

cdc.gov/hiv/basics/livingwithhiv/opportunisticinfections.html

Common Opportunistic Infections

Candidiasis	• Candidiasis is caused by infection with a fungus called *Candida*. • Candidiasis can affect the skin, nails, and mucous membranes throughout the body. • People with HIV often have trouble with *Candida*, especially in the mouth and vagina. • Candidiasis is only considered an OI when it causes severe or persistent infections in the mouth or vagina, or when it develops in the esophagus (swallowing tube) or lower respiratory tract, such as the trachea and bronchi (breathing tube), or deeper lung tissue.
Invasive cervical cancer	• Cervical cancer starts within the cervix (the lower part of the uterus at the top of the vagina) and spreads (becomes invasive) to other parts of the body. • Cervical cancer can be prevented by having your health care provider perform regular examinations of the cervix.
Coccidioidomycosis	• This illness is caused by the fungus *Coccidioides*. • It is sometimes called valley fever, desert fever, or San Joaquin Valley fever. • People can get it by breathing in fungal spores. • The disease is especially common in hot, dry regions of the southwestern United States, Central America, and South America.
Cryptococcosis	• This illness is caused by infection with the fungus *Cryptococcus neoformans*. • The fungus typically enters the body through the lungs and can cause pneumonia. • Cryptococcosis usually affects the lungs or the central nervous system (the brain and spinal cord), but it can also affect other parts of the body.

Common Opportunistic Infections	
Cryptosporidiosis (Crypto)	• Crypto is a diarrheal disease caused by a tiny parasite called *Cryptosporidium*. • Symptoms include abdominal cramps and severe, chronic, watery diarrhea.
Cystoisosporiasis	• Formerly known as isosporiasis. • This infection is caused by the parasite *Cystoisospora belli* (formerly known as *Isospora belli*). • Cystoisosporiasis can enter the body through contaminated food or water. • Symptoms include diarrhea, fever, headache, abdominal pain, vomiting, and weight loss.
Cytomegalovirus (CMV)	• CMV can infect multiple parts of the body and cause pneumonia, gastroenteritis (especially abdominal pain caused by infection of the colon), encephalitis (infection) of the brain, and sight-threatening retinitis (infection of the retina at the back of eye). • People with CMV retinitis have difficulty with vision that worsens over time. CMV retinitis is a medical emergency because it can cause blindness if not treated promptly.
Encephalopathy, HIV-related	• This brain disorder can occur as part of acute HIV infection or can result from chronic HIV infection. • Its exact cause is unknown, but it is thought to be related to infection of the brain with HIV and the resulting inflammation.
Herpes simplex virus (HSV)	• HSV is a common virus that causes no major problems for most people. • HSV is usually acquired sexually or passed from mother-to-child during birth. • In most people with healthy immune systems, HSV is usually latent (inactive). • Stress, trauma, other infections, or suppression of the immune system, (such as by HIV), can reactivate the latent virus and symptoms can return. • HSV can cause painful cold sores (sometime called fever blisters) in or around the mouth, or painful ulcers on or around the genitals or anus. • In people with severely damaged immune systems, HSV can also cause infection of the bronchus (breathing tube), pneumonia (infection of the lungs), and esophagitis (infection of the esophagus, or swallowing tube).

Common Opportunistic Infections	
Histoplasmosis	• Histoplasmosis is caused by the fungus *Histoplasma*. • *Histoplasma* most often develops in the lungs and produces symptoms similar to the flu or pneumonia. • People with severely damaged immune systems can get a very serious form of the disease called progressive disseminated histoplasmosis. This form of histoplasmosis can last a long time and spread to other parts of the body.
Kaposi's sarcoma (KS)	• KS is caused by a virus called Kaposi's sarcoma herpesvirus (KSHV) or human herpesvirus 8 (HHV-8). • KS causes small blood vessels to grow abnormally and can occur anywhere in the body. • KS appears as firm pink or purple spots on the skin that can be raised or flat. • KS can be life-threatening when it affects organs inside the body, such as the lung, lymph nodes, or intestines.
Lymphoma	• Lymphoma refers to cancer of the lymph nodes and other lymphoid tissues in the body. • There are many kinds of lymphomas. Some types, such as non-Hodgkin lymphoma and Hodgkin lymphoma, are associated with HIV.
Tuberculosis (TB)	• TB is caused by a bacterium called *Mycobacterium tuberculosis*. • TB can spread through the air when a person with TB coughs, sneezes, or speaks. Breathing in the bacteria can lead to infection in the lungs. • Symptoms of TB in the lungs include cough, tiredness, weight loss, fever, and night sweats.
***Mycobacterium avium* complex (MAC)**	• MAC is caused by infection with different types of mycobacterium: *Mycobacterium avium, Mycobacterium intracellulare*, or *Mycobacterium kansasii*. • These bacteria live in our environment, including in soil and dust particles. • Infections with these bacteria spread throughout the body and can be life threatening in people with weakened immune systems.

