PROFESSOR: All right. So the next chapter is Chapter 6, Communicable Diseases. Let's see. So basically communicable diseases, they're diseases that are transmitted from one person to another. And two terms you need to know are endemic and epidemic. Endemic refers to a communicable disease in which a small number of cases are continually present in the population. And it really refers to the percentage, a small number, not a lot. Maybe you or I we could say is endemic or whatever to the area.

Epidemic refers to communicable disease which is affecting a large number of people in the population, and usually an epidemic is an increase in number, okay. You may have flu symptoms during the winter. You know, people may have the flu and we can say that's endemic and we don't have a flu epidemic. We can have people who come down with the flu, but we don't really have a flu epidemic. So the difference, endemic and epidemic, refers to the number in the population.

So methods of transmission, communicable diseases. They perpetuate with a continuous transmission of the infectious agent from one person to another person by either direct or indirect. So what is direct transmission? Basically direct transmission refers to a physical contact, such as sex or droplet spread, coughing or sneezing. Indirect basically implies that there is an intermediary mechanism. So it is not person to person. The intermediate mechanism can be contaminated food, contaminated water or insects. That would be indirect.

Now, basically to control the disease, you have to break the transmission, okay. Now, one of the ways of dealing with the diseases is immunization. The purpose of immunization is to reduce the number of susceptible persons in the population. And by reducing the number of susceptible persons in the population, the disease eventually dies out due to lack of susceptible people. An example is going to be smallpox. Smallpox and I also mentioned polio. They have been eliminated due to widespread immunization. Of course, the concern now is that with smallpox, we don't vaccinate against it anymore. So therefore, we have a population, you guys are in that population, where you have no immunity, no antibodies to smallpox. As a result smallpox is very deadly. The smallpox infection has a very high mortality rate. It has great use then as a bioterrorist weapon when you have a population that is highly susceptible.

Let's see. So sometimes also immunizations are given to protect people traveling to geographic areas where a disease is endemic. An example is cholera. Some people will be able to be
immunized against cholera if they travel to certain emerging countries where they have a high cholera infection rate.

So basically, for identification, isolation, and treatment, what do you do if immunization is not available? So promptly carry it out to shorten the time in which others may be infected. So you want to reduce person-to-person transmission. How do you do that? You can isolate them, prevent the contact with susceptible persons and hopefully we'll stop the spread.

If the infection is not obvious, the disease may not be recognized and treated and will continue to spread and be difficult to control. TB is an example of that. People can have TB, spread it and not really be that symptomatic with it.

They also mention STDs. The previous lecture we talked about herpes and the silent spreader. They don't have the symptoms to the disease, but they still can spread it.

So you can control indirect transmission. How do you control it? Contaminated food or water. You can chlorinate water supplies; effective treatment of sewage; standards for handling, manufacturing, distributing commercially prepared foods. In the previous lecture, I mentioned staph aureus can cause food poisoning. The way it causes food poisoning is the food handler has a cut on their hand that's infected. It's infected with staph aureus and there is transmission of the bacteria from the cut to the food.

Chlorination of water supplies. Water supplies can also transmit disease. When there is, let's see, natural weather events such as severe hurricanes or tornados and water supply may be disrupted, they recommend boiling water to prevent the spread of typhus and other organisms.

Let's see. What else? I mentioned giardia in the previous lecture. That can be spread through the water. I know there was a local gym - not in Tampa, but in another town - and some of the people that worked out there got giardia infections from the water supply there.

Eradication and control of animal sources and vectors. Mosquitos, okay, they should be -- we spray for mosquitos. We advise people not to have any stagnant pools of water which can serve as a breeding ground for mosquitos which can transmit disease.

So for effective control, you need to know the cause of the disease and the methods of transmission, otherwise you can't control it. For example, during the Bubonic Plague or black death, which wiped out a large percentage of the population, people did not know that the disease was carried by rodents, and the bacteria was transmitted to people by insects, basically flies on the rats and mice. They did not know that. So also when people got it, if they got the Pneumonic Plague, in other words it affected the pneumonia, then it could be spread person to person via droplet.

So examples of methods of control. You have unimpeded
direct or indirect transmission. You have immunization which protects a susceptible person by giving them resistance to infection or you can isolate and promptly treat the infected person. And basically with control, the means of indirect transmission blocks the spread of the infectious agent.