Common Opportunistic Infections

***Pneumocystis* pneumonia (PCP)**	• PCP is a lung infection caused by the fungus *Pneumocystis jirovecii*. • PCP occurs in people with weakened immune systems. • The first signs of infection are difficulty breathing, high fever, and dry cough.
Pneumonia	• Pneumonia is an infection in one or both lungs. • Many germs, including bacteria, viruses, and fungi, can cause pneumonia. • Symptoms include a cough (with mucous), fever, chills, and trouble breathing. • In people with immune systems severely damaged by HIV, one of the most common and life-threatening causes of pneumonia is an infection with the bacteria *Streptococcus pneumoniae*, also called *Pneumococcus*. People with HIV should get a vaccine to prevent infection with *Streptococcus pneumoniae.*
Progressive multifocal leukoencephalopathy	• This rare brain and spinal cord disease is caused by the JC (John Cunningham) virus. • It is seen almost exclusively in people whose immune systems have been severely damaged by HIV. • Symptoms may include loss of muscle control, paralysis, blindness, speech problems, and an altered mental state. • This disease often progresses rapidly and may be fatal.
***Salmonella* septicemia**	• *Salmonella* are bacteria that typically enter the body through eating or drinking contaminated food or water. • Infection with salmonella (called salmonellosis) can affect anyone and usually causes nausea, vomiting, and diarrhea. • *Salmonella* septicemia is a severe form of infection in which the bacteria circulate through the whole body and exceeds the immune system's ability to control it.

Common Opportunistic Infections

Toxoplasmosis	• This infection is caused by the parasite *Toxoplasma gondii*. • The parasite is carried by warm-blooded animals including cats, rodents, and birds and is released in their feces (stool). • People can develop it by inhaling dust or eating food contaminated with the parasite. • *Toxoplasma* can also occur in commercial meats, especially red meats and pork, but rarely poultry. • Infection can occur in the lungs, retina of the eye, heart, pancreas, liver, colon, testes, and brain. • Although cats can transmit toxoplasmosis, litter boxes can be changed safely by wearing gloves and washing hands thoroughly with soap and water afterwards. • All raw red meats that have not been frozen for at least 24 hours should be cooked through to an internal temperature of at least 150^{o}F.
Wasting syndrome due to HIV	• Wasting is defined as the involuntary loss of more than 10% of one's body weight while having experienced diarrhea or weakness and fever for more than 30 days. • Wasting refers to the loss of muscle mass, although part of the weight loss may also be due to loss of fat.

El SIDA y las infecciones oportunisticas

cdc.gov/hiv/spanish/basics/livingwithhiv/opportunisticinfections.html

Infecciones oportunistas comunes

Candidiasis

- La candidiasis es causada por la infección por un hongo llamado *Candida*.
- La candidiasis puede afectar la piel, las uñas y las membranas mucosas de todo el cuerpo.
- Las personas con el VIH a menudo tienen problemas con infecciones por *Candida*, especialmente en la boca y la vagina.
- La candidiasis solamente se considera una infección oportunista cuando causa infecciones graves o persistentes en la boca o la vagina, o cuando se produce en el esófago (tubo por donde se traga), las vías respiratorias inferiores — como los bronquios y la tráquea (tubo por donde se respira) — o el tejido pulmonar más profundo.

Cáncer de cuello uterino invasivo

- Este cáncer de cuello uterino aparece inicialmente en el cuello del útero (la parte inferior del útero, en la parte superior de la vagina) y luego se propaga (se vuelve invasivo) a otras partes del cuerpo.
- Este tipo de cáncer se puede prevenir al hacerse examinar el cuello del útero regularmente con el proveedor de atención médica.

Coccidioidomicosis

- Esta enfermedad es causada por el hongo *Coccidioides*.
- A veces se la llama fiebre del valle, fiebre del desierto o fiebre del valle de San Joaquín.
- Se contrae al inhalar esporas del hongo.
- La enfermedad es particularmente común en las regiones cálidas y secas del sudoeste de los Estados Unidos, Centroamérica y Sudamérica.

Infecciones oportunistas comunes

Criptococosis	• Esta enfermedad es causada al infectarse con el hongo *Cryptococcus neoformans*. • El hongo suele entrar al cuerpo a través de los pulmones y puede causar neumonía. • La criptococosis generalmente afecta los pulmones o el sistema nervioso central (el cerebro y la médula espinal), pero también puede afectar otras partes del cuerpo.
Criptosporidiosis	• La criptosporidiosis (crypto) es una enfermedad diarreica causada por un parásito diminuto llamado *Cryptosporidium*. • Lo síntomas incluyen cólicos abdominales y diarrea acuosa crónica grave.
Cistoisosporiasis	• Previamente conocida como isosporiasis o isosporosis. • Esta infección es causada por el parásito *Cystoisospora belli* (previamente llamado *Isospora belli*). • El parásito *Cystoisospora belli* puede entrar al cuerpo a través de agua o alimentos contaminados. • Los síntomas incluyen diarrea, fiebre, dolor de cabeza, dolor abdominal, vómitos y pérdida de peso.
Citomegalovirus	• El citomegalovirus (CMV) puede infectar múltiples partes del cuerpo y causar neumonía, gastroenteritis (particularmente dolor abdominal por infección en el colon), encefalitis (infección del cerebro) y retinitis (infección de la retina en la parte de atrás del ojo) con potencial pérdida de la vista. • Las personas con retinitis por citomegalovirus tienen dificultad con la visión, que empeora con el tiempo. La retinitis por citomegalovirus es una emergencia médica porque puede causar ceguera si no se trata con prontitud.
Encefalopatía relacionada con el VIH	• Este trastorno del cerebro puede ocurrir dentro de la infección aguda por el VIH o como resultado de la infección crónica por el VIH. • Se desconoce su causa exacta, pero se cree que se relaciona con la infección del cerebro con el VIH y la inflamación resultante.

Infecciones oportunistas comunes	
Virus del herpes simple	• El virus del herpes simple (VHS) es un virus común que no causa ningún problema importante en la mayoría de las personas. • Generalmente se contrae a través de las relaciones sexuales o se pasa de madre a hijo durante el parto. • En la mayoría de las personas con el sistema inmunitario sano, el virus del herpes simple suele estar latente (inactivo). • El estrés, el trauma, otras infecciones o la supresión del sistema inmunitario (como por el VIH) pueden reactivar el virus latente y hacer que aparezcan los síntomas. • El virus del herpes simple puede causar ampollas dolorosas en la boca o alrededor de la boca, o en los órganos genitales o el ano o alrededor de estos. • En las personas con el sistema inmunitario gravemente dañado, el virus del herpes simple también puede causar infecciones de los bronquios (tubos respiratorios), neumonía (infección de los pulmones) y esofagitis (infección del esófago o tubo por donde se traga).
Histoplasmosis	• La histoplasmosis es causada por el hongo *Histoplasma*. • La histoplasmosis suele comenzar en los pulmones y producir síntomas similares a los de la influenza o neumonía. • Las personas con el sistema inmunitario gravemente dañado pueden presentar una forma muy grave de la enfermedad llamada histoplasmosis diseminada progresiva. Esta forma de histoplasmosis puede durar mucho tiempo y extenderse a otras partes del cuerpo.
Sarcoma de Kaposi	• Los sarcomas de Kaposi (KS, por sus siglas en inglés) son causados por un tipo de virus llamado virus del herpes del sarcoma de Kaposi (KSHV) o virus del herpes humano de tipo 8 (HHV-8). • Los sarcomas de Kaposi hacen que los vasos sanguíneos pequeños se agranden de manera anormal y se pueden producir en cualquier parte del cuerpo. • Estos sarcomas son puntos rosados o púrpura firmes que se forman en la piel y pueden ser protuberantes o planos. • Pueden ser potencialmente mortales cuando afectan a órganos dentro del cuerpo, como los pulmones, los ganglios linfáticos o los intestinos.
Linfoma	• El término linfoma se refiere al cáncer de los ganglios linfáticos y otros tejidos linfáticos del cuerpo. • Existen muchos tipos de linfoma. Algunos, como el linfoma no hodgkiniano y el linfoma de Hodgkin, se asocian al VIH.

Infecciones oportunistas comunes	
Tuberculosis	• La tuberculosis (TB) es causada por una bacteria llamada *Mycobacterium tuberculosis*. • Puede transmitirse a través del aire cuando una persona con tuberculosis tose, estornuda o habla. La inhalación de estas bacterias puede causar la infección en los pulmones. • Los síntomas de la tuberculosis en los pulmones incluyen tos, cansancio, pérdida de peso, fiebre y sudores nocturnos.
Complejo *Mycobacterium avium*	• El complejo *Mycobacterium avium* (MAC, por sus siglas en inglés) es causado por una infección de diferentes tipos de micobacterias: *Mycobacterium avium,Mycobacterium intracellulare* o *Mycobacterium kansasii*. • Estas bacterias viven en nuestro ambiente, incluso en la tierra y en las partículas de polvo. • Las infecciones con estas bacterias se propagan por todo el cuerpo y pueden ser potencialmente mortales en las personas que tienen el sistema inmunitario debilitado.
Neumonía por *Pneumocystis*	• La neumonía por *Pneumocystis* (PCP, por sus siglas en inglés) es una infección de los pulmones causada por el hongo *Pneumocystis jirovecii*. • La neumonía por *Pneumocystis* se produce en las personas con el sistema inmunitario debilitado. • Los primeros signos de la infección son dificultad para respirar, fiebre alta y tos seca.
Neumonía	• La neumonía es la infección de uno o ambos pulmones. • Hay muchos microbios, como bacterias, virus y hongos, que pueden causar la neumonía. • Los síntomas incluyen tos (con mucosidad), fiebre, escalofríos y dificultad para respirar. • En las personas con el sistema inmunitario gravemente dañado por el VIH, una de las causas más comunes y potencialmente mortales de neumonía son las infecciones por la bacteria *Streptococcus pneumoniae*, también llamada *Pneumococcus.* Las personas con el VIH deberían vacunarse para prevenir las infecciones por *Streptococcus pneumoniae.*