Now, isolation and prompt treatment of the infected person, we do that to prevent the spread of the disease if we don't have vaccinations. One of the disease on the horizon that people are concerned about is bird flu. And the problem with bird flu is that it's a herpes-type virus. It has a very high mortality rate if humans get it. The good thing about it is that the person-to-person transmission does not occur with bird flu. The only real transmission is from the birds to humans. So people who care for birds, fowl, duck farms, that type of thing where bird flu is present -- most commonly, the greatest presentation is going to be China, those people are at risk. There have been one or two supposedly documented cases where a human had bird flu, they transmit it to another human. The concern is if this virus mutates. If it mutates and it develops the ability to therefore infect humans, in other words, if it mutates and it's able to be spread by human-to-human contact, then there will be a great risk to the population of the world because we have no vaccine against it.

Now, the STD, sexually transmitted diseases. Spread primarily by sexual contact through heterosexual partners or through sexual acts with the same partner. The four major STDs: Syphilis, Gonorrhea, herpes, and chlamydia. We have touched on all of these in the previous lecture. Also, they mention HIV/AIDS. It's a separate class because of the high mortality and devastating consequences. HIV/AIDS is spread through heterosexual contact, homosexual contact, men who have sex with men, and basically through exposure to blood and body secretions. Exposure to blood and the body secretions are going to be semen, cervical/vaginal secretions, okay, and breast milk. Those are the sources for spread.

The first one is syphilis, Treponema Pallidum. And syphilis is interesting because there's three stages to syphilis. The first one is called primary syphilis. And what presents then is a painless ulcer called the chancre. It's going to be present on the genitalia. And the organism, Treponema Pallidum, if patients have a chancre or that sore, you can scrape the sore. You can then look at it underneath the microscope. You see all the organisms there, a lot of organisms. It is going to be located on the genitalia. It also can be in the rectum mucosa or through a break in the skin. They then multiply, okay.

Now, the chancre. If people are concerned about it, they see the doctor and it gets treated, the chancre resolves. If they don't see a doctor, okay, and they ignore it, it resolves. So the chancre goes away either way. The primary infection goes
away. However, if it's untreated, you then set up the likelihood of getting secondary syphilis, and then tertiary syphilis.

So let's go through these slides here. The chancre is a small ulcer at the site of inoculation, can be genitalia, whether it's the penis, the vulva, vagina, oral cavity or rectum. It has a high concentration of Treponemas and it can last for four to six weeks. It heals without treatment.

Now, then what happens is they develop secondary syphilis. That's a systemic infection. They get a skin rash and enlarged lymph nodes. It occurs several months after the chancre has resolved or healed. They can get a low-grade fever. They get swollen lymph nodes underneath the arm, in the groin. They get a skin rash. Sometimes they get the shallow ulcers on the mucus membranes, the oral cavity and genital tract, but not all the time. This persists for several weeks and then it goes away without treatment. Very often the signs are subtle, so as a result people don't go to the doctor to get it diagnosed because it's not that great. They think maybe it's a food allergy or whatever. It goes away in a little while and you think you're done, but you're not.

Then if it's not treated in secondary syphilis, they develop tertiary syphilis. Tertiary syphilis causes late destructive lesions in the internal organs. Now, at this time we consider them sort of not infectious in that they don't have a lot of live Treponemas present. But what happens is the organism takes up residence within certain organs and it causes damage. Now, what organs are we talking about? One is the aortic wall. When blood leaves the heart, what happens is -- anybody know the chamber that pumps blood away from the heart and into the body? What's the name of that last chamber?

STUDENT: (Inaudible.)

PROFESSOR: Left ventricle. The left ventricle pumps blood to the body and the first vessel that receives the blood from the heart is the aorta. And the pathway of the blood is that it goes to the aorta and it goes -- the aorta has an ascending portion. It goes up and then it's got an average, and then it has the descending portion. So the descending portion brings blood then to the abdominal organs, and it splits into the femoral artery and the iliacs. But what I want to focus on, the aortic arch. Syphilis, the syphilitic organisms will invade the ascending portion of the aortic arm. As they invade that ascending portion, the way, they multiply, they grow and they weaken the wall of the aorta. So as a result, that wall is weaker and it dilates. When it dilates, it forms an aneurysm. An aneurysm is a dilatation of an artery. So it's the ascending portion of the aorta. People can get an aneurysm of the posterior -- or not the posterior, the descending portion of the aorta and that's not caused by syphilis. That's caused by hyperlipidemia, high cholesterol, high fat. But the ascending...
portions, pathognomonic for syphilis.