Infecciones oportunistas comunes	
Leucoencefalopatía multifocal progresiva	• Esta rara enfermedad del cerebro y la médula espinal es causada por el virus JC (John Cunningham). • Se presenta casi exclusivamente en las personas cuyo sistema inmunitario ha sido gravemente dañado por el VIH. • Los síntomas pueden incluir pérdida del control muscular, parálisis, ceguera, problemas con el habla y alteración del estado mental. • Esta enfermedad a menudo progresa rápidamente y puede ser mortal.
Septicemia por *Salmonella*	• La *Salmonella* es un tipo de bacteria que por lo general entra al cuerpo al comer o beber algo contaminado. • La infección por *Salmonella* (llamada salmonelosis) puede afectar a cualquier persona y por lo general causa náuseas, vómitos y diarrea. • La septicemia por *Salmonella* es un tipo grave de infección en el que las bacterias circulan por todo el cuerpo y superan la capacidad del sistema inmunitario de controlarlas.
Toxoplasmosis	• Esta infección es causada por el parásito *Toxoplasma gondii*. • Esta infección se transmite a través de los animales de sangre caliente portadores del parásito —incluidos los gatos, los roedores y las aves— quienes lo excretan en sus heces (excrementos). • Las personas la contraen al inhalar polvo o comer alimentos contaminados con el parásito. • El parásito *Toxoplasma* también se puede encontrar en las carnes comerciales, especialmente las carnes rojas, el cerdo y, muy raramente, las aves. • La infección puede producirse en los pulmones, la retina del ojo, el corazón, el páncreas, el hígado, el colon, los testículos y el cerebro. • Aunque los gatos pueden transmitir la toxoplasmosis, se pueden recambiar las piedritas o arena de sus cajas sanitarias de manra segura usando guantes y lavándose bien las manos con agua y jabón después. • Todas las carnes rojas crudas que no hayan estado congeladas por al menos 24 horas deben cocinarse completamente hasta que alcancen una temperatura interna de al menos 150 ^{o}F.

Infecciones oportunistas comunes	
Síndrome consuntivo del VIH	• Consunción (o desgaste) se define como la pérdida involuntaria de más del 10 % del peso corporal durante un periodo de diarrea, debilidad y fiebre de más de 30 días. • La consunción se refiere a la pérdida de masa muscular, aunque parte de esa pérdida pueda deberse también a la pérdida de grasa.

HIV-Related Infections and Cancers

hiv.va.gov/patient/diagnosis/infections-cancers-single-page.asp

Common opportunistic infections and HIV-related cancers

Opportunistic infections (OIs) can be caused by viruses, bacteria, fungus, even parasites. Common OIs that are covered in this tutorial are:

- Anal cancer
- Candidiasis (thrush)
- Coccidioidomycosis
- Cryptococcosis
- Cryptosporidiosis
- Cytomegalovirus
- Herpes simplex
- Herpes zoster (shingles)
- Histoplasmosis
- HIV-related neurocognitive disorders
- HIV wasting syndrome
- MAC
- PCP
- Pneumonia
- PML
- Salmonella
- Toxoplasmosis
- Tuberculosis

AIDS-related cancers:

- Cervical cancer
- Kaposi sarcoma
- Lymphomas

What follows are descriptions of some of these illnesses. Note that most of them occur only in people with severely suppressed immune function, such as in advanced HIV infection.

Candidiasis (thrush)

Candidiasis (or thrush) is a fungal infection of the mouth, esophagus and/or vagina. Most people already have the Candida fungus in their body, but the body keeps it in check. Someone whose immune system is weakened is more likely to develop problems.

Some people show no symptoms, but for those who have them, symptoms can include:

- white patches on the tongue
- smooth red areas on the back of the tongue
- painful areas in the mouth
- changes in taste
- sensitivity to spicy foods
- decreased appetite
- pain or difficulty swallowing
- yeast infection of the vagina (vaginal itching and white discharge)

Treatments for thrush include liquid medicines (suspensions) that you swish around in your mouth and swallow as well as antifungal pills. If you are taking drugs for oral thrush, be sure to:

- brush your teeth after each meal;
- rinse your mouth of all food before using either lozenges or oral suspension;
- avoid hurting your mouth: use a soft toothbrush, avoid foods and drinks that are too hot or too spicy.

Cervical cancer (for women)

Cervical cancer usually is caused by the same virus that causes anal and genital warts. The virus is called human papilloma virus (HPV). Using condoms consistently may help reduce the risk of this infection.

In the early stage, there usually are no symptoms. Some women, however, may notice bleeding between their periods or spots of blood after sex. Women should get regular exams and Pap tests to check for cervical cancer and precursors to cancer.

Coccidioidomycosis

This is a caused by a fungus present in soil in desert areas of Mexico and South America and in the southwestern United States, but risk of infection is highest in Kern and Tulare counties and the San Joaquin Valley in California.

The fungus is inhaled from dust and dirt carried in the air or wind, rather than passed from person to person. Most people don't have symptoms. Others will feel like they have the flu, sometimes with chest pain and a cough. Infection can lead to meningitis, including headache, fever, and altered mental states.