And when I was in practice, I got a phone call one time from a radiologist. And he called me up. He was a friend of mine. He said, "Jim, I've got a patient I want to refer to you." And we never got referrals from radiologists because radiologists, what do they do? They have patients come who are going to have an X-ray and they have to interpret the X-ray. But this woman came in, she was 42 years old. She came in for a routine chest X-ray required for work. When they did the chest X-ray, they saw that she had an aneurysm of the ascending portion of the aorta. So that's why he referred her to me. And so I saw her and then I diagnosed it and treated her in conjunction with an infectious disease person for tertiary syphilis. She also had -- the other organ that gets involved very often is the brain. And she did have what we call neurosyphilis, and that's very difficult to treat. It's difficult to get high does of antibiotics in the spinal cord. And one of the ways we followed her was that we did serial spinal taps and measured antibody levels against syphilis in the spinal cord fluid. So when they get neurosyphilis, they can develop mental deterioration and even paralysis.

So diagnostic tests. You can scrape the chancre, look at it under the microscope and look for the Treponemas or you can do the blood tests, okay. We call those serologic tests. And once you get a positive test for syphilis, it remains positive for quite a few years.

Congenital syphilis. The concern about syphilis is that it is transmissible from mother to child. Fortunately, it's not really transmissible in the first half of pregnancy. As the placenta ages and matures, membranes change, and the barrier changes. And it's easier for the syphilitic organism to cross the placenta in the second half of the pregnancy and therefore cause an infection within the baby. So it can cause defects in the baby, can cause death. So treatment is very important, early treatment.

So here we go. This is a gram stain of pus from the urethra illustrating many gram-negative intracellular diplococci characteristics of gonorrhea. This is honestly a great slide. You see the diplococci, the round spheres. They are grouped together as twos. They are diplococci. They are gram negative. They are not purple. They are that pinky-red. And the cell type that that's in is what we call polymorpholeukocyte, white blood cell. We've talked about them before. Neutrophils, all the same. Polys, polymorpholeukocyte, neutrophil, all the same. And this is -- it was taken, all right, from a male who presented with burning urination and pus coming from the urethra. The pus is going to be the neutrophils with the gram-negative diplococci within it.

So gonorrhea. Neisseria gonorrhea primarily affects the mucosal surfaces of the urethra, the genital tract, the pharynx,
and the rectum. Symptoms appear about a week after exposure. For women, it affects the cervix, the uterus, and also can affect the urethra. The urethra, of course, brings the urine from the bladder to the outside. The Bartholin's glands are mucus-producing glands, really lubrication for relations. There are two Bartholin's glands, one on either side of the entrance to the vagina by the labia. They can be infected. When they become infected, they become blocked and they swell. All right. And if they get really swollen, they have to be drained. I've seen them honestly extremely large, the size of an orange. They are very painful. And then women also will get a vaginal discharge. As I mentioned, they may have some burning in urination. Others may be asymptomatic.

Men, with the initial infection, almost all of them are symptomatic. They all have burning in urination. They all have pain. The symptoms -- they quote 80 percent, but usually it's higher than that. For women, 80 percent of women may be asymptomatic. They may not have symptoms, okay, or their symptoms may be more mild.

The infection can spread. The concern is that the infection spreads from the cervix up into the Fallopian tubes causing salpingitis, inflammation of the tubes. The word salpingitis refers to tubes, okay. They occasionally get an abscess, a collection of pus and sometimes it has to be drained surgically. They can get -- the symptoms of pelvic inflammatory disease, or PID, they get abdominal pain, they get a fever, and they get an elevation in white count.

As a gynecologist, I was called to the emergency room many a time for women who are sexually active who came in complaining of right lower quadrant pain. What's in the right lower quadrant besides the tubes and the ovary?

STUDENT: The appendix.

PROFESSOR: The appendix. So, you know, any woman who came in with right lower quadrant pain, if she didn't have the classical appendicitis infections, gynecologists were called in to make sure that it wasn't a pelvic inflammatory disease that was being missed, and that she was indeed -- you know, it ruled out an appendix diagnosis. Because obviously to rule out an appendix diagnosis, you need surgery. So I used to see a lot of right lower quadrant consults.

So gonorrhea in the male. The acute inflammation of the mucosa, urethra. They get a discharge. They get burning urination. And they are much less likely to be asymptomatic. Men who get recurring gonorrheal infections of the urethra, with each infection they have a lesser chance of developing symptoms. Major complications for the men is basically that it can cause an infection in the epididymis. The epididymis is part of the duct of the testes and is involved in the traveling of sperm from the testes through the vas, through the seminal vesicles which provide fluid for the -- seminal fluid for the sperm to
travel in. So in epididymitis, men will have a redness over the scrotum, pain and tenderness. Of course, recurring gonorrheal infections leads to scarring and blocking the transport of sperm or reducing the sperm counts, therefore, reducing fertility for men and also for women. Extragenital gonorrhea, it can occur in the rectum. Also it can occur in the pharynx and tonsils, obviously due to oral-genital sex acts.