Treatment with antifungal drugs usually is given for a long period of time and sometimes for life. Sometimes surgery is required to remove infected tissue. The seriousness of the disease depends on what part or parts of the body the fungus has infected.

Cryptococcosis

This fungus is present in soil, usually where there are bird droppings, particularly those of pigeons. It can be passed through the air or wind. It's important to avoid handling birds, including pet birds, and to avoid areas with lots of bird droppings.

The fungus can infect different organs, such as the lung, heart, and central nervous system. Symptoms vary, depending on where the infection occurs. In the lung, for example, symptoms can include:

- cough
- fever
- malaise
- shortness of breath

This infection is very serious. It can lead to meningitis (infection around the brain) and pneumonia. Drugs are available to treat this infection, and they must be continued until the immune system has improved on HIV medications.

Cryptosporidiosis

This parasite is found in the feces of many animals, including humans. It can contaminate drinking water.

To avoid infection from people, avoid contact with feces (diapers, sex involving direct oral-anal contact). Try to avoid accidentally swallowing water when swimming in pools, rivers, or lakes. Do not drink from streams. Drink bottled water or use filters on tap water (look for "submicron" filters, which will filter out this parasite). Avoid eating raw oysters because they can carry eggs of cryptosporidia.

Symptoms of this infection include:

- persistent watery diarrhea
- nausea
- vomiting
- abdominal pain
- cramping
- loss of appetite
- weight loss

The main treatment for cryptosporidiosis is effective HIV antiretroviral medications. In conjunction with HIV medications, antimicrobials can hasten clearance and improve resolution of diarrhea. No medication has been shown to cure cryptosporidiosis in the absence of HIV medications.

Cytomegalovirus (CMV)

Cytomegalovirus (CMV) is transmitted by close contact through sex and through saliva, urine, and other body fluids. It can be passed from mother to child during pregnancy and by breast-feeding. If you are not infected, using condoms during sex may help prevent infection.

Many people are infected with this virus, though they have no symptoms. In people with HIV who have low CD4 counts, the infection can be extremely serious. Symptoms can include:

- blind spots in vision, loss of peripheral vision
- headache, difficulty concentrating, sleepiness
- mouth ulcers
- pain in the abdomen, bloody diarrhea
- fever, fatigue, weight loss
- shortness of breath
- lower back pain
- confusion, apathy, withdrawal, personality changes

Drugs are available to keep symptoms of the infection under control. HIV drugs can improve the condition, too. If you have CMV and haven't started taking drugs for HIV, it may be best to wait until you have been on treatment for CMV for a few weeks.

Treatment can prevent further loss of vision but cannot reverse existing damage. If you experience any vision problems, tell your provider immediately.

Herpes simplex virus

Herpes simplex is common in many people, but in people with HIV outbreaks may be more frequent or more severe. Symptoms include outbreaks of red, painful sores on the mouth ("fever blisters"), genitals, or anal area. Genital herpes is passed through sexual contact. Herpes on the mouth is easily spread through kissing, and it can be spread to the genitals through oral sex. Although less common, the virus can be spread even if you don't have blisters. Using latex barrier protection during sex can decrease the risk of infection.

Drugs are available to help herpes blisters heal, but there's no cure. Outbreaks may occur periodically for the rest of your life. Taking an anti-herpes medication every day can help reduce the number of outbreaks.

For more information on herpes, call the National Herpes Hotline at 919-361-8488.

Herpes zoster (shingles)

Shingles is caused by the varicella-zoster virus, the same virus that causes chickenpox. People with shingles usually had chickenpox as a child. Shingles is caused by reactivation of the virus.

Symptoms can include:

- painful skin blisters on one side of the face or body
- vision loss

The skin blisters can be extremely painful. Treatment can help the blisters heal, but there is no cure of the underlying infection, which stays dormant in the body and can reactivate. Shingles can cause painful nerve inflammation that persists after the skin rash has healed. Early treatment can help reduce the likelihood of long-term nerve pain. Antibiotic ointments can help keep the infection from becoming super-infected. The skin rash should be kept covered until healed in order to prevent spreading the infection to anyone who is not immune to the virus. A vaccine to prevent shingles is available for certain groups of patients -- check with your VA provider to see if you should receive this vaccine.

Histoplasmosis

This infection is caused by a fungus present in soil contaminated with bat or bird droppings, particularly in eastern and central United States as well as in Mexico. It gets into the air when the soil is disturbed, such as when people explore caves. It is not passed from person to person.

Symptoms can include:

- fever
- weight loss
- cough
- shortness of breath
- abdominal pain

Histoplasmosis can be quite serious but is treatable with medications, which need to be continued until the immune system has improved with HIV treatment. In some parts of the country, medication is given to patients with HIV who have low CD4 counts in order to prevent histoplasmosis.

HIV-associated neurocognitive disorders

HIV can invade the brain and cause a variety of symptoms. Sometimes this disease is called "HIV encephalopathy" or "AIDS dementia" when the symptoms are severe. It is most common in people who are not on effective HIV medications and when the CD4 cell count is very low.