I had one patient who came in with GC arthritis. She had pain and tenderness in her right ankle. Typically GC can gain access to the bloodstream and so it can involve joints, tendons or heart valves. And her history was -- this is years ago when I was a resident. She was diagnosed in an STD clinic as being positive for gonorrhea. So she was treated appropriately. Then what they did is they recommend the patient come back in two or three weeks for a repeat culture to make sure that they are negative. I mean, what if she had -- whatever she was treated with, what if she had a resistant -- what if the GC she had was resistant to the antibiotics she was given? So you have to reculture them to make sure that they are indeed clear.

And the thing is when someone comes in with GC, a lot of these people can be unreliable. So you can't do a culture and say call back in three days. You really have to see them, diagnose them, and treat them on the spot.

So anyway, she did not go back for a repeat culture three weeks later, as they requested. And she ended up with GC arthritis. She came in with a red and swollen right ankle. What we were able to do is take a very small needle, put it in the joint, got some fluid back, gram stained the fluid. And we saw gram-negative diplococci within the polys just like that slide with the male with the urethritis. So she was then admitted and treated and she did well.

Let's see. Herpes. Let me just see here. So basically the treatment of gonorrhea, you want to culture it, the suspected sites. And you can get a positive blood culture if it's in the bloodstream. And treatment, you have to be aware of what type of strains are present, the strains that have penicillinase enzyme. You kind of know -- if you're doing it all the time, if you're at a STD clinic or whatever, you kind of know which antibiotics are the best ones to use. Otherwise, you have to do a culture.

So herpes. There's two types. It's not restricted in distribution. Like I said, you can get Type 2 on the mouth. You can get Type I on the genitals. But classically, Type 1 is basically oral mucus membrane, causes fever blisters. Type 2 infects the genital tract. Infections usually occur after puberty. Also, the practice of oral-genital sexual practice or activities can spread herpes. I've had that with married couples, which was a little bit of a situation to work through. But it definitely can be transmitted that way.
Vesicles. How they present, they have vesicles, little blisters with clear fluid. They break. They have shallow ulcers. Men will have them on the glands or the shaft of the penis. Women can have it on the vulva or the vagina. If it's on the vulva, they are usually painful. The other painful thing is when they are on the vulva like that, there is a lot of them, they have burning urination. Urine actually burns the ulcer, so they have a lot of discomfort. I've had patients sometimes that had so much pain that really for a day or two - and it may sound extreme - but they had to urinate in a tub of water because it was the only way of preventing the urine from not hitting the ulcers and causing tremendous pain. So the vesicles, there's painful blisters on the external genitalia and genital tract. They can rupture and form shallow ulcers. They contain a large quantity of virus and are infectious. They get regional lymph nodes enlargement. The lymph nodes in the groin become swollen and tender. And the way you diagnose it is -- you remember the virus lives inside the cell, so you can see changes within the nucleus of the cell. You can do viral cultures, and you also can do a blood test, serologic tests in some cases.

So treatment. Antiviral drug will shorten the course, reduces the severity, but it does not eradicate the virus. You cannot eradicate the virus. Once you have it, you'll always have it. The only question is if and when you have another outbreak.

Major complications. You don't want to spread it. The big concern from spreading it from an infected mother to an infant through active herpetic lesions in the mother's genital tract.

When I was in practice, you know, we always took complete histories on our patients, and one was: Do you have a past history of herpes? If they said yes, and they were pregnant what we would do is we tell them if during your pregnancy you get -- develop a herpetic sore, you need to call us. Call us as soon as you think you have it. Then would call the office and we would have them come in. And when they came in, we would do a culture of the area where they thought they had the sore. Usually recurring herpetic sores are very small. They are not big. The initial outbreak can be extensive. But the recurring outbreaks are usually very small, almost insignificant, but they are not because they have live virus. But they are very small. So then we would do a culture from where they had the sore and then, you know, we'd get the results back two to three days later. If the culture was positive, then we knew indeed they did have herpes in the past, and we knew that they were able to diagnose or be aware of the fact that they had an active herpetic ulcer. So then the rest of the pregnancy, we wouldn't have them come in or anything like that. But what was important was when they went into labor, especially if they ruptured membranes. If they thought they had a herpetic sore and they were right in the past, proven right by the culture, we would
tell them call us as soon as that happens, come on in, and we'd do a Cesarean section. And the idea of the Cesarean section is that you don't want the infant, who really has not developed immune responses, to come in contact with the herpetic virus. Then the infant can get a herpes infection which can be systemic and have consequences to the fetus. So anyway, that's why women who have an active herpetic sore, if they go into labor when they have that active sore, it should be delivered by Cesarean section. If they don't, if they go into labor and they don't have a herpetic sore then they can be delivered vaginally without a person.

Over here is a picture of a penis by the foreskin, circumcision. You will see the retracted foreskin and the herpetic ulcers.

Chlamydia. We talked a little bit about chlamydia.

(Cell phone interruption)

I'm going to continue here. With chlamydia, you have the test for diagnosis, they detect chlamydial antigens in the cervical or urethral secretions. You can diagnose it under microscopy. You can do cultures or nucleic acid amplification tests. These are all different tests that can be done.

Treatment is going to be antibiotics. So this is a summary of the different STDs. We talked about syphilis, gonorrhea, herpes, chlamydia. You will need to have a good understanding of these. You're going to have to basically know this chart. The STDs are very important. I consider them very significant.

There's other common but less serious STDs. They describe condylomas and anal and genital warts as less serious. Guess there's some debate-ability about that since HPV has been proven to be causative for cancer of the cervix. Thankfully, cervical cancer is not that common.

Gardnerella is another organism that causes vaginal symptoms. Trichomonas does. Scabies and crabs, we talked about previously, and also hepatitis.

So, HIV we talked about a little bit before. It attacks the helper T lymphocytes. The normal helper T lymphocyte count is 800 to 1,200. When it gets down to 500, people start getting some of the symptoms of HIV. And when it gets down to 200, that's the severe count where the severe complications occur.

The first AIDS cases were diagnosed in 1981 in the village, Greenwich Village, the St. Vincent's Hospital emergency room. Men in their 20s were coming in with pneumocentesis carinæ, an opportunistic lung infection or pneumocentesis (), same thing. They changed the name. And typically, men in their 20s don't come down with this type of lung infection, okay. The epidemiologists were called in. They wanted to find the common factor. And basically because pneumocentesis () causes infections in the very elderly and severely compromised population. So obviously, I think, as you guys know, it was identified in 1981, and it was due to the transmission of the
AIDS virus basically in the gay male population through anal intercourse. What happens with anal intercourse is that they can be small micro tears in the rectum, and those tears then if the male ejaculates inside the rectum, the semen has high concentrates of the AIDS virus. So you have got the microscopic tears, very small tears in the rectal lining, and you have the AIDS virus present, easy to gain access. So transmission of AIDS, once again, is through exposure to body fluids, cervical or vaginal secretions, semen, and breast milk. So that's when the first cases were identified.

And then in 1983, they were able to identify the organism.

In 1985 developed a blood test for HIV.

So groups at high risk: homosexual, bisexual men, men who have sex with men, present or past IV drug users, persons with clinical laboratory HIV infection, male or female prostitutes and their sexual partners, sexual partners to infected people, people with hemophilia. These people are at risk why? Because they receive blood products. And newborn infants of infected or high risk motors.

What happens is the CD4 protein on the cell membranes of the helper T lymphocytes, what happens is this functions as a receptor for the virus. The virus binds to that receptor, okay. Where it binds to that receptor, the cell opens up. The virus gains access to the cell, takes over the cell mechanisms, and produces other virus particles.

Now, the AIDS virus is an RNA containing virus we call a retro virus. It has three significant enzymes. The first one is reverse transcriptase. The second one is integrase, and the third is protease. When the AIDS virus gains access to the nucleus, the first enzyme activated is reverse transcriptase. What reverse transcriptase does is it codes the viral RNA into DNA. The host cell genetic information is in DNA, not RNA. So reverse transcriptase codes the viral RNA into DNA. The second enzyme then acts. That's integrase. Integrase serves to insert the newly coded viral DNA into the host cell DNA. Then what happens is once it's inserted into the host cell DNA, they can get copied by messenger RNA, goes to the ribosomes. As a result the messenger RNA serves as a template for the synthesis of viral proteins. Then the third enzyme becomes active, and that's protease. Protease cuts the newly synthesized protein sheets or chains into segments which then are assembled to form the virus particles. So the three enzymes: reverse transcriptase, integrase, and protease.