Symptoms can include:

- memory loss
- depressed mood
- personality changes
- apathy
- unsteadiness when walking
- irritability
- clumsiness
- shaky hands (poor handwriting)

This condition is less common with early and continuous treatment of HIV, but less severe forms of cognitive disease are increasingly recognized.

People who are affected need to have a strong support system. Friends, roommates, or family members can help make sure that HIV medications are taken on time, in the right combination, and at the right dose. If memory is poor, a person can use notes, calendars, and alarms to remember medicines, appointments, and other important events.

HIV wasting syndrome

Wasting syndrome refers to unwanted weight loss of more than 10 percent of a person's body weight, with either diarrhea or weakness and fever that have lasted at least 30 days. For a 150-pound man, this means a weight loss of 15 pounds or more. Weight loss can result in loss of both fat and muscle. Once lost, the weight is difficult to regain.

The condition may occur in people with advanced HIV disease, and can be caused by many things: HIV, inflammation, or opportunistic infections. The person may get full easily or have no appetite at all.

The most important treatment for wasting syndrome is effective treatment of HIV with antiretroviral medications. In addition, the condition may be controlled, to some degree, by eating a good diet. A "good diet" for a person with HIV may not be the low-fat, low-calorie diet recommended for healthy people. Compared with other people, you may need to take in more calories and protein to keep from losing muscle mass. To do this, you can add to your meals:

- peanut butter
- legumes (dried beans and peas)
- cheeses
- eggs
- instant breakfast drinks
- milkshakes
- sauces

You can also maintain or increase muscle mass through exercise, especially with progressive strength-building exercises. These include resistance and weight-lifting exercise. (For more diet and exercise tips, see the Living with HIV section.)

Isosporiasis

This condition is caused by a parasite found in feces. It may contaminate food or drinking water. It is most common in tropical and subtropical regions of the United States. To avoid infection, do not drink water from rivers and streams. When appropriate, drink bottled water or use filters on tap water. Cook food thoroughly.

Symptoms can include:

- stomach cramps
- watery diarrhea
- weight loss (which may be significant)
- weakness
- loss of appetite
- fever

Rehydration and nutritional support are key components of treatment. Antiparasitic drugs can treat the infection, but they may need to be taken for a long time to keep the parasite in check.

Kaposi sarcoma

Kaposi sarcoma (KS) is the most common cancer seen in HIV. This cancer is caused by the human herpes virus 8 (HHV-8), also known as Kaposi sarcoma-associated herpesvirus (KSHV). The virus can be spread by deep kissing, unprotected sex, and sharing needles. It also can be spread from mother to child. However, HIV-related KS usually develops only in people with relatively advanced HIV disease.

Symptoms include brown, purple, or pink lesions (or blotches) on the skin, usually on the arms and legs, neck or head, and sometimes in the mouth. KS can also affect the lungs and intestines and cause swelling in the legs. Sometimes there is tooth pain or tooth loss, weight loss, night sweats, or fever for longer than 2 weeks.

HIV drugs can slow the growth of lesions, and even reverse the condition itself. KS has become less common and much more treatable since the development of effective HIV therapy. Other treatments for KS, such as laser therapy, are meant to relieve symptoms and improve the appearance of the lesions. There is also chemotherapy that helps control KS.

Lymphomas

Lymphomas associated with HIV include a large group of cancers that begin in the cells of the immune system. The cancers can spread to different parts of the body, such as the central nervous system, liver, bone marrow, and gastrointestinal tract. Symptoms depend on where the cancer resides.

Treatment varies depending on the specific cancer but can include radiation and chemotherapy. HIV medications help boost the immune system and aid the body in fighting the cancer. In fact, the development of effective combination HIV therapy has greatly improved the outlook for persons with HIV-associated lymphoma.

Mycobacterium avium complex (MAC)

This condition is caused by bacteria that are present everywhere in the environment--in soil, food, and animals. It is difficult to avoid exposure because MAC is in so many places, but MAC usually causes illness only in people with very weakened immune systems, like those with advanced HIV disease.

Symptoms of MAC can include:

- fever
- night sweats
- weight loss
- loss of appetite
- chronic diarrhea
- weakness
- fatigue
- abdominal pain

HIV drugs, by helping your immune system stay strong, can help your body fight the infection. Antibiotics given over a long period of time can control the infection and may be stopped once the disease is cured and the immune system is strong enough. Call your provider if you have vision changes or abdominal discomfort while being treated for MAC.

Pneumocystis pneumonia (PCP)

Pneumocystis pneumonia (PCP) is a serious infection caused by the fungus Pneumocystis jirovecii. PCP usually occurs in persons with a CD4 count of less than 200 cells per cubic millimeter of blood. Starting combination antiretroviral therapy before your CD4 count gets this low, or, if you already have a CD4 count of less than 200, taking daily doses of protective antibiotics, greatly reduces the risk of developing PCP. The fungus can affect many organs, the most common being the lung.

Symptoms can include:

- fever
- shortness of breath
- dry cough
- night sweats or fatigue

The usual treatment is with antibiotics.

After completing treatment, if you experience shortness of breath (especially with exercise), fever, chills and sweats, or a new cough, contact your provider.

Pneumonia, recurrent

Bacterial pneumonia (often caused by *Streptococcus pneumoniae* or *Haemophilus influenzae*) can affect people whose immune systems are not weakened by HIV. Persons infected with HIV, however, are much more likely than people who are HIV /negative to develop bacterial pneumonia. Fortunately, these pneumonias can be treated with available antibiotics. Persons with HIV should receive vaccines to help prevent infections caused by *Streptococcus pneumoniae*. Contact your provider for more information.

Progressive multifocal leukoencephalopathy (PML)

This disease is caused by a virus called the JC (John Cunningham) virus. This is a common virus and most people probably are infected early in life. However, in people with HIV the virus can cause serious disease. The virus is possibly spread through sexual contact, or from mother to child.

Symptoms can include:

- difficulty in speaking
- difficulty in walking
- weakness in arms or legs
- personality changes
- seizures
- changes in vision
- headache
- shaky hands

There is no specific treatment for PML, but HIV therapy can reverse the symptoms and keep the JC virus under control. People with PML should have a good support system. Friends, roommates, or family members can help make sure that HIV medications are taken on time, in the right combination, and at the right dose. The disease is extremely serious and can lead to death.

Salmonella septicemia, recurrent

Salmonella is a bacteria often found in food such as undercooked poultry, eggs, and unpasteurized milk. It is also present in water, soil, kitchen surfaces, animal feces, and raw meat and on certain animals, such as reptiles. Because of the risk of salmonella, reptiles are not recommended as pets for patients with HIV, especially if their immune suppression is advanced.

Symptoms can include:

- diarrhea
- fever

Salmonella septicemia usually is treated with antibiotics. Drug therapy may be required for life to prevent relapses.

Toxoplasmosis

The parasite that causes toxoplasmosis is found in almost all animals. Cats and birds are major sources of infection. Indoor cats pose less risk. Avoid cat feces (use gloves to change litter). Avoid handling birds. Never eat undercooked meats, particularly pork or lamb, or unwashed vegetables.

Symptoms can include:

- dull, constant headache
- changes in vision
- disorientation
- seizures

Toxoplasmosis can occur in people with advanced immune system disease caused by HIV. It can be treated with antibiotics, which need to be continued until the immune system improves through HIV (antiretroviral) therapy. If you are being treated for toxoplasmosis, see your provider promptly if your symptoms worsen or you develop a rash.

Tuberculosis (TB)

Mycobacterium tuberculosis disease is caused by a bacteria passed through the -air when someone with TB infection coughs, sneezes, or talks. It is spread easily in closed-in places, such as low-income housing, shelters, and jails.

Tuberculosis (TB) can occur at any time in the course of HIV infection, but most often when CD4 counts are low. Symptoms can include fever, night sweats, weight loss, fatigue, loss of appetite, and coughing.

TB can be prevented and usually is curable. If you have TB, it's important that you take your TB medication exactly as prescribed (missed doses can result in the TB germ developing resistance to the drug). Some TB medications can damage your liver, but your liver usually recovers if the medications are stopped. If your skin or eyes turn yellow, or if your urine darkens to the color of Coca-Cola while you are taking tuberculosis medications, call your provider immediately. It could be a sign of liver damage.

Many people who are exposed to TB do not develop active tuberculosis but have a small amount of TB in the body. If your provider diagnoses you with exposure to TB but not active TB, they will recommend treatment to reduce the likelihood of developing active disease.

CD4 counts and infections

CD4 cells (also known as CD4+ T cells) are white blood cells that fight infection. CD4 cell count is an indicator of immune function and disease progression and one of the key determinants for the need of opportunistic infection (OI) prophylaxis. CD4 cell counts are obtained from bloodwork as part of laboratory monitoring for HIV infection.

Studies have shown that starting HIV medicines soon after you are diagnosed, and ideally when your CD4 cell count is high, will greatly help your health and will reduce the risk of OIs. Regularly checking your CD4 cell count will allow you to begin necessary prophylactic medications to reduce your risk of opportunistic infections.

AIDS-defining illnesses

Certain serious and life-threatening diseases that occur in HIV-positive people are called "AIDS-defining" illnesses. When a person gets one of these illnesses, he or she is diagnosed with the advanced stage of HIV infection known as AIDS.

The Centers for Disease Control and Prevention (CDC) has developed a list of these illnesses (see below). No single patient is likely to have all of these problems. Some of the conditions, in fact, are rare.