Now, so what happens is the virus binds the cell, the viral envelope infuses with the cell membrane and the virus enters the cell. Once it's inside the cell, the virus makes a DNA copy of this RNA genetic material. The DNA copy gets inserted using integrase. Then the viral genes direct the synthesis and assembly of more virus particles. The viral protein assembles into small segments around the viral DNA. It then can bud out
of the cells. So that's basically the life of the AIDS virus. So it invades the CD4 cells and becomes part of the cell DNA.

This summarizes what I've said. There is progressive destruction of the helper T cells. And as there is progressive destruction of the helper T cells, also known as the CD4 cells, then the immune defenses collapse. When the immune defenses collapse, then the person is at risk for opportunistic infections or neoplasms, cancers.

Anybody know the most common cancer associated with AIDS patients?

STUDENT: (Inaudible)

PROFESSOR: It's skin cancer called Kaposi's sarcoma. There's skin nodules. Basically it's of connective tissue. It has small capillaries in it and fiber blasts. And another cancer associated with that is rectal cancer.

Let's see. So the clinical manifestations. The virus attacks and kills the helper T cells. The monocytes survive, but the virus continues to replicate the monocytes and transport the virus throughout the body. Patients become susceptible to the opportunistic infections and cancer. Early stage, there's large amounts of virus in the blood. They get a mild febrile illness. The body responds by forming anti-HIV antibodies and it takes one to six months and they are not effective in dealing with the virus. The amount of virus declines, but the body's defenses cannot eliminate the virus. There is no latent or dormant phase where the virus remains inactive. It continuously destroys the CD4 cells.

Chronic stage. Eventually, the rate at which CD4 cells are replaced cannot keep up with the rate of destruction. And there are different strains of HIV. Some can be more aggressive than others. And the goal of the treatment is that the antiviral drugs suppress the proliferation and damage, but they cannot completely eliminate the virus.

So antibodies, as I mentioned, are formed within one to six months. They don't eradicate the virus. They are detected by laboratory tests.

So signs and symptoms of AIDS. After the high risk exposure and inoculation, infected persons usually experience a mono-like illness. The infected person can remain asymptomatic for years, okay. Sometimes the only way you can confirm it is through a laboratory test. Later on they develop generalized lymph node involvement. They develop fever, weakness, chronic fatigue, weight loss, thrombocytopenia. Anybody know what thrombocytopenia means? Penia means decrease. So what does thrombocyte? Anybody? Platelets. So they develop a low platelet count and they get full blown AIDS.

So to study the disease, you can measure the amount of viral RNA that's present. You can measure the CD4 lymphocytes. The amount of viral RNA in the blood reflects the extend of
viral replication in the lymphoid tissue.

Once again, here are the levels I mentioned. 800 to 1,200 is considered normal. 500, they are at risk for opportunistic infections. When they are below 200, major HIV complications. Complications are going to be the opportunistic infections. Pneumocystis carinii pneumonia is the most common, also the mycobacterium avium. They're at risk for getting toxo, Cryptosporidiosis, TB. Malignant tumors in AIDS patients, Kaposi's sarcoma is the most common one. It's caused by the human herpes virus 8. Malignant tumors of B lymphocytes also of the oral cavity and rectum.

All right. Common infections in AIDS patients. They get herpes or CMV, Epstein-Barr, which causes mono. The fungi, the protozoa. I'm not going to really hold you for this slide. You don't really have to know this one. Just realize that people with AIDS can have other infections because of their decreased immunity.

Here's a picture. It's difficult to see, but there is a picture of a Kaposi's sarcoma. Below the arrow you see those red things; that's a capillary. The flattened endothelia cell, and then above it is the tumor nodule. The nuclei are a little more regular, little more darker staining, indicative of neoplastic cells.

So HIV transmission, sexual contact, blood and body fluids, mother to infant. Direct inoculation or exposure, transfusion, sharing of contaminated needles or transplacental or post-partum transmission by exposure of the baby being exposed to cervical blood or breast milk. It's not transmitted by casual household or social contacts. No cure.

The primary therapy is using medications that inhibits the three enzymes: reverse transcriptase, integrase, and protease. And the treatment schedules vary. Revised as new drugs are developed.

(End of class.)

CERTIFICATE OF TRANSCRIPTION

I hereby certify that the foregoing transcription is a true and accurate verbatim record of the recorded proceedings.

KERRY MERCade, CSR
813.404.2488, www.HRICART.com