- Candidiasis of the esophagus, bronchi, trachea, or lungs [(but NOT the mouth (thrush)]
- Cervical cancer, invasive
- Coccidioidomycosis, disseminated or extrapulmonary
- Cryptococcosis, extrapulmonary
- Cryptosporidiosis, chronic intestinal (greater than one month's duration)
- Cytomegalovirus disease or CMV (other than liver, spleen, or nodes)
- Cytomegalovirus retinitis (with loss of vision)
- Encephalopathy, HIV related
- Herpes simplex: chronic ulcer(s) (more than 1 month in duration); or bronchitis, pneumonitis, or esophagitis
- Histoplasmosis, disseminated or extrapulmonary

- Isosporiasis, chronic intestinal (more than 1 month in duration)
- Kaposi sarcoma
- Lymphoma, Burkitt's (or equivalent term)
- Lymphoma, immunoblastic (or equivalent term)
- Lymphoma, primary, of brain
- Mycobacterium avium complex or M kansasii, disseminated or extrapulmonary
- Mycobacterium tuberculosis, any site (pulmonary or extrapulmonary)
- Mycobacterium, other species or unidentified species, disseminated or extrapulmonary
- Pneumocystis pneumonia (PCP)
- Pneumonia, recurrent
- Progressive multifocal leukoencephalopathy
- Salmonella septicemia, recurrent
- Toxoplasmosis of brain
- Wasting syndrome due to HIV

(Source: Revised classification system for HIV infection and expanded surveillance case definition for AIDS among adolescents and adults. Morbidity and Mortality Weekly Report, December 18, 1992/41 (RR-17), 1993).

Preventing Opportunistic Infections (OIs)

Opportunistic infections can be caused by viruses, bacteria, and fungus, even parasites. One way to avoid these infections is to reduce your risk of exposure to these germs. Here are some practical suggestions.

Sexual exposures

- Use condoms every time you have sex. (See Tips for Using Condoms)
- Avoid oral-anal sex.
- Use waterproof gloves if you're going to insert your finger into your partner's anus.
- Frequently wash hands and genitals with warm soapy water after any sex play that brings them in contact with feces.

Injection drug use

- Do not inject drugs.
- If you cannot stop using, avoid sharing needles and other equipment.
- Get vaccinated against hepatitis A and hepatitis B.

Job exposure

Certain type of jobs or facilities can put a person with HIV at risk of OIs. These include work in:

- health care facilities

- homeless shelters
- day-care centers
- prisons
- places that involved work with animals (such as farms, veterinary clinics, pet stores)

Pet exposure

Pets can carry diseases that don't affect a healthy person but can pose a serious risk to someone with HIV. For that reason, if you have a pet, follow these suggestions.

General

- Wash your hands after handling your pet (especially before eating).
- Avoid contact with your pet's feces. If your pet has diarrhea, ask a friend or family member to take care of it.
- If you are getting a new pet, try not to get one that is younger than a year old, especially if it has diarrhea. (Young animals are more likely to carry certain germs like Salmonella.) Avoid stray animals.

Cats

- Keep your cat indoors. It should not be allowed to hunt and should not be fed raw or undercooked meat.
- Clean the litter box daily. If you do it yourself, wear gloves and wash your hands thoroughly afterward.
- Control fleas (ask your vet how to do this).
- Avoid playing with your cat in ways that may result in scratches or bites. If you do get scratched or bitten, wash the area right away. Don't let your cat lick your cuts or wounds.

Birds

Avoid areas where there are any bird droppings. Do not disturb soil underneath bird-roosting sites.

Others

- Avoid touching reptiles, such as snakes, lizards, iguanas, and turtles.
- Wear gloves if you are cleaning an aquarium.

Cautions about food and water

- Avoid raw or undercooked eggs (including hollandaise sauce, Caesar salad dressing, some mayonnaises, eggnog, cake and cookie batter).
- Avoid raw or undercooked poultry, meat, and seafood (especially raw seafood). Use a meat thermometer. Cook poultry to 180° F, and other meats to 165° F. If you don't have a meat thermometer, cook meat until no traces of pink remain.
- Avoid unpasteurized dairy products and fruit juice.
- Avoid raw seed sprouts (such as alfalfa, mung beans).

- Thoroughly wash fruits and vegetables before eating.
- Don't let uncooked meats come into contact with other uncooked foods. (Wash thoroughly hands, cutting boards, counters, knives, and other utensils after contact with uncooked meats.)
- Do not drink water directly from lakes or rivers. Filtered water is preferable, particularly if your immune system is weak.

People with HIV whose immune systems are severely weakened may want to:

- Avoid soft cheeses (feta, brie, camembert, blue-veined, and Mexican-style cheeses, such as queso fresco).
- Cook leftover foods or ready-to-eat foods, such as hot dogs, until they are steaming hot.
- Avoid food from delicatessens, such as prepared meats, salads, and cheeses--or heat these foods until steaming before eating.

Cautions about travel

Before you travel to other countries, particularly developing countries, talk to your provider about ways you can avoid getting sick on your trip. People with weakened immune systems are at risk and should discuss travel plans well in advance. Be sure to check with your provider regarding recommended or required immunizations, as well as indications and precautions of travel vaccines, before traveling out of the country.

When traveling in developing countries, people who have HIV should be especially cautious of food and water that may be contaminated. It is best to avoid:

- raw fruits and vegetables (unless you peel them first)
- raw or undercooked seafood or meat
- tap water or ice made with tap water (drink bottled water instead)
- unpasteurized milk or dairy products
- swallowing water when swimming

Talk to your health care provider about whether you need to get vaccinated before your trip and whether you need to take drugs to prevent diseases that are common in the country you are going to visit.